Description of document: Defense Technical Information Center (DTIC) computer-generated bibliography prepared by matching the subject terms: epidemic, coronavirus, pandemic against the Technical Report database, 2020

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Sincerely,

Michael Hamilton

3 Enclosures

Michael Hamilton
FOIA Program Manager
## Unclassified citations to Classified documents

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<td>Hendley, J. Owen</td>
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<td>Powelson, Robert L.</td>
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<td>Bergmann, H.</td>
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<td>RICKETTSIAL DISEASES: SECTION A: TRENCH FEVER; SECTION B: EPIDEMIC TYPHUS, HARVARD SCHOOL OF PUBLIC HEALTH BOSTON MASS</td>
<td>Murray, Edward S., Vinson, J. William</td>
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Detection of Spread Source in Complex Networks

Rensselaer Polytechnic Institute Troy United States

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Statistical Modeling of Dependent Network Data

WASHINGTON UNIV SEATTLE DEPT OF STATISTICS

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<td>Pino, Gene</td>
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<td>Li, Rong</td>
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<td>Francis, Thomas, Jr</td>
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<td>5/31/2012</td>
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<td>COLORADO UNIV DENVER MEDICAL CENTER</td>
<td>Meiklejohn,Gordon,Eickhoff,Theodore C.</td>
<td>9/1/1971</td>
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Highest Classification: Unclassified
When studying the geography of zoonotic diseases of man, it is important to separate out the incidence is concentrated mainly within the limits of such areas of interaction, they can be designated as nosofoci. Designated as nosofoci should be those populated concrete geographical areas of interaction which are the main structural units of a zoonosis nosoareal. Since human territories of a human collective, which on the strength of specific conditions of material life interact with the populations of the zoonosis causative agent.

The occurrence of head trauma is so common that its true importance as a major statistic is approached epidemiologically. Instead, the bulk of head injury research is directed toward protection, most systems of accident investigation, injury analysis and data recording do not recognize head trauma as endemic or even epidemic. Thus, the problem has not been investigated continuously to monitor the antigenic stability of parasites from western Kenya. Current evidence indicates that there was a significant antigenic shift in the 1980-81 outbreak. Epidemiology and treatment record analysis studies continued. A treatment center was opened in western Kenya situated north of the Lambeve Valley endemic area and to the east of the Ugandan epidemic area. This center will serve as a routine treatment facility and research facility for the evaluation of standard drugs available and USMRDC developed drugs effective in screens against human African trypanosomiasis. An experimental compound WR 163577 is being evaluated in the goat model against T. brucei infection.

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THough its timing, severity, and ultimate strain remain a mystery, a pandemic promises to test the critical infrastructure of both the United States and the world. Public health officials have long maintained the potential for pandemic influenza is not a matter of if, but rather a matter of when. To avoid an economic and social catastrophe, pandemic preparedness demands full public- and private-sector participation. With that in mind, U.S. Department of Homeland Security (DHS) Secretary Michael Chertoff joined Secretary Leavitt in May 2006 to ask the National Infrastructure Advisory Council (NIAC) to provide them and President Bush with recommendations regarding the prioritization and distribution of pandemic countermeasures to the essential workers in our nation’s Critical Infrastructure and Key Resource (CI/KR) sectors. Given the scope and scale of a pandemic, the Federal government has repeatedly asserted it cannot handle all pandemic preparedness, response, and recovery efforts on its own. In their letter to the NIAC, the Secretaries highlighted the necessity for the public and private sectors to prepare for this serious threat. The Secretaries also emphasized their understanding that successful pandemic planning requires coordination across all CI/KR sectors.

A discrete time stochastic model is often used to describe a natural animal, pest, or epidemic. An outbreak in the United States in 1989 of nephropathia epidemic (NE) at the Andaman and Nicobar Islands.

The incidence of influenza A and B at Lowry AFB from 1977 to 1981 is reviewed. Following the large outbreaks of H1N1 influenza, when no vaccine was available, the H1N1 virus caused low incidence smouldering outbreaks in vaccinated personnel in 1979 and 1981. A small outbreak of influenza B occurred in 1978-79, affecting mainly permanent party. A few cases of H3N2 influenza occurred in 1977-78 and 1980-81. It appeared that vaccine was providing good levels of protection to military personnel in the face of large scale outbreaks in the surrounding civilian community. During the last 3 years, rates of febrile U.R.I. in students have at no time exceeded 8.8/1000/week. The ‘protective’ H.O. antibody level for students have at no time exceeded 8.8/1000/week. The ‘protective’ H.O. antibody level for
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<td>Combat Drug Zone 2010: The United States Southwest Border</td>
<td>Kent, Stephen G.</td>
<td>3/1/2010</td>
<td>Not available</td>
<td>USAMRMC</td>
<td>U - A - 01</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>Research paper</td>
<td>America's indulgence in drugs has been a historical, cultural, and social aspect of history for numerous decades. Government inefficiency, conflicting government objectives, international politics, and societal norms, coupled with the impact of globalization, have greatly influenced conditions in the drug world. The net result has been a significant increase in the trajectory of demand, trafficking, violence, and associated second and third order effects. While a majority of Americans can readily identify with the everyday realities and pressures of life, few are cognizant of the looming crisis of narco-trafficking along the U.S.-Mexico border. Given the proximity of the major friction points in this drug war, the second order effects and regional security effects are increasingly amplified, and they can potentially affect every citizen in the United States. This analysis examines the factors contributing to the rise in drug trafficking along the southwest border of the United States, discusses the multiple second and third order effects of this trafficking, and examines policy alternatives for the U.S. Government in combating it. Statistics and experience illustrate that past and present U.S. policies have not created the desired effect on narco-trafficking. Even with the post-9/11 increase in security and increased counter-drug budgets, the illicit drug trade in the Southwest is flourishing. The Mexican border drug epidemic requires urgent and careful action by the U.S. Government.</td>
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<tr>
<td>Molecular Pathogenesis of Rickettsioses and Development of Novel Anti-Bacterial Treatment by Combinatorial Peptide-Based Libraries</td>
<td>Krahmer, David H.</td>
<td>2/1/2003</td>
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<td>USAMRMC</td>
<td>U - A - 01</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>Annual rept. 31 Jan 2003</td>
<td>The purpose of this study was to utilize adapter libraries encoded within pentadecapeptide vectors that confer protection against rickettsial pathogens and to study the molecular pathogenesis of rickettsioses. The following specific aims were proposed: 1) To establish heterogeneous cell populations, with each cell expressing a unique member of a complex combinatorial peptide-based (e.g. adapter) library and challenge with R. prowazekii, R. rickettsii, and O. tsutsugamushi; 2) To determine the role of NF-kB, cytokines (TNFalpha, IFN-gamma, RANTES), ROS and NO in intracellular killing of rickettsia-infected mononuclear cells; and 3) To characterize signal transduction pathways modulating the cytokinetic events responsible for the increased vascular permeability. During the first year of this project we were able to construct two dozen libraries encoding combinatorial 6-mer, 12-mer, and 18-mer peptides. We successfully produced these libraries in bacterial cells and transfected two different cell lines with recombinant retroviruses containing the libraries with high efficiency for rickettsial challenges. We have also developed in vitro models of endothelial barrier using rat-derived microvascular endothelial cells. Measurements of endothelial permeability using FITC-dextran in transwells and using ECIS have been performed. Elevation of intracellular calcium in infected cell monolayers and activation of calmodulin have also been demonstrated.</td>
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<td>Development of Assay Technologies to Profile the MEP Pathway of Select Agents</td>
<td>Couch, Robin</td>
<td>5/1/2014</td>
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<td>USAMRMC</td>
<td>U - A - 01</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>Annual rept. 31 Jan 2014</td>
<td>The threat of bioterrorism and the use of biological weapons against both military personnel and civilian populations has become an increasing concern for governments around the world. The 1984 Rajneeshee Salmonella attack, 2001 anthrax letter attacks, 2003 SARS outbreak, 2009 H1N1 swine flu pandemic, and the current US flu epidemic all illustrate our vulnerability to both deliberate and natural outbreaks of infectious disease and underscore the necessity of effective antimicrobial and antiviral therapeutics. The prevalence of antibiotic resistant strains and the ease by which antibiotic resistance can be engineered into bacteria further highlights the need for continued development of novel antibiotics against new bacterial targets. This research project directly addresses this need through the development of a broad spectrum inhibitor of the biothreat agents Francisella tularensis and Yersinia pestis. During this period of performance, we have optimized assays with the Y. pestis MEP synthase and the F. tularensis MEP cytidylyltransferase for use in HTS. The screening of transgenic and rationally designed libraries has identified a novel inhibitor that binds to the allosteric site on MEP synthase and the F. tularensis MEP cytidylyltransferase for use in HTS. The screening of libraries that confer protection against rickettsial pathogens and to study the molecular pathogenesis of rickettsioses. The following specific aims were proposed: 1) To establish heterogeneous cell populations, with each cell expressing a unique member of a complex combinatorial peptide-based (e.g. adapter) library and challenge with R. prowazekii, R. rickettsii, and O. tsutsugamushi; 2) To determine the role of NF-kB, cytokines (TNFalpha, IFN-gamma, RANTES), ROS and NO in intracellular killing of rickettsia-infected mononuclear cells; and 3) To characterize signal transduction pathways modulating the cytokinetic events responsible for the increased vascular permeability. During the first year of this project we were able to construct two dozen libraries encoding combinatorial 6-mer, 12-mer, and 18-mer peptides. We successfully produced these libraries in bacterial cells and transfected two different cell lines with recombinant retroviruses containing the libraries with high efficiency for rickettsial challenges. We have also developed in vitro models of endothelial barrier using rat-derived microvascular endothelial cells. Measurements of endothelial permeability using FITC-dextran in transwells and using ECIS have been performed. Elevation of intracellular calcium in infected cell monolayers and activation of calmodulin have also been demonstrated.</td>
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Page 3 of 231 Pages
During the winters of 1995 through 1997, college students (midshipmen) at the US Naval Academy suffered epidemics of upper respiratory tract infections of unknown causes. We sought to determine to measure the impact of respiratory diseases and to determine etiology. Over the 11 months of active surveillance, 85 midshipmen sought medical attention for acute respiratory disease and were evaluated with PCR, serologic studies, and culture for etiology. Among these 85, there was considerable evidence for respiratory pathogen infection: Chlamydia pneumoniae in 52.6%, Mycoplasma pneumoniae in 27.1%, respiratory syncytial virus in 9.4%, influenza in 8.2%, and adenovirus in 1.2%. The accumulation of materials on the viability of microbes has moved along three channels: recovery from radioactive environments, epidemics and diseases, and virological studies. Recovery Prospects presents a number of low-cost proposal primarily directed at developing practical but comprehensive management plans. PART II is entitled PERSPECTIVES. It presents in Question-and-Answer form a number of reflections, derived mostly from the conferences, on such topics as economic modeling, functioning in a radioactive environment, and the Soviet civil defense. The outbreak also portends challenges for the military until adenovirus vaccine production is reestablished.
The experiments show that it is possible to transmit exanthematic typhus from a Chinese macaca who had been infected to a new Chinese macaca by means of a body louse. The application of this datum to etiology and to prophylaxy of the malady in man should be made. The measures against typhus inroads must aim at the destruction of the parasites; they will especially aim at the body, the body garments, the clothes and the bedding of the patients.
### Improving Protection against Viral Aerosols Through Development of Novel Decontamination Methods and Characterization of Viral Aerosol

**Woo, Myung-Huei**

*Florida Univ Gainesville Dept of Environmental Engineering Sciences*

4/1/2012 166 AFRL-RX-TY-TP-2012-0040 TP-2012-0040/AFRL-RX-TY U A - 01 Approved for public release; distribution is unlimited.

**Doctoral Thesis**

Although respirators and filters are designed to prevent the spread of pathogenic aerosols, a stockpile shortage is anticipated during the next flu pandemic. Contact transfer and reaerosolization are also concerns. An option to address these potential problems is to decontaminate used respirators/filters for reuse. In this research a droplet/aerosol loading chamber was built and used in decontamination testing to prove a fair comparison of the performance of different decontamination techniques, including antimicrobial chemical agents, microwave irradiation and ultraviolet (UV) irradiation, which were incorporated into filtration systems and tested. The inactivation efficacy of dialdehyde cellulose and starch filters vs. biosolid filters was investigated. In sufficiently humid conditions both media showed higher removal efficiency and better disinfection capability at lower pressure drop than conventional media. In microwave-assisted filtration systems temperature (T) was found to be a key factor. Relative humidity (RH) was another pivotal parameter at warm-to-hot-water temperatures but became insignificant above 90 C. An examination of the effect of T and RH on UV inactivation revealed that absorption of UV by water and shielding of viruses inside aggregates suppressed inactivation. Varying the spray medium showed that artificial saliva (AS) and beef serum extract (BE) produce a protective effect against UV compared to deionized (DI) water, that RH was not a factor in stability of MS2 coliphage sprayed in AS or BE, and that infectious MS2 particles in DI water displayed a volume-based size distribution but in AS and in BE the size dependence was of a lower order. Whereas AS and BE enhanced stability, adding salts had the opposite effect.

### A Simulation Optimization Approach to Epidemic Forecasting

**Nsoesie, Elaine O., Beckman, Richard J., Shashaani, Sara, Naga raj, Kalyani S., Marathe, Madhav V.**

*Virginia Bioinformatics Institute, Virginia Tech Blacksburg United States*

6/27/2013 10 ARPA/DC Not available U A - 01 Approved for public release; distribution is unlimited.

**Journal Article - Open Access**

Reliable forecasts of influenza can aid in the control of both seasonal and pandemic outbreaks. We introduce a simulation optimization (SIMOP) approach for forecasting the influenza epidemic curve. This study represents the final step of a project aimed at using a combination of simulation, classification, statistical and optimization techniques to forecast the epidemic curve and infer underlying model parameters during an influenza outbreak. The SIMOP procedure combines an individual-based model and the Nelder-Mead simplex optimization method. The method is used to forecast epidemics simulated over synthetic social networks representing Montgomery County in Virginia, Miami, Seattle and surrounding metropolitan regions. The results are presented for the first four weeks. Depending on the synthetic network, the peak time could be predicted within a 95 CI as early as seven weeks before the actual peak. The peak infected and total infected were also accurately forecasted for Montgomery County in Virginia within the forecasting period. Forecasting of the epidemic curve for both seasonal and pandemic influenza outbreaks is a complex problem, however this is a preliminary step and the results suggest that more can be achieved in this area.
Caribbean Region: Issues in U.S. Relations

With some 34 million people and 16 independent nations sharing an African ethnic heritage, the Caribbean is a diverse region that includes some of the hemisphere’s richest and poorest nations. The region consists of 13 island nations, from the Bahamas in the north to Trinidad and Tobago in the south, Belize, which is geographically located in Central America; and the two nations of Guyana and Suriname, located on the north central coast of South America. With the exception of Cuba and Haiti, Caribbean governments have generally respected the human rights of their citizens. Regular elections are the norm, and for the most part have been fair and free. Nevertheless, while many Caribbean nations have long democratic traditions, they are not immune to threats to their political stability, including terrorism.

Many nations in the region experienced economic decline in 2001-2002 due to downturns in the tourism and agriculture sectors. The extensive damage resulting from several storms in 2004 caused an economic setback for several Caribbean nations. U.S. interests in the Caribbean are diverse, and include economic, political, and security concerns. The Bush Administration describes the Caribbean as America’s third border, with events in the region having a direct impact on the homeland security of the United States. According to the Administration, the United States has an interest in bolstering political and economic stability in the region because instability would heighten the region’s vulnerability to drug trafficking, financial crimes, and illegal immigration. The U.S.-Caribbean relationship is characterized by extensive economic linkages, cooperation on counter-narcotics efforts and security, and a sizeable U.S. foreign assistance program. U.S. aid supports a variety of projects to strengthen democracy, promote economic growth and development, alleviate poverty, and combat the AIDS epidemic in the region.
The objective of this project is to develop concepts for the analysis of the dynamics of interacting systems in a noisy environment. New approaches should lead to a better understanding of system dynamics and generate novel efficient algorithms of stochastic optimal control for interacting systems. One of the central issues that we address is dynamics of noise-induced switching. The phenomenon underlies a large portion of all significant changes that occur in systems in noisy environment. Examples range from breakdown events in complex systems to swarming in systems of interacting vehicles to overcoming barriers by such vehicles. Therefore understanding the switching dynamics is instrumental for developing highly efficient ways of controlling noisy systems. Central to the theoretical approach is the notion that the dynamical trajectories followed in switching form narrow tubes. We demonstrate that the tubes can be directly observed in experiment. Quantitatively, the tubes are characterized by the distribution of trajectories. To find it theoretically we modify the instanton technique developed in a completely different area, the quantum field theory. This approach maps the problem of most probable switching trajectories in noisy dissipative systems onto a problem of Hamiltonian dynamics of an auxiliary system of a higher dimension.

The cases of encephalitis in the Drogobych region require further accurate studies. According to immediate data it is possible to exclude it as a tick encephalitis. The clinical chart of the infection is close to the chart of a light form of mosquito (Japanese) encephalitis, but not identical with it.

Volume 1 summarizes current knowledge of the effects of nuclear weapons on area targets. Radiological effects are divided roughly into three categories: external gamma-radiation from fallout fields; external beta-burns and internal hazards due to cycling of Sr-90, Cs-137 and I-131. Vulnerabilities of different classes of targets or 'biomes' are considered, e.g. vertebrates, insects, conifer forests, deciduous forests, grasslands and crop lands. Thermal ignition and probabilities of fire spread under various conditions are discussed in Chapter 2. Chapter 3 is concerned with potential meteorological and climatic problems. Chapter 4 discusses a variety of 'second-order' problems such as epidemics, pest outbreaks, floods, erosion and ecological changes.

The armed forces are only one of several weapons the nation is employing against the drug epidemic. The Federal counternarcotic effort involves multiple agencies cooperating at all levels of command simultaneously on a variety of fronts. The Federal agencies involved in CD operations are all vying for recognition and view the challenge from different perceptions by the nature of their different experiences, roles, and responsibilities. Doctrinal guidance for the DoD's support to Counternarcotics operations falls under Current Joint Doctrine for Military Operations Other Than War (MOTW). MOTW principles are an extension of warfighting doctrine. In the Caribbean, the Customs Service and Coast Guard are lead agencies for interdiction, the State Department for dealings with foreign governments and the DoD for Detection and Monitoring. The question arises are the Federal agencies working together effectively – is there unity of effort in Caribbean Counternarcotics Operations?
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<th>Title</th>
<th>Institution</th>
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<td>Cook-Mills, Joan M., Munshi, Hidayatulla G., Perlman, Robert L., Chambers, Donald A.</td>
<td>Mouse Hepatitis Virus Infection Suppresses Modulation of Mouse Spleen T-Cell Activation</td>
<td>ILLINOIS UNIV CHAMPAIGN</td>
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<td>3/1/2011</td>
<td>Vigersky, Robert A.</td>
<td>An Overview of Management Issues in Adult Patients with Type 2 Diabetes Mellitus</td>
<td>WALTER REED ARMY MEDICAL CENTER WASHINGTON DC</td>
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A Critique of the Evidence Linking Diet and Coronary Heart Disease

Qian, George V.

12/1/1963 18 Not available KD U A - 01 Approved for public release; distribution is unlimited. Conference paper

It may be useful for me to review the problem of coronary heart disease (CHD) from the special viewpoint of a nutritionist. While this view may have some prejudice it seems relevant because of the frequent association of diet with CHD and the widespread lay interest in the problem. Coronary heart disease may seem to have risen like an epidemic among us. It is a complicated task to determine whether this rise to prominence is real or only made apparent by changing techniques. It would be an interesting task for someone to relate the time course of the prevalence of CHD to the marketing of electrocardiographs. To my knowledge this has not been done. One might have expected a rise of CHD when the ECG became available for diagnosis. Dr. Lee of the Metropolitan Life Insurance Company has shown a remarkable explanation for the distribution by states of coronary heart disease in the United States (1963). (Fig. 1 and II). It must be clear that we see what we look for. A more subtle influence is that of competing causes (2). Even when age specific rates are considered we may be baffled in understanding the entire effect of the removal of diseases which typically kill at an earlier age than does coronary heart disease.

Update on Diagnosis, Management, and Prevention: Hepatitis B Virus Infection

Mahoney, Francis L.

4/1/1999 18 Jun-99 NARC U A - 01 Approved for public release; distribution is unlimited. Journal article

Viral hepatitis is a disease with multiple causes that was first described in the fifth century BC. When Hippocrates described epidemic jaundice, he was undoubtedly referring to persons infected with acute hepatitis B virus (HBV) as well as other agents capable of infecting the liver. Epidemics of jaundice have been described throughout history and were particularly common during various wars in the 19th and 20th centuries. While many of these outbreaks were due to hepatitis A, it is likely that epidemic transmission of hepatitis B also occurred in settings where the use of blood-containing products was common.

Homeland Defense and ‘Posse Comitatus’ A Domestic Security Analysis

Thompson, Jeffrey R.

2/6/2006 15 Not available OSAC/JSC U A - 01 Approved for public release; distribution is unlimited. Research paper

For the past 25 years, the Posse Comitatus Act has been gradually eroding, bringing us closer to overriding the law that precludes use of the military in domestic law enforcement. A recent surge in high-profile security events on U.S. soil, such as the attacks of 9/11, the Hurricane Katrina disaster, and the specter of a bird-flu pandemic, has hastened this legal erosion, encouraging some lawmakers to call for the revision or even elimination of Posse Comitatus. Unrestricted use of active duty forces in execution of the law threatens civil liberties, States’ autonomy, and the military’s readiness to defend the nation; consequently, Posse Comitatus must be strengthened and the National Guard must be empowered to halt this trend and ensure U.S. domestic security.
| ADA478672 | Fire Fighters’ Ability and Willingness to Participate in Pandemic | U.S. NAVAL POSTGRADUATE SCHOOL, MONTEREY, CA | Delaney, Jr, John | 3/1/2008 | 117 | Not available | Approved for public release; distribution is unlimited. | Master’s thesis | Current estimates predict that 30-40 percent of the population will be infected with the flu virus during a pandemic. Fire departments should anticipate a higher attack rate for their personnel because of increased exposure risk. Additionally, many variables will negatively influence fire fighters' ability and willingness to work include childcare, concern for family, adequate personal protective equipment, worker’s compensation coverage, and availability of vaccines and antivirals. Collectively, these variables determine a workforce participation percentage (WPP) the share of fire fighters who will be able and willing to participate in a response during a pandemic. Results indicate that between 30-70 percent of the fire fighters will not be able or willing to work during a pandemic. Although a fire fighter’s participation is situationally dependent, fire departments should take urgent steps to address five core areas. These are included in a set of recommendations. Ultimately, the priority recommendation is for fire officials and regional public policymakers to rise to the challenge of the complexity of these issues. Leadership in the face of this recognized pandemic threat, however, remains an elusive solution. |
| ADA357210 | EXPERIENCE IN THE SYSTEMATIZATION OF THE FIELDS AND LAWS OF EPIDEMIOLOGY. REPORT I. FIELDS OF EPIDEMIOLOGY, | U.S. ARMY BIOLOGICAL LABS, FREDERICK, MD | Chasovnikov, A. A. | 10/7/1987 | 9 | Trans-2240 | Approved for public release; distribution is unlimited. | Not available | Throughout the course of its history, epidemiology has accumulated numerous theoretical and practical data which are subject to regulation and systematization. One of the forms of theoretical generalization are the categories and laws of epidemiology. They are logical definitions, objectively reflecting existing features and properties, the content and relation of epidemiological phenomena, and revealing the substance of the epidemic process. These are structural elements, which are the supporting points in the process of perception. If they are united into a common logical system they become the foundation of epidemiological theory. (Author) |
| ADA467529 | Modeling Influenza Pandemic Response Effectiveness in Canada | U.S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND, FORT DETRICK, MD | Jacobson, Zack, Houston, Ben | 12/1/2006 | 22 | Not available | Approved for public release; distribution is unlimited. | Not available | As the risk of a global influenza pandemic increases there is growing response preparedness efforts within Canada. One question that governmental decision makers have in this context is what is the most effective distribution of anti-virals, such as oral oseltamivir, within the population of first responders, health care workers, administrators and the general public in addition to what extent should the anti-virals be used as prophylactics. To provide an answer to this question, we have developed a Canada-wide influenza pandemic simulator and visualization system that allows for the modeling of various patterns of anti-viral distribution and use. |
| ADA0489215 | Study of an Outbreak of Venezuelan Encephalitis in 1968 | U.S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND, FORT DETRICK, MD | Escalona, Armando, Soto, Ryder, Slavia, Finol, Luis T. | 11/18/1971 | 13 | TRANS-2747 | Approved for public release; distribution unlimited. | Not available | An epidemic of Venezuelan encephalitis, which occurred in October 1968 in the District of Paro, State of Zulia, Venezuela, is described and analyzed. A total of 1,077 cases of the disease were registered, 150 of which included evident attack on the nervous system. Two deaths were attributable to the encephalitis, both in children less than one year old. There was a larger number of cases among children less than 6 years old; these were born after the last encephalitis epidemic in the region, which points to the cyclic activity of the virus. It was concluded that the virus is inactive in the interepidemic periods. The immunity conferred by the virus is apparently of long duration, as indicated by the small number of older patients and ill children less than one year old, the latter protected by transmitted maternal antibodies. (Author) |
Shope, R. E. 2/1/1981 100 Not available Not available U A - 01 Approved for public release; distribution is unlimited. Annual progress rept. no. 1, 1 Jan-31 Dec 80, Viruses identification. Soldado Rock virus was identified from ticks of the Seychelles; Pongola, a new Yogue group virus from bats and human febrile cases, and an apparently new bunyavirus were identified from Uganda; a strain of West Nile virus from an apparently rabid dog in South Africa was identified; from Australia, a new tick-borne flavivirus was characterized (isolated from ticks of birds; Ross River virus was confirmed from serum of a case of epidemic polyarthritis and rash in Fiji; four strains of Sindbis were identified from Lake Naasir, Egypt, and six strains of dengue, type 4 as well as other as yet unidentified viruses from New Galeria were studied. An isolate of Colorado tick fever was identified from human serum of the Netherlands in a traveller. The Sakhalin serogroup was shown to belong in the Nairo-virus genus. The IFA test reactions and cross-reactions of Rift Valley fever and other Phlebotomus fever group viruses indicated that the IFA test is relatively specific. Surveys of Ghana, Liberia, Cameroon and the Sudan showed widespread activity of arboviruses and indication of activity of Lassa virus and Ebola virus in several areas of Africa.

Lee, H. W. 7/1/1984 40 Not available Not available U A - 01 Approved for public release; distribution is unlimited. Final rept. 1 Feb 83-31 Jan 84, Hemorrhagic fever with renal syndrome (HFRS) was an important military problem since large epidemics of HFRS occurred among soldiers in the past wars. Although predominantly associated with field mice in rural areas, it is now being recognized that urban rats and laboratory rats are also reservoirs of Hantaan virus, the etiologic agent of HFRS, in many parts of the world. This report presents the results of the isolation of Hantaan virus from blood of HFRS patients in tissue culture cells, the serosurvey of Hantaan virus among U.S. soldiers and wild rats caught at the U.S. Army Installations in Korea, and the serosurvey of domestic animals in Korea and neighbouring countries. From blood of HFRS patients, 3 strains of Hantaan virus were isolated in Vero E-6 cells and 19 strains in Apodemus mice. The prevalence rate of IF antibodies to Hantaan virus among 1,986 soldiers stationed in Korea was 1.2% which is a data very similar to that of Seoul residents. Of the 195 wild rats caught at the U.S. Army Installations, 10% had serum antibodies and viral antigen was found in lungs of 2 rats. In domestic animals, IF antibodies to Hantaan virus were demonstrated in 3.5% of 792 commercial rabbits, 1 out of 123 chicken and 1 out of 104 porcine sera. Originator supplied keywords include: Hantaan virus, Vero E-6 cells, Seroepidemiology, R. norvegicus, R. rattus, Apodemus agrarius, Domestic animals, Immunofluorescent antibodies, Neutralization.
### Intervention to Decrease Risk for Sexually Transmitted Diseases (STDs) and the Associated Negative Reproductive Health Outcomes in Women Aboard Ships: A Biopsychosocial Approach

**CALIFORNIA UNIV SAN DIEGO**

Beyer, Cherrie

9/1/2001 53 Not available

ISAMMRC U A-01 Approved for public release; distribution is unlimited.

**Annual rept. 7 Aug 2000-6 Aug 2001**

Unintended pregnancies (UIPs) and STDs with their sequelae of ectopic pregnancy continue to be epidemic among active duty enlisted women. Such reproductive health problems result in major morbidity among affected women as well as posing a potential threat to combat readiness. UIPs and STDs result from complex interactions between biological and behavioral factors in military women. The ultimate control in preventing such morbidities must rely on both behavioral and biologic strategies. The primary aim of the project is to develop, implement, and evaluate an intervention which emphasizes correct information, motivation and behavioral skills building (IMB Model) coupled with non-invasive screening using urine-based amplified DNA techniques to detect C. trachomatis and N. gonorrhoeae and urine based pregnancy testing. A pre-test, post-test experimental design was employed to evaluate the impact of the behavioral intervention on the experimental group using both self-report questionnaires (UIPs/STD psychosocial and behavioral risk factors) and results from the STD and pregnancy screening tests as measures. The control intervention will consist of a prevent six month intervention program focusing on nutrition, breast cancer, fitness, and injury prevention. Questionnaires and urine testing will be done at pre-test, mid-study, and post-test 6-12 months later. Subjects will include junior enlisted Marine women with N=4000 in the experimental group and N=4000 in the control group.

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**Isolation of a Hantavirus from a Severely Ill Patient with Hemorrhagic Fever with Renal Syndrome in Greece**

**THESSALONIKI UNIV SALONIKAI (GREECE)**

Antoniades, A., Grivas, D., Rossi, C., LeDuc, J., Kim, D., Mohamed, M., Keyrouz, G., Boyer, Cherrie

12/1/1987 4 Not available

ISAMMID U A-01 Approved for public release; distribution is unlimited.

**Journal article**

Attention has recently been drawn to a severe form of hemorrhagic fever with renal syndrome (HFRS) found in the Balkan region of Europe. This disease is characterized by fever, abdominal or back pain, conjunctival injection; renal insufficiency, and a significant mortality rate (currently estimated to be approx. 14% in Greece). The disease resembles Korean hemorrhagic fever (KHF) of Korea and epidemic hemorrhagic fever (EHF) of China, rather than the milder nephropathia epidemica (NE) of Scandinavia and Western Europe. Patients who have recovered from this disease possess antibodies that react to highest titers with Hantaan virus, the cause of KHF and EHF, rather than with Puumala or Seoul viruses, the other known causes of HFRS. We have previously suggested, based on serological and epidemiological studies, that the disease found in Greece may be caused by a virus closely related or identical to the prototype Hantaan virus. In this communication, we report the isolation of a hantavirus from the urine of a severely ill patient with HFRS who was infected in northern Greece, that the disease found in Greece may be caused by a virus closely related or identical to the prototype Hantaan virus.

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**Immunization of the National Defense Using a Hantavirus Vaccine**

**NATIONAL DEFENSE UNIV WASHINGTON DC**

France, Martin E.

1/1/2000 26 Not available

NUU U A-01 Availability: This document is not available from DTIC in microfiche.

Not available

The Giggle Factor (GF). Mention Planetary Defense and you'll soon understand. Even without attention has recently been drawn to a severe form of hemorrhagic fever with renal syndrome (HFRS) found in the Balkan region of Europe. This disease is characterized by fever, abdominal or back pain, conjunctival injection; renal insufficiency, and a significant mortality rate (currently estimated to be approx. 14% in Greece). The disease resembles Korean hemorrhagic fever (KHF) of Korea and epidemic hemorrhagic fever (EHF) of China, rather than the milder nephropathia epidemica (NE) of Scandinavia and Western Europe. Patients who have recovered from this disease possess antibodies that react to highest titers with Hantaan virus, the cause of KHF and EHF, rather than with Puumala or Seoul viruses, the other known causes of HFRS. We have previously suggested, based on serological and epidemiological studies, that the disease found in Greece may be caused by a virus closely related or identical to the prototype Hantaan virus. In this communication, we report the isolation of a hantavirus from the urine of a severely ill patient with HFRS who was infected in northern Greece, and the preliminary serological evidence to suggest that this virus represents a unique strain of hantavirus that is closely related to the prototype Hantaan virus.

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**Document Not Available**

**Notes:**

- **ADA440757**: Intervention to Decrease Risk for Sexually Transmitted Diseases (STDs) and the Associated Negative Reproductive Health Outcomes in Women Aboard Ships: A Biopsychosocial Approach
- **ADA462200**: Isolation of a Hantavirus from a Severely Ill Patient with Hemorrhagic Fever with Renal Syndrome in Greece
- **ADA463091**: Immunization of the National Defense Using a Hantavirus Vaccine
- **ADA440758**: Attention has recently been drawn to a severe form of hemorrhagic fever with renal syndrome (HFRS) found in the Balkan region of Europe. This disease is characterized by fever, abdominal or back pain, conjunctival injection; renal insufficiency, and a significant mortality rate (currently estimated to be approx. 14% in Greece). The disease resembles Korean hemorrhagic fever (KHF) of Korea and epidemic hemorrhagic fever (EHF) of China, rather than the milder nephropathia epidemica (NE) of Scandinavia and Western Europe. Patients who have recovered from this disease possess antibodies that react to highest titers with Hantaan virus, the cause of KHF and EHF, rather than with Puumala or Seoul viruses, the other known causes of HFRS. We have previously suggested, based on serological and epidemiological studies, that the disease found in Greece may be caused by a virus closely related or identical to the prototype Hantaan virus. In this communication, we report the isolation of a hantavirus from the urine of a severely ill patient with HFRS who was infected in northern Greece, and the preliminary serological evidence to suggest that this virus represents a unique strain of hantavirus that is closely related to the prototype Hantaan virus.
Testing the Effectiveness of the U.S. Health System's Bioterrorism Response Program to Identified Surveillance Data

Reeve, Thomas W.
3/1/2007
Not available
Approved for public release; distribution is unlimited.

Pandemic Flu Planning in Nigeria: Thoughts from a Nigerian Case Study

National Defense University, Washington DC Center for Technology and National Security Policy

Lobbi, Cheryl; McGrath, E.; Lynn; Devalia, Sudhir
7/1/2009
Not available
Approved for public release; distribution is unlimited.

Globalization, the Infectious Disease and Croatian Civil Defense

Ministry of the Interior Zagreb (Croatia)

Sagnic, Tomo; Sagnic, Nevenka
9/1/2001
Not available
Approved for public release; distribution is unlimited.

Effect of Maleic Hydrazide in Culture Media on the Mycelial Growth, Sporulation, and Spore Germination of Various Phytopathogenic Fungi

Amy Bologischian Labs Frederick MD

Arsh, Yoshio; Kanoko, Kenzo
10/28/1996
Not available
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<th>FED</th>
<th>TITLE</th>
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<td>AD0837860</td>
<td>THE GERM CONTENT OF THE AIR AND ITS MEASUREMENT, ARMY BIOLOGICAL LABS FREDERICK MD</td>
<td>Grundmann, W.</td>
<td>7/1/1968</td>
<td>Trans-487</td>
<td>Not available</td>
<td>U A - 01</td>
<td>Approved for public release; distribution is unlimited.</td>
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<td>AD0057729</td>
<td>A New Technique for Evaluating Antigenic Relatedness Among Viruses</td>
<td>Hetrick, Frank M., Benton, Charles F., Novotny, James F., Vic, David</td>
<td>3/1/1973</td>
<td>Exp. no. 2</td>
<td>Not available</td>
<td>U A - 01</td>
<td>Approved for public release; distribution is unlimited.</td>
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<tr>
<td>AD1085858</td>
<td>Priority Challenges for Social and Behavioral Research and its Modeling</td>
<td>Davis, Paul K., O’Mahony, Angela G., Osborn, Timothy A., Osoba, Osonde A., Sieck, Katharine</td>
<td>1/1/2018</td>
<td>187</td>
<td>Not available</td>
<td>U A - 01</td>
<td>Approved for public release; distribution is unlimited.</td>
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Page 15 of 231 Pages
Alphaviruses

The alphaviruses constitute an important genus of the Togaviridae family. They are transmitted by mosquitoes, and their major ecological maintenance strategy is passage from mosquito to vertebrate to mosquito. Thus, an understanding of their epidemiology requires an appreciation of the factors that regulate populations of arthropods, vectors, and their interactions, as well as knowledge of the viral genome and its phenotypic expression. In many cases, humans are not the major vertebrate amplifier, but rather an accidental target of virus infection with no significance in the further propagation of virus. When humans are infected, the consequences can range from asymptomatic seroconversion to devastating illness. In this chapter we attempt to summarize basic concepts of the classification of these viruses, their ecological strategies and epidemic potential; clinical disease manifestations, and prospects for their control. Their replication strategy is discussed in detail in Chapter 25, but this chapter presents molecular data that bear on these biological issues. We concentrate on the viruses of greatest biomedical significance; but even in the case of very important viruses, many uncertainties exist in our knowledge base. Keywords: Reprints; Morphology.

Some Topics in Computer Assisted Modeling, Simulation, and Data Analysis

The supported graduate student, John Dobelman has begun extensive work on his dissertation to find stochastic models to explain the mechanisms whereby electricity prices spike. Three books and six papers were authored or co-authored by Thompson during this grant period. The common thread is the development of models supported by intensive computer simulation to help explain and understand real world processes. Among these investigations are included models for statistical process control in situations new to SPC. Almost all SPC treatments deal with situations in which the paradigm is of mature usage. Thompson shows how difficult such implementations are to achieve in practice and gives means for jumpstarting SPC in such systems as the International Space Station. The first world AIDS epidemic has received substantial attention by Thompson. Most recently he has given a model based argument that there is no standalone AIDS epidemic in Europe: it only exists by contacts with American infectives. In stochastic process based economic modeling, Thompson and his co-authors have shown how effective simulation models of relative simplicity and parametric parsimony may be achieved by aggregation from the micro to the macro. The smugram is Thompson’s discovery that we can forecast the future multivariate stochastic process of even a large portfolio by the use of simulation. The risk-neutral formula of Black-Scholes-Merton is shown to be seriously deficient as a practical tool. Similarly, the artificiality of the portfolio paradigm of Markowitz is replaced by other, conceptually simple, but requiring extensive computer simulation, techniques. Work is done which shows how data analysis in high dimensions needs to be carried out with techniques very different from those used in low dimensions.

Medical Aspects of Disaster Preparedness and Response: A System Overview of Civil and Military Resources and Potential

America’s surge capacity medical infrastructure was in many respects launched in 1864, when the National Disaster Medical System, in a partnership between and among many public and private sector organizations and four federal agencies, emerged. Although this system has provided a critical service to those with medical needs, 9/11 and recent reassessments of the current medical threat environment pointed to emerging threats that have lead to the development of other surge responders, including the Surgeon General’s MRC, reemphasis upon DoD and NG health related missions, and an incipient revival and expansion of SPC medical missions. The recent passage of the Pandemic and All-hazards Preparedness Act presents a renewed call for organized health volunteerism generally, and is a mandate for strengthening of all emergency health preparedness initiatives, as well as a strengthening of the uniformed Public Health Service and Veterans Administration to help meet emerging medical, mental health, mortuary and veterinary disaster response needs. Although the nation’s medical system has struggled with the jurisdictional changes since 9/11, it remains evident that America’s emergency health volunteers will continue as never before to come to the aid of those with medical needs after a disaster befalls them.
An Evaluation of Pharmacy Real-Time Polymerase Chain Reaction Assays for Rickettsial Diseases

Rickettsial diseases are found worldwide and have been the cause of outbreaks. These diseases are difficult to diagnose clinically and require the development of rapid diagnostic assays. Real-time PCR assays are capable of detecting rickettsial disease agents quickly and with great sensitivity and specificity. These assays were found to be capable of detecting rickettsial disease agents with a sensitivity of 90-100%. The instruments used for this work were the Biomeme two3 instrument, which was purchased for this work. The reagents specifically designed and set in this system were purchased from the manufacturer of the instrument. The assay performance was evaluated for template copy numbers that varied from 50 to 500,000 per reaction.

Identification of Influenza Assay Development on NGDX

Influenza A virus (H7N9) and Influenza A virus (H7N9) for this assessment. Three Biomeme two3 instruments were purchased for this work. The reagents specifically designed and set in this system were purchased from the manufacturer of the instrument. The assay performance was evaluated for template copy numbers that varied from 50 to 500,000 per reaction.

MERS-CoV and H7N9

Center for Advanced Molecular Detection, National Institutes of Health, Bethesda United States

The detection targets were an orf1a segment and a segment upstream of gene I (termed upf). For H7N9, the target amplicons were in the H7 and N9 genes. The instrument performance was evaluated for template copy numbers that varied from 50 to 500,000 per reaction.

Between February and October 1987, a febrile illness killed 14 persons and seriously affected at least 14 others in Shumpillan, a remote Peruvian mountain village of 353 people. The illness was characterized by fever, headache, chills, and pallor. The fatality rate of untreated cases was 88%. The patients, 71% of whom were male, were 1-75 years of age. Fatal illnesses progressed from lethargy to coma to death in 3-60 days. Patients treated empirically with antibiotics survived. A serologic study revealed a high prevalence of antibodies to B.bacilliformis in the villagers. It is concluded that the villagers suffered from an epidemic of Oroya fever.

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Assessing Fitness and Nutrition Programs in the Marine Corps: A Qualitative Analysis of Perceptions of Effectiveness

TAIBI, Paula D., WALLACE, Leigh E.

12/1/2009 146 Not available NPS U A-01 Approved for public release; distribution is unlimited. Master's thesis

The purpose of this contract is to carry out emerging infectious disease surveillance in Kenya. Specific areas in which work is performed include respiratory illness surveillance (particularly influenza), acute febrile illness surveillance, malaria resistance surveillance, diarrhoea etiology and antimicrobial resistance surveillance, sexually transmitted illness surveillance, and capacity building. KEMRI maintained surveillance sites in both Ministry of Health and now Kenyan Defense Forces clinics and hospitals throughout the country. KEMRI operated reference laboratories for this work in Nairobi, Kericho, and Kisumu, including the National Influenza Center (NIC), the arbovirus reference laboratory, the antimicrobial resistance laboratory, and the entomology facility. Capacity development projects include continuation of a laboratory and medical maintenance student attachment program and a safety training program. The program was able to characterize respiratory viruses causing influenza-like illness in Kenya, determine etiologies of diarrheal illnesses and antimicrobial resistance patterns of bacterial causes, determine the etiologies of sexually transmitted infections and acute febrile illnesses in military and civilian populations, and establish the pattern of antimicrobial resistance across Kenya. Outbreak investigation and response continues. AFI expanded into regions around Somalia.

The First Four Years: A Synopsis of the Global Effort Department of Defense HIV/AIDS Prevention Program (DHAPP)

6/1/2005 81 Not available NHR/MD U A-01 Approved for public release; distribution is unlimited.

In response to the increasing devastation and instability in developing countries caused by the HIV/AIDS pandemic, the United States Government augmented its existing HIV/AIDS programs by pioneering the Leadership and Investment in Fighting an Epidemic (LIFE) Initiative, commencing in 1999. At the urging of the White House, the Department of Defense (DoD) committed to participate but limited its scope of activities to prevention programs in sub-Saharan Africa. The uniformed militaries in sub-Saharan Africa face serious health threats, which have an effect on operational readiness and national security due to high rates of HIV infection among their personnel. The Deputy Assistant Secretary of Defense (OSD) for African Affairs and the OSD for Clinical and Program Policy subsequently provided policy direction, technical support, and a comprehensive strategy for the DoD portion of the LIFE Initiative. Under the leadership of the Office of the OSD for African Affairs, a plan was conceived to cover 42 African militaries at 5 priority levels. Under this plan, program staff approached Ministers of Defense and their military chiefs with an offer of technical assistance and fiscal support. The US Congress provided $10 million as part of the Defense Health Program budget to support the DoD LIFE Initiative for fiscal years 2001 to 2002. In November 2000, the US Navy was designated as Executive Agent for the DoD LIFE Initiative, with responsibility for program management assigned to the Naval Health Research Center, San Diego, California. During the early stages of the LIFE Initiative, the DoD joined ongoing efforts of the US Agency for International Development (USAID), the Centers for Disease Control and Prevention (CDC), and those managed by allies and the United Nations, to provide uniformed personnel with access to existing HIV/AIDS prevention, care, and treatment programs.

Global Emerging Infection Surveillance and Response (GEIS)- Avian Influenza Pandemic Influenza (AI/PI) program

MOAPE, Solomon, COLDREN, Rodney L.

10/1/2010 14 Not available USAMRMC U A-01 Approved for public release; distribution is unlimited. Annual rept. 13 Sep 2009 - 12 Sep 2010
Military Medical Research in Support of National Instruments of Power

ARMY WAR COLL CARISLE BARRACKS PA

Jeremey, Daniel H.

3/26/2009 32 Not available USAWC U A - 01 Approved for public release; distribution is unlimited.

Strategy Research Project

At the dawn of this new millennium, there are few threats more menacing to mankind than the global Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) pandemic. The current national security strategy and national military strategy acknowledge the threat posed by infectious diseases like HIV/AIDS and the potential adverse effects pandemic diseases have to vital U.S. interests. This strategy research project examines how military medical research serves as a soft power asset and reveals how military medical research strengthens the nation’s diplomatic, informational, military, and economic instruments of national power. Improving the health of people in other countries makes both strategic and moral sense and could become an integral part of future U.S. foreign policy. Beyond enhancing security, prosperity, and democracy, a vigorous international health policy actively supported by a robust program of military medical research, will enhance U.S. global leadership. Giving higher priority to global health in foreign policy is good for the United States and good for the world.

Ad Hoc Subgroup on Threat of Vectors and natural Reservoirs of Oropouche Virus in Cell-Based Models, Antiviral Research

ARMY MEDICAL RESEARCH INST OF INFECTIOUS DISEASES FORT DETRICK MD

Paragas, Jason,Blatt, Lawrence M.,Hartmann, Karl A.,Peterson,Norman E.,Western,Karl A.

1/4/2005 5 WMP-05-292 USAMRMD U A - 01 Approved for public release; distribution is unlimited. Availability: This document is not available from DTIC in microfiche.

Conference paper

Preliminary data examining interferon alfacon1 treatment of SARS-CoV (severe acute respiratory syndrome - corona virus) suggests this therapy is well tolerated and of therapeutic benefit. We report herein that interferon alfacon1, has potent in vitro antiviral activity against SARS-CoV. In a cytopathic effect (CPE) assay, interferon alfacon1 inhibited the generation of CPE in a dose-dependent manner with an IC50 of 0.001 ng/ml, a clinically achievable level. Furthermore, interferon alfacon1 also demonstrated significant antiviral activity in yield reduction and plaque reduction assays. The in vitro activity of interferon alfacon1 against SARS-CoV suggests continued evaluation of interferon alfacon1 as a therapeutic treatment for patients infected with SARS-CoV.

Epidemic Cordackie Virus InfectioN with Mixed Clinical Manifestations

WALTER REED ARMY MEDICAL CENTER WASHINGTON DC

Arkenstein, Malcolm L.,Buescher, Edward L.

7/12/1983 10 Not available WRAR U A - 01 Approved for public release; distribution is unlimited.

Final rept.

Current efforts attempt to elucidate the epidemic and endemic cycles of Oropouche (ORO) virus. This virus cause disease in man generally of about 7 days duration, with some patients severely ill, occasionally to the point of prostration. This disease has been reported to cause large scale epidemics in urban areas of northern Brazil. Accomplishments included in this report with regard to ORO virus have been divided into two major categories; studies on the epidemic cycle, and studies on the endemic cycle. Under the category studies on the epidemic cycle, conclusive data are presented which establish the midge, Culicoides parames, as the primary epidemic vector of ORO virus. Subsequent sections present results of investigations of the basic biology of this midge. A second section of studies on the epidemic cycle of ORO virus deals with man as the principal vertebrate host in the epidemic cycle. Here evidence is presented which indicates that, when infected, man circulates ORO virus in sufficient titer to infect feeding C. paraensis. Finally, results of an epidemic of ORO virus deals with man as the principal vertebrate host in the epidemic cycle. Here evidence is presented which indicates that, when infected, man circulates ORO virus in sufficient titer to infect feeding C. paraensis. Finally, results of an epidemic of ORO virus which occurred in and around Tome, Acu, Para, Brazil are reported.

Epidemic Cordackie Virus InfectioN with Mixed Clinical Manifestations

AIDS SCIENCE BOARD WASHINGTON DC

Simmitt, Harrison H.,Alexander, Martin,Barth, Dellbert

8/1/1990 88 Not available ASB U A - 01 Approved for public release; distribution is unlimited.

Final rept.

This report is an evaluation of current Army policy with regard to the significant choices and challenges presented by the HIV pandemic. The report discusses specific finding and recommendations in the areas of Combat Readiness, Medical Care and Disease Intervention and Research. Human Immunodeficiency virus (HIV), Acquired Immune Deficiency Syndrome (AIDS), Deployability, Blood Supply, Medical Treatment and Prevention, Research Resources.
Prompted by several infectious disease epidemics and the perception that weight loss was excessive, the US Army Ranger Training Brigade requested an assessment of the effect of restricted rations on nutritional status, physical performance, and immune function during summer Ranger training. A comprehensive physiological evaluation of 55 volunteers who completed all 4 phases of the 8-1/2 wk course was made at the beginning and end of the course, with abbreviated measurements made at the end of each 2 wk phase. The study revealed that Ranger students have a decreased protection against infection, with decreased T-lymphocyte function. There was no evidence of a vitamin, mineral, or protein deficiency despite reduced rations, and extensive clinical chemistry profiles were remarkably normal, indicating that this is an uncomplicated energy deficiency (average energy expenditure and intake: 4010 and 2800 kcal/day, respectively). Weight loss was high (15.6% of weight) but recovery to original fitness levels occurred by 6 months after the end of training. It is concluded that as little as 300-400 kcal/day increase in intakes may attenuate decrements in physical performance and immune function. A follow-on study of the effects of an intervention using the LLRP ratio is proposed.

The detection of pathogens in complex sample backgrounds has been revolutionized by wide access to next-generation sequencing (NGS) platforms. However, analytical methods to support NGS platforms are not as uniformly available. Pathosphere (found at Pathosphere.org) is a cloud based open sourced community tool that allows communication, collaboration and sharing of NGS analytical tools and data amongst scientists working in academia, industry and government. The architecture allows for users to upload data and run available analytical pipelines without the need for onsite processing hardware or technical support.

A global outbreak of severe acute respiratory syndrome (SARS) caused by a novel coronavirus began in March 2003. The rapid emergence of SARS and the substantial illness and death it caused have made it a critical public health issue. Because no effective treatments are available, an intensive effort is under way to identify and test promising antiviral drugs. Here, we report that recombinant human interferon-beta 1a potently inhibits SARS coronavirus replication in vitro.
The study develops quantitative estimates of the potential postattack threat from vectorborne diseases. The diseases chosen for analysis on the basis of previous estimates of importance are plague, epidemic typhus, murine typhus, mosquitoborne encephalitis, and rabies. The analysis is based on a set of explicit assumptions about postattack medical services and command-and-control in the absence of specific plans to combat vectorborne diseases. The regional distribution of risk is considered. It is concluded that in the absence of specific preattack preparations, the best estimate is that 2 percent of the survivors may contract one of these diseases and 0.75 percent of the survivors may die from one of these diseases. Plague in the western states might be expected to account for one-half of the cases and two-thirds of the deaths from vectorborne disease. Thus vectorborne diseases are a potential postattack problem, but are less of a potential hazard than the enteric or the man-to-man disease groups. Methods of control of rodents, nident ectoparasites, lice, and mosquitoborne vectors are reviewed. Normal inventories of pesticides are estimated to be adequate in quantity and distribution to support postattack vector control operations. Dissemination of information in the postattack period is judged to be of prime importance in controlling the vectorborne disease threat. The relative magnitude of the postattack vectorborne disease threat indicates that only low cost preattack preparations such as recognition of the threat in plans and the maintenance of records of commercial inventories are needed and are feasible.

In 1977 a program of field and laboratory studies was initiated to study Oropouche virus in the Amazon region of Brazil. This virus is a frequent cause of urban epidemics of a febrile disease in this region and Culicoides paraensis has been incriminated as the vector. This research program includes (1) surveillance of forest vertebrates and invertebrates near Santarem, Brazil to detect the natural reservoirs and vectors; (2) studies on the biology and population dynamics of C. paraensis in the urban environments of Belem, Brazil; (3) laboratory studies at the Evandro Chagas Institute to evaluate vector potential of various hematophagous insects in transmission tests, and (4) efforts to colonize the various potential vector species with emphasis on C. paraensis. The C. paraensis have efficiently transmitted the virus in the laboratory. The other candidate vector Culex quinquefasciatus were not efficient vectors under laboratory conditions. Observations have been made on the biology of the vector species with emphasis on C. paraensis. The C. paraensis have efficiently transmitted the virus in the laboratory. The other candidate vector Culex quinquefasciatus were not efficient vectors. The etiology of a small typhus epidemic in Mexico was serologically confirmed. B. Epidemic Typhus. Over the past 15 years studies have been carried out to determine the immune status of communities subjected over many years to epidemics of typhus. By means of a vaccine response test antibodies to the virus have been found in one monkey.

A. Trench Fever. Synthetic Juvenile Hormone was lethal for body lice. CF antigens from R. quintana propagated on blood agar were used to establish etiology of cases of trench fever and to begin to determine the geographic distribution of the disease. An antigenic relationship may exist between R. quintana and Canadian Vole Agent. Two rickettsia-like agents were isolated from guinea pigs. Tests suggested that positive reactions of Mexican donkey sera to soluble typhus antigen and recrudescent attack widened. (Author)
<table>
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<tr>
<th>Document Code</th>
<th>Title</th>
<th>Author</th>
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<tr>
<td>ADA510981</td>
<td>The 2009 Influenza Pandemic: An Overview</td>
<td>Lister, Sarah A., Redhead, C. S.</td>
<td>11/16/2009</td>
<td>46</td>
<td>CRS-R40554 CRS/DC</td>
<td>U A - 01</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>CONGRESSIONAL RESEARCH SERVICE</td>
<td>The World Health Organization (WHO) declared the outbreak to be an influenza pandemic the first since 1968. The novel &quot;H1N1 swine flu&quot; was first identified in California in late April. Since then U.S. officials adopted a response posture under the overall coordination of the Secretary of Homeland Security. Among other things officials established a government-wide informational website (<a href="http://www.flu.gov">http://www.flu.gov</a>) released antiviral drugs from the national stockpile developed new and published guidance for the clinical management of patients and the management of community and school outbreaks. This report provides a synopsis of key events in the H1N1 pandemic response diagnostic tests for the H1N1 virus.</td>
</tr>
<tr>
<td>ADA409037</td>
<td>Prevalences, Genotypes, and Risk Factors for HIV Transmission in South America</td>
<td>Montano, Silvia M., Sanchez, Jose L., Laguna-Torres, Paloma, Avila, Maria M., Weissbacher, Mercedes, Serra, Margarita, Russi, Jose C., Nicola</td>
<td>2/7/2005</td>
<td>8</td>
<td>Not available NRAR/MD</td>
<td>U A - 01</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>NAVAL MEDICAL RESEARCH INST DETACHMENT LIMA (PERU)</td>
<td>HIV cross-sectional studies were conducted among high-risk populations in 9 countries of South America. Enzyme-linked immunosorbent assay screening and Western blot confirmatory testing were performed, and env heteroduplex mobility assay genotyping and DNA sequencing were performed on a subset of HIV-positive subjects. HIV prevalences were highest among men who have sex with men (MSM; 2.0%-27.8%) and were found to be associated with multiple partners, noninjection drug use (non-IDU), and sexually transmitted infections (STIs). By comparison, much lower prevalences were noted among female commercial sex workers (FCSWs; 0%-6.3%) and were associated mainly with a prior IDU and STI history. Env subtype B predominated among MSM throughout the region (more than 90% of strains), whereas env subtype F predominated among FCSWs in Argentina and male commercial sex workers in Uruguay (more than 50% of strains). A renewed effort in controlling STIs, especially among MSM groups, could significantly lessen the impact of the HIV epidemic in South America.</td>
</tr>
<tr>
<td>ADA261546</td>
<td>Molecular Studies of Alphavirus Immunogenicity</td>
<td>Strauss, James H.</td>
<td>12/3/1992</td>
<td>46</td>
<td>Not available USAMRDC</td>
<td>U A - 01</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>CALIFORNIA INST OF TECH PASADENA</td>
<td>The alphaviruses consist of a group of 26 closely related viruses. Many of these viruses can cause disease in man, characterized by encephalitis, polyarthritis, fever or rash, depending upon the virus. In the 2.5 years of research supported under this contract we have mapped antigenic epitopes in the structural glycoproteins of alphaviruses that lead to neutralization of virus infectivity upon reaction with an antibody, and have determined the sequence relationships of a number of Sindbis-like alphaviruses to one another and to other alphaviruses. We found that a domain of glycoprotein E2 of alphaviruses, between residues 170 and 220, was an important region for binding of monoclonal antibodies that neutralize virus infectivity, making it critical importance for the immune response required for protection from infection by the virus. In the determination of the relationships of alphaviruses to one another, we have determined complete or partial sequences of 8 different alphavirus RNAs. These include Ockelbo virus, a virus causing epidemic polyarthritis in northern Europe, strains of Sindbis virus from Africa, India, Australia and New Zealand and Aura virus from South America.</td>
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For almost a generation, Somalia has been a byword for state failure, defying the combined efforts of diplomats and soldiers to restore some semblance of order, to say nothing of a functional national government. In the absence of an effective sovereign, the country is a backdrop for multiple humanitarian crises, as well as the emergence of an epidemic of maritime piracy that threatened vital sea lanes in the Gulf of Aden and the western Indian Ocean. Even worse, notwithstanding a military intervention by the army of neighboring Ethiopia and the subsequent deployment of an African Union force operating with a mandate from the United Nations Security Council, an al-Qaeda-linked militant group, al-Shabaab, managed to seize control of most of central and southern Somalia and confined the internationally-recognized government and the peacekeepers protecting it to little more than a few besieged districts in the capital of Mogadishu. Consequently, in the space of months, the tide was turned against the insurgents, and a new Somali authority, appointed in late 2012, presents what appears to be the most promising chance for a permanent government in recent memory. It is not surprising that many policymakers have sought to tease out lessons from the apparent success of the Somali model that might be applicable to similar situations, both in Africa and beyond, where weak governments face Islamist insurgents, including the Sahel, in particular where al-Qaeda-affiliated fighters and their allies have posed severe challenges to embattled governments. In this monograph, however, Dr. J. Peter Pham adopts a different approach. Beginning with a keen appreciation for the intricacies of Somali culture and history, he argues that the key is to understand political legitimacy among the Somali and then examines how both al-Shabaab and the different local polities that have emerged in Somalia have, to varying degrees, acquired it as well as how successive Somali regimes have not.

Rabbit-specific immune gamma-globulins were combined against influenza virus A2, A1, B, B1 and C with fluorescein isothiocyanate (FITC). Such fluorescent antibodies were used for a rapid diagnostic test of nasal smears (concha inferior) from people suffering from A2 influenza or living together with patients at the same place during the influenza epidemic caused by the A2 type. In five out of eleven persons examined daily, specific immuno-fluorescence of the cylinder epithelia was demonstrated in the first three days. Influenza was serologically corroborated in nine persons. Further two did not produce specific antibodies although the cytological analysis of nasal mucosal cells as well as mild clinical signs showed a definite infection. As a contribution to quick influenza diagnosis, the demonstration of influenza antigen can be also used with the aid of fluorescent antibodies in amnion and amniotic fluid cells, if the chicken embryo was inoculated in the first passage with influenza-virus containing material. In influenza patients the cytological analysis of smears from the inferior concha shows changes on the cells (degeneration, cytopathic effect, inclusion formation, occurrence of leukocytes). The use of fluorescent antibody method in the rapid diagnosis of influenza on smears of the nasal mucosa, prepared during the first three days of sickness, can be recommended as a suitable method.

Studies have confirmed that the epidemic hemorrhagic fever in the People's Republic of China and the Far Eastern hemorrhagic nephropathy in the Soviet Union are caused by the same virus and the HFRS in European Russia and nephropathia epidemica in Scandinavia are caused by Puumala virus, an antigenically related Bunyavirus that is distinguishable serologically from Hantaan virus. The nephropathia epidemica antigen has been detected and the virus has been isolated from the lungs of the reservoir bank voles (Clethrionomys glareolus). In addition, serologic surveys of patients in Sweden, Finland, Hungary, Yugoslavia, and European Russia have shown that both the Hantaan and Puumala antigens are circulating in these areas. The availability of Hantaan virus antigen has further permitted the diagnosis of urban cases throughout Korea, China, and Japan of a disease, transmitted to man from urban commensal rats (Rattus norvegicus and Rattus rattus), which is characterized by mild nephropathy with minimal shock or hemorrhagic diathesis or by only flu-like symptoms with albuminuria. Thus, Hantaan and related viruses cause an acute viral nephropathy across much of the Eurasian landmass in the form of a hemorrhagic disease of great clinical severity. Mortality rates range from 5% to more than 20% in East Asia. Lower mortality rates are found in nephropathia epidemica, a much milder form of non-hemorrhagic nephropathy in Scandinavia.


The Pandemic Influenza outbreak that occurred in 1918 killed over 50 million people worldwide and was responsible for more deaths than our first two world wars combined. Unlike most threats to our national security, Pandemic Influenza does not have a political or ideological motive, does not distinguish between social or economic class, nor does it require special environmental conditions to attack. According to experts across the country and throughout the world, it is only a matter of time before the next Pandemic strikes. Over 85 percent of our nation's entire critical infrastructure belongs to the private sector. As equal stakeholders in the fight against the next Pandemic, it seems obvious that our Federal, State, and local governments should solicit more support from the private sector to plan, mitigate, and respond to Pandemic Influenza. This study addresses how the Federal, State (Kansas) and local governments can better solicit the support of private sector industries in support of Pandemic Influenza. This thesis will delve into the Federal, State and local plans and policies to expose capability gaps that could be filled by private sector industries. This study will address what types of industries could be enlisted to provide desperately needed resources in the event of an outbreak. Finally, this research will look at the types of incentives or instruments of power the Federal, State and local governments could utilize to better facilitate public-private partnerships.

| AD0619964 | Shigellosis - A Preventive Medicine Problem in Turkey | United States Air Forces in Europe (Turkey) | Not available | 7/1/1963 | 11 | EFAE T-63-7 | Not available | U | A - 01 | Approved for public release; distribution is unlimited. | Not available |

The presence of acute gastroenteritis in U. S. Personnel in Turkey as both an endemic and epidemic problem has prompted this publication to alert Medical Personnel of the actual hazard existing in Turkey. It is the intent of this paper to advise Medical Personnel that Shigella does exist in Turkey; to give a general idea of the frequency of the disease, and to outline certain procedures that may be useful in its diagnosis and control. Because of the difficulty in obtaining specimens from Turkish Nationals other than Indigenous food handlers, the works of local Medical Authorities are cited as evidence of endemic and epidemic Shigellosis in Turkey. (Author)
This report provides a descriptive survey of conflicts and problems that birds have caused man, identifies the state of the art methodologies in bird management and control, and examines potential disease risks to humans. Bird problems are related to one or more of the following categories: damages and economic losses, human health and safety, aesthetics, inconveniences, and competition with native species and brood parasitism. Pigeons, starlings, and house sparrows, all introduced from Europe, and several species of native blackbirds—usually in excessive numbers—are responsible for most problems in the United States. Most of the research on bird management has been directed to agricultural and feedlot depredations, winter blackbird-starling roosts, and safety hazards to aircraft; urban bird management strategies have not been adequately researched. Large-scale control measures include habitat modifications, repellents, frightening devices, and wetting agents. Exclusion, toxic baits, toxic perches, live-trapping, repellents, and frightening devices are all used for controlling small-scale or local bird damage problems. Birds represent a potential, although low, health or disease risk for humans. Most avian pathogens or parasites only affect other birds and host specificity is often high. Pets, poultry, game species, and aviary specimens have been affected in epidemics. The most important human diseases associated with birds in the United States are histoplasmosis, encephalitis, chlamydiosis, and cryptococcosis. All four of these diseases are potential health hazards at Civil Works Projects because of the bird species present and site/habitat characteristics.
Background: Arthropod-borne viruses (arboviruses) are among the most common agents of human febrile illness worldwide and the most important emerging pathogens, causing multiple notable epidemics of human disease over recent decades. Despite the public health relevance, little is known about the geographic distribution, relative impact, and risk factors for arbovirus infection in many regions of the world. Our objectives were to describe the arboviruses associated with acute undifferentiated febrile illnesses in participating clinics in four countries in South America and to provide detailed epidemiological analysis of arbovirus infection in Iquitos, Peru, where more extensive monitoring was conducted.

Methodology/Findings: A clinic-based syndromic surveillance system was implemented in 13 locations in Ecuador, Peru Bolivia, and Paraguay. Serum samples and demographic information were collected from febrile participants reporting to local health clinics or hospitals. Acute-phase sera were tested for viral infection by immunofluorescence assay or RT-PCR while acute- and convalescent-phase sera were tested for pathogen-specific IgM by ELISA. Between May 2000 and December 2007, 20,880 participants were included in the study, with evidence for recent arbovirus infection detected for 6,793 (32.5%). Dengue viruses (Flavivirus) were the most common arbovirus infections, totaling 26.0% of febrile episodes with DENV-3 as the most common serotype. Alphavirus (Venezuelan equine encephalitis virus [VEEV] and Mayaro virus [MAYV]) and Orthobunyavirus (Oropouche virus [OROV], Group C viruses, and Guaroa virus) infections were both observed in approximately 3% of febrile episodes. In Iquitos, risk factors for VEEV and MAYV infection included being male and reporting to a rural (vs urban) clinic. In contrast, OROV infection was similar between sexes and type of clinic. Conclusion: Arboviral etiologies of acute febrile illnesses in Western South America, 2000-2007.
A storm is coming. None of us have ever experienced a storm like this. It could arrive very soon. But, as anyone who makes a living as a forecaster will quickly say, On the other hand... The storm is, of course, an influenza pandemic. Much has been written in the past few years about the virus known as H5N1 and its potential to develop into a pandemic. Some in the scientific community are questioning whether that will ever happen.1 If H5N1 does become pandemic, we have no basis for predicting whether it will be this year or 10 years from now. After all, H5N1 was first identified in birds in 1961; the first human cases did not appear until 1997. There is little doubt, though, that eventually something most likely a virus will mutate into a pandemic form. The SARS outbreak in February 2003 is a good example of how a lethal virus can emerge suddenly. We were fortunate that SARS, while contagious, did not become pandemic. The SARS outbreak and the emergence of H5N1 avian influenza provide us with a forewarning of the problems a larger outbreak will pose. It is prudent to use this time before the storm to plan for the societal disruption a pandemic will cause. A pandemic poses problems that most disasters even ordinary public health disasters do not present. First, the time period of the disaster is extended; the 1918 pandemic lasted about 18 months, with three distinct peaks of infection and illness. Another issue with a pandemic is its geographic spread; modern air travel can deliver any pathogen worldwide in a very short time frame. Thus, our planning has to take into account the necessity to change our social behaviors and possibly restrict our movements to limit the pathogen’s spread.

A keratoconjunctivitis epidemic occurred in Hungary in 1961-1962. Characteristic inclusion bodies were found in the epithelial cytoplasm of 88 percent of the scrapings taken during the acute phase of the disease. Through immunofluorescent tests it was established that these inclusion bodies have specific antigen properties which conform to the antigenic nature of type 8 adenovirus, which may be considered as the main pathogenic agent in this epidemic. According to this the inclusions of keratoconjunctivitis epidemic partly or entirely contain the pathogenic virus particles. Antibody studies on 23 unvaccinated and 30 vaccinated persons with A/ Texas/77 influenza showed that almost all had been infected previously with H3N2 strains. HI titers were highest against the earliest strain and diminished progressively with more recent strains. They were lowest with A/Denver/77, the epidemic strain. Neuraminidase inhibiting (NI) antibody titers were low in the acute sera of unvaccinated persons, but 15 of 33 vaccinated persons had titers of ≥ 16. The NI titer levels were of less value in predicting protection against influenza illness than HI antibody levels against the epidemic strain. The most useful tests for serodiagnosis were HI tests using the epidemic strain and complement-fixation tests. NI tests and HI tests with earlier H3N2 strains were less sensitive, particularly in vaccinated persons. The Lowry Air Force Base population, which had received A/Victoria/75 vaccine in November, 1977 had only a scattering of cases of influenza even though influenza A, mainly A/ Victoria/75, was widespread in the Denver area in December, 1977 and January, 1978. HI tests for antibody for H1N1 strains showed that persons under 23 years of age lacked antibody for A/FM1/47, A/AA/57 or the new epidemic strain A/USSR/90/77. A large proportion of persons between 23 and 32 and a smaller proportion of older persons had antibody. Titers were considerably higher for A/FM1/47 than for A/AA/57 or A/USSR/90/77.
Yersinia pestis, the causative agent of plague, has caused several pandemics throughout history and remains endemic in the rodent populations of the western United States. More recently, Y. pestis is one of several bacterial pathogens considered to be a potential agent of bioterrorism. Thus, elucidating potential mechanisms of survival and persistence in the environment would be important in the event of an intentional release of the organism. One such mechanism is entry into the viable but non-culturable (VBNC) state, as has been demonstrated for several other bacterial pathogens. In this study, we showed that Y. pestis became nonculturable by normal laboratory methods after 21 days in a low-temperature tap water microcosm. We further show evidence that, after the loss of culturability, the cells remained viable by using a variety of criteria, including cellular membrane integrity, uptake and incorporation of radio-labeled amino acids, and protection of genomic DNA from DNase I digestion. Additionally, we identified morphological and ultrastructural characteristics of Y. pestis VBNC cells, such as cell rounding and large periplasmic spaces, by electron microscopy, which are consistent with entry into the VBNC state in other bacteria. Finally, we demonstrated resuscitation of a small number of the non-culturable cells. This study provides compelling evidence that Y. pestis persists in a low-temperature tap water microcosm in a viable state yet is unable to be cultured under normal laboratory conditions, which may prove useful in risk assessment and remediation efforts, particularly in the event of an intentional release of this organism.
A pandemic influenza A virus (pH1N1) emerged in April 2009, preferentially affecting pregnant U.S. military women and their newborns. Rates of all outcomes were lower or similar to overall rates within the general population. There were no identified adverse pregnancy or infant health outcomes associated with pH1N1 vaccination during pregnancy noted among our cohort. These findings are important for determining the safety of pH1N1 vaccination and should be used to encourage increased vaccine coverage among pregnant women.

One of the most fundamental problems in the field of information retrieval is that of determining the circumstances under which it might be necessary to introduce an information retrieval system as an aid to a given population of scientists. It is proposed that this problem be examined in terms of the transmission and development of ideas within a population. Specifically, the transmission of ideas within a population will be treated as if the problem were the transmission of an infectious disease, that is, in terms of an epidemic process. An attempt is made to indicate the role of information retrieval in the development of such a process.

One of the most fundamental problems in the field of information retrieval is that of determining the circumstances under which it might be necessary to introduce an information retrieval system as an aid to a given population of scientists. It is proposed that this problem be examined in terms of the transmission and development of ideas within a population. Specifically, the transmission of ideas within a population will be treated as if the problem were the transmission of an infectious disease, that is, in terms of an epidemic process. An attempt is made to indicate the role of information retrieval in the development of such a process.

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Laboratory Infections in Relation to the Question of Ecology and Epidemiology of epidemic Typhus Fever and Trench Fever.

Grayson, J.

Advanced Technologies Addressing Asia-Pacific Infectious Diseases

Targeting the Adipocyte Tumor Cell Interaction in Prostate Cancer Treatment

Our globally interconnected world has brought with it globally interconnected problems. One of these problems is gender-based violence (GBV). The links between GBV and a nation’s security and stability are undeniable. High rates of such violence drain the state of both earnings and resources, and threaten stability and governance at all levels. GBV discourages investment, destroys social cohesion, and limits employment and educational opportunities. GBV is an important barometer of state fragility as it points to the state’s inability to provide basic security, services, or capacity to impose social controls on GBV behavior. This is particularly harmful to development efforts in low-income and war-torn countries. We can ill afford to continue ignoring GBV in its various forms throughout the world. It is a public health issue and human rights issue affecting poverty, development, and economic growth, which are all critical to stable nations and a stable world. GBV includes such acts as rape and sexual assault, child marriage, prostitution, female genital mutilation, dowry-related violence, trafficking, sexual gender-based violence during armed conflict (SGBV), gendercide, honor killings, forced sterilization, and acid throwing. Any long-term solution to GBV is best addressed using cross-cutting strategies at multiple levels.

A cornerstone of effective disease surveillance programs comprises the early identification of infectious threats and the subsequent rapid response to prevent further spread. Effectively identifying, tracking and responding to these threats is often difficult and requires international cooperation due to the rapidity with which diseases cross national borders and spread throughout the global community as a result of travel and migration by humans and animals. From Oct. 1, 2008 to Sept. 30, 2009, the United States Department of Defense’s (DoD) Armed Forces Health Surveillance Center Global Emerging Infections Surveillance and Response System (AFHSC-GEIS) identified 76 outbreaks in 53 countries. Emerging infectious disease outbreaks were identified by the global network and included a wide spectrum of support activities in collaboration with host country partners, several of which were in direct support of the World Health Organization’s (WHO) International Health Regulations (IHR) (2005). The network also supported military forces around the world affected by the novel influenza A/H1N1 pandemic of 2009. With IHR (2005) as the guiding framework for action, the AFHSC-GEIS network of international partners and overseas research laboratories continues to develop into a far-reaching system for identifying, analyzing and responding to emerging disease threats.

Punjab is a strategically and economically important state for India. It shares a border with both Pakistan, a historical rival, and with the state of Kashmir, which is at the center of India’s conflict with Pakistan. Punjab is also the breadbasket of India and provides a number of recruits for the military, both of which are essential for food and physical security for an economically rising country. In the 1980s, Punjab experienced a decade-long violent insurgency caused by grievances arising from the unequal distribution of benefits from the Green Revolution. The states economy has been in decline for the past decade, which, along with a rise in drug use and trade, represents grounds for a crisis that threatens its post-insurgency stability. The unaddressed drug epidemic allows the emerging drug-crime-terror nexus to thrive. However, national and state-level elites and politicians continue to use identity as a mobilization tool for engaging with the population, mirroring the setting that led to the previous insurgency. Specifically, this research provides an insight into the growing possibility of instability in Punjab. This research derives implications for stability in a border state with porous borders experiencing increased drug use.
The drug problem in the United States has reached almost epidemic proportions. Americans have become frustrated at the lack of progress that the government and civilian law enforcement agencies have made in combatting the drug problem. This lack of progress has caused many to believe that the military may provide the solution. Counter-narcotics efforts, to include production and trafficking, are a high priority mission of the Department of Defense. However, the ability of the DoD to fight a drug war is severely limited by the Posse Comitatus Act. Although this Act has been amended to allow the military to take a more active role in counter-narcotics missions, the military is still severely constrained from using all of its resources. Civilian and military planners must answer three basic questions before they fully commit the armed forces of the United States to fight the war on drugs: (1) Should the military be involved in the drug war? (2) What are the possibilities and limitations of military involvement?, and (3) What is the military objective? In examining these very pertinent questions, it is also necessary to consider the role of the military as policemen, and the impact that such a mission would have on the ability of our nation’s warriors to conduct standard warfighting missions.
President Nixon’s Decision to Pursue the U.S. Offensive Biological Weapons Program

The security situation in western Africa has been preoccupying in the last years with threats ranging from large scale radical Islamist groups to a pandemic Ebola outbreak, which have been observed in the Mediterranean region in January and have spread to the Continental Zone. In the Mediterranean region, the first manifestations of this malady were observed last year. The epidemic followed two typical courses, one of them in the Mediterranean region and the other in the Continental Zone. In the Continental Zone, the first manifestations of this malady were seen in January. The resulting report contains a study of the state of knowledge of tobacco mildew in North America and Australia, those problems and aspects which have not yet been clarified and which still require further study. Tobacco Mildew has a great economic importance for North America and Australia, and that, since three years ago, it has implanted itself in the Old Continent with such intensity that the weaknesses of the existing collective security institutions, the delay in implementing external intervention, that questioned the regional mechanisms, took place. The study finds that the threats of biological attack is one of the gravest that face the U.S. Throughout history, there have been world leaders in combating the proliferation of deadly biological agents. The U.S. was one of the original signatory states of the 1972 Biological and Toxin Weapons Convention. The current nonproliferation strategy calls for strengthening the treaty yet the U.S. unilaterally opposed a verification protocol that promised to increase accountability of treaty compliance in 2001. The U.S. has been the target of considerable international criticism for this action. While the verification protocol promised to strengthen the treaty, it did not offer any guarantees. The unique characteristics of biological warfare research and production pose considerable challenges to any verification protocol. The potential economic, security, and intellectual costs to the U.S. of this program would likely offset any advantages. The U.S. must find a compromise in order to avoid international isolation and prevent diplomatic nonproliferation efforts from being completely eclipsed by more aggressive programs.

The report contains a study of the state of knowledge of tobacco mildew in the second half of 2012, in which ECOWAS provided, through its standby force ESF, a military intervention to restore security and stability. However, in both of those interventions, forces were deployed on reactionary basis to humanitarian crisis, rather than in a proactive strategy that could have prevented the crisis from escalating to a point where an early intervention, that questioned the regional mechanisms, took place. The study finds that the weaknesses of the existing collective security institutions, the delay in implementing the stand-by force, and the poor funding were the reasons of the inability to provide an early intervention. In order to be proactive in crisis management, ECOWAS needs to empower its security institutions, finalize the operationalization of a effective and capable stand-by force, and conceive, in coordination with other actors, a reliable funding mechanism.
Burden of Musculoskeletal Disease and Nonbattle Nontraumatic Injury in Both War and Disaster Zones

William Beaumont Army Medical Center El Paso TX DEPT OF ORTHOPAEDIC SURGERY AND REHABILITATION

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ARBMC/DFR

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Disasters, both man-made and natural, are a known cause of morbidity and mortality among vulnerable populations. The initial phase of public health response typically addresses immediate traumatic injury or death in the wake of a disaster. However, little is known about the magnitude and cost of subsequent nontraumatic injury and illness in disaster zones. Known as the hidden epidemic the incidence and epidemiology of disease and nonbattle injuries among military service members in deployed settings has been more extensively investigated and may serve as a proxy for the evaluation of civilian populations following natural disaster. Further, prior reports from the military setting may serve to inform the broader population on the ultimate burden of nontraumatic injury and illness in recent disasters, particularly as they relate to musculoskeletal health.

The 2009 Influenza Pandemic: An Overview

Army Biomedical Research Institute Frederick MD

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Work on anti-plague research in the USSR in 1931 led to the preparation of an anti-tularemia vaccine(live), appreciatively high in anti-epidemic properties content.

EXPERIMENTAL MATERIAL OF THE ETIOLOGY OF THE AUTUMNAL FORM OF ENCEPHALITIS, REPORT 2

Army Biomedical Research Institute Frederick MD

Not available

9/1/1968

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The report states that 48 strains of virus have been isolated from patients and people who died from the disease. These strains of anti-strain were tested in all experiments and are identical (biologically and serologically) to Japanese encephalitis. Vectors were ascertained to be the Culex pipiens and Culex tritaeniorhynchus. This coincides with reports from Japan on the vectors of encephalitis. Humans and animals were also named as vectors of the virus, alive or healthy. Reports of the epidemic in Tokyo in 1938 stated (according to this author) that humans and horses had a high titer of antibodies of encephalitis, and figures are 88% in humans, 98% in horses, 86% in cows and 87% in pigs. Tests on humans and birds, not infected or having been infected, were made to determine their virus capacity at the time of this epidemic; blood from humans was blended (three blood samples) and injected into mice (white). An experimental encephalitis developed. The strain was identical to that of infected humans. Only one strain survived a 3 month storage in 50% glycerine. Strains were easy to handle and filtered nicely.

Chancing Influenza Surveillance Using Electronic Surveillance System for the Community-Based Epidemics (ESSENCE)

Walter Reed Army Inst of Research Silver Spring MD

Not available

6/1/2004

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Approved for public release; distribution is unlimited. NATO Conference paper

Influenza is a cause of preventable morbidity and mortality. Timely analysis of surveillance data may allow earlier recognition of outbreaks, potentially including those caused by new influenza strains. Influenza-like illness (ILI) is of particular interest in surveillance because many bio-warfare and bio-terrorism agents cause flu-like syndromes. The Department of Defense Global Emerging Infections Surveillance and Response System (DoD-GEIS) sponsors two programs, ESSENCE (The Electronic Surveillance System for the Early Notification of Community-Based Epidemics) and the DoS Influenza Surveillance Program, that could assist in influenza outbreak detection and response. ESSENCE utilizes military beneficiary population outpatient visits data to detect aberrations in daily counts of ICD-9 based syndrome groups. Begun in 1999 in the Washington, DC area and expanded in 2001 following the events of September 11, this system analyzes outpatient visit data across DoD military treatment facilities (MTFs) in the US and abroad. A prior study assessed the value of ESSENCE data in detecting yearly influenza activity by comparing it to a traditional influenza surveillance system used by the Centers for Disease Control and Prevention (CDC). Results of that study showed similar relationships between the rates of ILI visits to sentinel physicians in the South Atlantic region and military facilities in the National Capital Area. Soon after September 11, 2002, ESSENCE began receiving outpatient data from all US MTFs in the world and making syndromic surveillance data easily available throughout DoD installations.
Military forces in Sub-Saharan Africa, including peacekeepers, rank among the highest in the world in terms of HIV prevalence. The incidence of HIV among military forces personnel, several key factors make them vulnerable to STIs: the work environment, poor health care, high mobility, and age. These risk factors expose all the population to HIV/AIDS infection, military and civilians. According to the Joint UN Program on AIDS (UNAIDS), soldiers are two to five times more likely to contract STIs than the civilian population. In fact, during conflict, the rate of STI infection can increase significantly.2 In some African countries, the rates of HIV infection among the military are estimated to be as high as 50 to 60 percent. Given the high mobility and mobility, and age. These risk factors expose all the population to HIV/AIDS infection, military and civilians. According to the Joint UN Program on AIDS (UNAIDS), soldiers are two to five times more likely to contract STIs than the civilian population. In fact, during conflict, the rate of STI infection can increase significantly.2 In some African countries, the rates of HIV infection among the military are estimated to be as high as 50 to 60 percent.

In 1960, the climatic conditions were entirely different from those that prevailed in 1959. Rice Blast Epidemic of 1960.2 In 1960, the climatic conditions were entirely different from those that prevailed in 1959. Rice Blast Epidemic of 1960.2 In 1960, the climatic conditions were entirely different from those that prevailed in 1959. Rice Blast Epidemic of 1960.
In 1997, a new avian influenza virus (H5N1 avian flu) emerged in Hong Kong, killing 6 people. This was the first time that an avian influenza virus was shown to be transmitted directly from birds to humans. The virus persisted in the region, and has since spread to a number of Asian and European countries where it has infected more than 120 people, killing more than 60. The severity of this strain is similar to that of the deadly 1918 Spanish flu, which caused a global pandemic. Though influenza pandemics occur with some regularity, and the United States has been involved in specific planning efforts since the early 1990s, the H5N1 situation has created a sense of urgency among the world’s public health officials. Global pandemic preparedness and response efforts are coordinated by the World Health Organization (WHO). The U.S. Department of Health and Human Services (HHS) released a draft pandemic flu preparedness and response plan in August 2004, and a final plan in November 2005. President Bush announced a national strategy to coordinate pandemic preparedness and response activities across federal agencies. Domestic response activities will be carried out under the broad, all-hazards blueprint for a coordinated federal, state, and local response laid out in the National Response Plan, released by the Department of Homeland Security (DHS) in 2004. If a flu pandemic were to occur in the next several years, the U.S. response would be affected by the limited availability of a vaccine (the best preventive measure for flu), as well as by limited availability of certain drugs used to treat severe flu infections, and by the general lack of surge capacity within the healthcare system. The U.S. healthcare system is largely private, while the public health system is largely based in state, rather than federal, authority. This structure creates numerous challenges in assuring the needed response capacity, and coordinating the various response elements.

The significant increase in the number of women serving in the Navy has raised questions concerning the impact of infectious disease risks on women’s health during recent years, particularly among those aboard Navy ships. This study examines gender and other demographic differences among all US Navy enlisted personnel with first hospitalizations for infectious and parasitic diseases during 1980 through 1989 (N = 33,334), and it identifies trends in incidence rates across this 10-year time period. All information used in the study was from official personnel and medical records. Varicella and other viruses and chlamydiae accounted for more than 20,000 hospitalizations among Navy enlisted personnel in the 1980s. In 7 of the 12 categories of common infectious diseases, women rates were more frequently higher than those for men, particularly in meningitis, herpes simplex, syphilis, gonorrheal disease, and candidiasis. In general, the 1980s were marked by downward trends in incidence rates across this 10-year time period. All information used in the study was from official personnel and medical records. Varicella and other viruses and chlamydiae accounted for more than 20,000 hospitalizations among Navy enlisted personnel in the 1980s. In 7 of the 12 categories of common infectious diseases, women rates were more frequently higher than those for men, particularly in meningitis, herpes simplex, syphilis, gonorrheal disease, and candidiasis.

The joint program executive office for chemical and biological defense, formed just seven years ago, is in the forefront of developing cutting-edge defenses and protections for military service members against potential chemical and biological attacks. In the past year alone, the organization has fielded more than 1.3 million items of equipment to the military services, including protection masks, biological detectors, and chemical detectors. The organization is also involved in preparing our country to respond to potentially crippling pandemics, as demonstrated by its involvement in H1N1 research. Army Brig. Gen. Jess A. Scarbrough, the joint program executive officer for chemical and biological defense (JPEO-CBD), spoke with Defense AT and I about the latest initiatives in the program office. Mike Kotzian, the DAU Mid-Atlantic Region acquisition/program management department chair, oversaw the development of this interview.

Page 36 of 231 Pages
Obesity has reached epidemic levels and yet the incidence continues to rise. The current study is seeking to examine the hypothesis that obesity may reflect dysfunctioning of the hypothalamic-pituitary-adrenal (HPA) axis in response to stressors. African American persons are at greatest risk, but reasons for this difference are unknown. We will study 120 men and women of Caucasian and African American ethnicity and examine their responses to physiologic stressors: exercise and ingestion of a meal. Methods: The HPA axis will be studied in some detail by using two stressor paradigms and two steroid regimens. We expect to be able to detect subtle differences in HPA axis reactivity in obese individuals and that might contribute to morbidity and perhaps even make individuals resistant to therapeutic interventions. Results: We have enrolled 21 participants, with 7 completed without seeming difficulty, and data collection is proceeding on schedule. Participants are also completing the exercise stress test, in spite of not being used to exercise, in general. Conclusions: We anticipate being able to complete this study as planned without difficulty and look forward to being able to answer the important questions regarding the potential role of the HPA axis in obesity.

Disease Vector Ecology Profile: Somalia. Fourth Edition

School Violence: Prevalence, Fears, and Prevention

School shootings such as the one at Columbine High School in 1999 have left deep scars in our nation. The apparently random nature of these highly publicized shootings has raised public fears to epidemic proportions. According to 2001 polls, more than 50 percent of parents with children in grades K-12(1) and 75 percent of secondary school students(2) now think that a school shooting could occur in their community. Schools are taking a variety of measures to improve school safety. These include the use of metal detectors, the presence of security guards on campus, rules and regulations regarding student conduct and dress, profiling of potentially violent students, anti-bullying instructional programs, and counseling and mediation. Which of these approaches work? Which will reduce the incidence of violence in our schools and alleviate the fears of parents and children? How can school and district administrators choose among the myriad possibilities, and how can they know where to allocate precious resources? RAND examined the literature regarding these programs and found that only a handful have been evaluated, and even fewer have been deemed effective or even promising. The goal of this paper is to describe the options that are currently available for schools. An analysis of the key components of various approaches in terms of their potential positive and negative effects can assist in the selection of policies, programs, and procedures while we wait for evaluations to be conducted.
The ongoing drug epidemic fueled by Mexican Transnational Criminal Organizations (TCO) is a
matter of national interest that the current presidential administration has addressed in its
2017 National Security Strategy. Mexican TCOs continue to expand their cross-border
operations through robust distribution networks and shared relationships with gangs located
within the United States. Efforts to prevent expansion and influence have been largely
unsuccessful due to the application of inappropriate strategies and lack of intelligence-
sharing products. This thesis examines the factors that make up powerful Mexican TCO
networks through the application of visual analytics. Exploration of power factors such as
organization structure and information sharing and relationships with other organizations involved in cross-border illegal activities and to add to our overall understanding of TCO networks.
In June 2011, the United States Central Command (USCENTCOM), with support from the Armed Forces Health Surveillance Center (AFHSC) and the Center for Disaster and Humanitarian Assistance Medicine (CDHAM) sponsored a conference addressing Infectious Disease Border Issues. The conference was hosted by the Royal Medical Service (RMS) in Amman, Jordan. The workshop was designed for mid- to senior level professionals who were actively involved in Jordan’s public health and pandemic preparedness efforts in ensuring the integrity of national borders. The primary objective was to strengthen inter-ministerial level relationships between essential policy makers and share priorities, successes, and challenges in preparedness and mitigation capabilities directed at pandemic influenza, emerging infectious diseases and other public health emergencies. The Infectious Disease Border Issues Conference aimed to: a) Conduct information exchange with Jordan on medical response to infectious diseases; b) Build capacity to defend, operate, or maintain essential health and government functions in a pandemic/infectious disease environment; and c) Enhance inter-ministerial emergency response coordination mechanisms. The three-day workshop was organized into three main themes: Infectious Disease Containment and Surveillance, Border Issues and Quarantine, and Medical Reporting and Information Sharing.


date: 4/3/2012 27 Not available AFHSC U A - 01 Approved for public release; distribution is unlimited. Not available

The nearly 40 year process of decolonization and the end of the Cold War have helped create new areas, and an agreement on the Terrorist Finance Tracking Program was negotiated. Working Group on Cyber-security and Cybercrime was established to address specific priority military planning and operations. In the spirit of enhancing EU-NATO cooperation, an EU-US impede access to space--appear poised to have major global effects that will impact on NATO including the development of laser weapons, electronic warfare and technologies that affect civil security environment of this troubled region. If the United States is going to shape Africa's security environment, political leaders must become the visionaries of, and the advocates for, a more sophisticated foreign policy for the region. They must gain consensus on national interests in the region, and formulate a coherent set of policy objectives which will focus future engagement strategies. Through selective engagement the United States can help Africans solve African problems while shaping a security environment favorable to United States interests.


date: 2/1/1998 52 Not available DAHK U A - 01 Approved for public release; distribution is unlimited. Strategy research project.

The conference was hosted by the Royal Medical Service (RMS) in Amman, Jordan. The workshop was designed for mid- to senior level professionals who were actively involved in Jordan’s public health and pandemic preparedness efforts in ensuring the integrity of national borders. The primary objective was to strengthen inter-ministerial level relationships between essential policy makers and share priorities, successes, and challenges in preparedness and mitigation capabilities directed at pandemic influenza, emerging infectious diseases and other public health emergencies. The Infectious Disease Border Issues Conference aimed to: a) Conduct information exchange with Jordan on medical response to infectious diseases; b) Build capacity to defend, operate, or maintain essential health and government functions in a pandemic/infectious disease environment; and c) Enhance inter-ministerial emergency response coordination mechanisms. The three-day workshop was organized into three main themes: Infectious Disease Containment and Surveillance, Border Issues and Quarantine, and Medical Reporting and Information Sharing.
### Conference paper

FIVE YEARS AGO, I ADDRESSED THE STATE GUARD ASSOCIATION OF THE UNITED STATES (SGAUS) ANNUAL CONFERENCE. AT THAT TIME I SPOKE TO THE URGENT NEED FOR THOUSANDS OF ORGANIZED, DISCIPLINED, TRAINED, AND ARMED MILITIA MEMBERS TO AUGMENT THE NATIONAL GUARDS OF THEIR RESPECTIVE STATES. I SAID THAT THERE WOULD BE EMERGENCIES THAT WOULD REQUIRE LARGE NUMBERS OF ARMED PERSONNEL TO PROVIDE FOR CROWD CONTROL, EVACUATION, AND MAINTENANCE OF LAW AND ORDER. I URGED THE WHITE HOUSE, DEPARTMENT OF DEFENSE (DoD), DEPARTMENT OF HOMELAND SECURITY (DHS), AND GOVERNORS OF THE SEVERAL STATES TO TAKE ADVANTAGE OF LOW-COST STATE DEFENSE FORCES (SDFs) TO PROVIDE ADDITIONAL TROOPS WHEN NEEDED. I CHARGED THE SGAUS WITH THE MISSION OF REVIVING THE SDFs FOR HOMELAND SECURITY. BUT I HAVE THE UNPLEASANT DUTY TO TELL YOU THAT WE ALL HAVE FAILED TO ACCOMPLISH THE MISSION. IN 2002, THERE WERE 11,000 ACTIVE SDF PERSONNEL IN 16 STATES AND PUERTO RICO. IN 2007, THERE ARE 20,000 ACTIVE SDF PERSONNEL IN 24 STATES AND PUERTO RICO. THIS IS SOME PROGRESS, BUT IT IS NOT ENOUGH. THERE ARE STILL 26 STATES WITHOUT SDFs. MANY OF THE EXISTING SDFs STILL CONSIST MOSTLY OF SENIOR OFFICERS AND SENIOR NCOs. MOST STATES DO NOT PERMIT THEIR SDF MEMBERS TO BEAR ARMS. SOME STATES KEEP THEIR SDF UNITS IN CADRE STATUS. NOT A SINGLE STATE HAS A SDF THAT CAN PROVIDE AN ADEQUATE NUMBER OF ORGANIZED, TRAINED, AND ARMED TROOPS TO DEAL WITH A CATACLYSMIC EMERGENCY. STRANGELY, THE MOST FERVENT OPPOSITION TO A ROBUST SDF CAME FROM THE FOUR GROUPS THAT HAVE MOST TO GAIN FROM IT: THE NATIONAL GUARD BUREAU, DoD, THE NATIONAL GUARD ASSOCIATION OF THE UNITED STATES, AND THE ADJUTANT GENERALS ASSOCIATION. THIS PAPER DISCUSSES FIVE POTENTIAL CATACLYSMIC EMERGENCIES (I.E., NUCLEAR ATTACK, AN INFLUENZA PANDEMIC, THE NEW MADMID EARTHQUAKE, A PROLONGED POWER OUTAGE IN A METROPOLITAN AREA, AND PROLONGED DISRUPTION OF ELECTRONIC COMMUNICATIONS), THE RESPONSE LEVEL THEY WILL REQUIRE, AND THE ROLE OF SDF UNITS IN THAT RESPONSE.

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### Document

**DA0687077**

**State Defense Force Manpower Remedy Ignored by National Leaders**

**Brinkerhoff, John R.**

1/1/2007 13 Not available SDF U A - 01

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Conference paper

In 6-18 months after the infection with epidemic hepatitis, 19 of 36 children had some residual phenomena. A lower protrombin indicator was noted in 13 children; of them 5 had the hypoprotrombin as the only symptom. This seems to indicate the stable and lengthy disruption of the protrombin producing function of the liver, after infection by epidemic hepatitis. In view of all the above, it is recommended that the children recovering from epidemic hepatitis be under outpatient observation for a regulated period.

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**DA0687049**

**On the Residual Phenomena in Children Having Had Epidemic Hepatitis**

**Mazurn, A. V.**

9/1/1968 5 SMUFD-TRANS-758

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**DA0695058**

**Allergy Reactions in Persons Inoculated Cutaneously With Live Egg-Yolk Tularemia Vaccine**

**Dyachenko, S., Khyzhynska, O., Buyalo, S. H.**

9/1/1968 15 SMUFD-TRANS-758

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**DA0415502**

**Further Development of the Campaign Against Tuberculosis.**

**Mosolygo, Denes**

4/28/1961 5 JPRS-4574 FBIS U A - 01

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**DA0452684**

**Worldwide Emerging Environmental Issues Affecting the U.S. Military. April 2009**


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Malaria was the single most serious health hazard to Allied troops in the South Pacific area during World War II. It caused up to five times as many casualties as combat. Some 100,000 Allied military personnel contracted malaria in the South Pacific, most more than once. On Guadalcanal, in the Solomon Islands, this disease threatened the success of the military campaign. Due to the presence of U.S. military personnel around the world and because of our experience with malaria, military entomologists are often expected to confront this and other vector-borne diseases. Although force health protection is our primary mission, many operations are humanitarian in nature and require working with host country ministries of health. These efforts are usually of short duration and range from small-scale combat operations designed to prevent epidemics, to training of in-country public health staff.
The overarching aim of our seedling effort was to de-risk the idea that viruses could be engineered into therapeutics, known as Therapeutic Interfering Particles (TIPs), using the virus HIV as a model system. By engineering TIP prototypes that were shown to reduce HIV levels >10X in cell-culture while having no effect on the viability of healthy, uninfected cells, we directly achieved this aim (Aim I of our proposal). The secondary aim (Aim II) of the proposal was to demonstrate, via mathematical modeling, that engineered TIPs could have indefinite, population-scale impact. To achieve this aim, we developed novel multi-scale models that connected the measured within-cell TIP dynamics achieved in Aim I with the predicted population-scale impact of these TIP prototypes on HIV prevalence levels. We further calculated cellular design constraints (e.g., genomic RNA expression levels) to guide the development of TIPs with predicted population-scale efficacy. Finally, we demonstrated the evolutionary robustness of TIPs against a key route of HIV mutational escape. Our modeling results de-risking the TIP approach were published in PLoS Computational Biology this past year.
In this paper, we discuss the technical challenges of electronic medical syndromic surveillance systems intended to provide early warning of bioterrorist attacks and naturally occurring epidemics. The discussion includes challenges associated with both civilian and military environments. In particular, we address the challenges in: (1) establishing an automated data collection infrastructure, (2) achieving timely access to quality data from disparate sources, (3) developing sensitive and specific outbreak detection algorithms, and (4) developing comprehensive and realistic simulation models for detection-algorithm development and validation. In addition, we identify unique attributes of military and North Atlantic Treaty Organization settings that may affect the development, deployment, and usage of medical surveillance systems. We conclude that considerable work and research are needed to overcome these challenges, that the information provided by these systems may lack the necessary specificity for follow-on mitigating actions, and that their cost-effectiveness and practical relevance, vis-à-vis the traditional reliance on health care provider to identify outbreaks, is still to be demonstrated.

**Challenges of Electronic Medical Surveillance Systems**

[APA citation]

**EXPERIMENTAL INVESTIGATION OF ATTENUATED STRAINS OF GROUP A PSI TTACOSIS SUPPLEMENT, VOLUME 1950-1962**

[APA citation]

**CLEANING OF FILTERING FACEPIECE RESPIRATORS CONTAMINATED WITH MUCIN AND STAPHYLOCOCCUS AUREUS**

[APA citation]
The studies undertaken in the contract are fully counter to the recent and much-quoted contention that ticks and domestic animals play a significant role in the ecology of epidemic typhus and, instead, strongly suggest that the serological data that had been presented in support of such a hypothesis are based upon artifacts. Thus, out of 861 Ethiopian livestock sera and 2,849 sera from Egyptian domestic animals tested by complement fixation (CF) in our program, none of the samples contained antibodies specific for rickettsiae of either epidemic typhus or murine typhus. Moreover, 821 of 832 sera from Egyptian donkeys were uncomplementary and therefore nonspecifically ‘positive’ in CF tests. It is our opinion that the identical or a similar anticomplementary substance, identified by us as IgM, accounted for the results reported as ‘positive’ by earlier workers. (Modified author abstract)
HYGIENIC EDUCATION OF THE POPULATION ON THE PREVENTION OF INFECTIONOUS DISEASES

The hygienic education of the population on the prevention of intestinal infections includes:

- Training of active sanitation workers and those workers by whose work and by whose process of the dispensary treatment of chronic patients and bacteria carriers; epidemiological training of active sanitation workers and those workers by whose work and by whose standard of sanitation education there is a direct reflection on the status of intestinal infections in the population; the wide attraction of the population to active participation in the work on the good sanitary organization of populated places and the sanitary protection of the soil and sources of water supply. These considerations will ensure an increase in the effectiveness of hygienic education of the population for the purpose of combating infectious diseases, particularly intestinal infections.

AIDS (Acquired Immunodeficiency Syndrome) Prevention: Views on the Administration's Budget Approvals

This briefing report responds to a request concerning the level of fiscal year 1988 funding needed to limit the further spread of acquired immunodeficiency syndrome (AIDS). We explored both the adequacy of the funding levels and the appropriateness of priorities reflected in the administration's proposed budget for AIDS prevention. We focused on education, testing, and counseling services. Since a vaccine is at least 5 years into the future and probably longer experts in the research community agree that education and prevention activities are the most powerful tools available to reduce the potential impact of the AIDS epidemic. Investing in prevention now can help contain the future, direct medical costs of treating AIDS. Those areas targeted for immediate action should be: containing the spread of the AIDS virus among intravenous drug users as well as from this risk group to their sexual partners; educating targeted high-risk groups and the general population; and expanding voluntary testing with pretest and posttest counseling services.

Obesity and Physical Activity in the United States

- These behavioral components for a more effective and client-centered intervention program.
- Recommendations for practical application include incorporating these behavioral components for a more effective and client-centered intervention program.

Syndromic Surveillance and Outbreak Detection Using Automated Microbiologic Laboratory Test Order Data

Background: Syndromic surveillance systems monitor one or more electronic data sources in real time to assist in early detection of unusual health events. To detect such events at military treatment facilities (MTFs), the Department of Defense Electronic Surveillance System for the Early Notification of Community-based Epidemics (DoDESSENCE) conducts daily surveillance on outpatient visit diagnosis and pharmacy data. Combining data from multiple sources may improve the ability of syndromic surveillance systems to detect disease outbreaks. Objective: To evaluate whether data on microbiologic laboratory tests ordered for patients during outpatient visits to MTFs can improve the performance of DoDESSENCE in detecting disease outbreaks. Technical Report

Weight Maintenance: Determinants of Success

This literature review was a selective examination of current obesity and physical activity research and opinions. Its purpose was more to evoke thought and discussion regarding the United States' obesity epidemic, rather than serve as an exhaustive account of prospective causes and solutions. Obesity and physical inactivity are major preventable health problems in the United States, but despite overwhelming evidence regarding the benefits of a healthy weight and regular physical activity, adult, childhood and adolescent obesity rates continue to escalate, creating significant health, medical and economic consequences. While obesity rates soar, a small population percentage has proven successful in long-term weight maintenance, even in the presence of significantly influential environmental and interpersonal factors. Reviewing strategies employed by National Weight Control Registry members, this literature review discusses the two behavioral components missing from standard or traditional, action-oriented intervention programs. Although the Stages of Change Model explains an individual's readiness to change and the process involved, self-efficacy and self-regulating behaviors were shown to have a more positive effect on long-term maintenance. Thus, recommendations for practical application include incorporating these behavioral components for a more effective and client-centered intervention program.
Morphological Studies of Experimental Epidemic Encephalitis (Summer-Encephalitis). II. Regarding Modifications of Intracranially, Nasally, Intravenously and Subcutaneously Injected Mice, with Special Consideration of the Relation between the Infection-Mode and Its Distribution, Fumikazu Takaki, MD

Project BioShield: Authorities, Appropriations, Acquisitions, and Issues for Congress, Frank Gottron

A Host Transcriptional Signature for Presymptomatic Detection of Infection in Humans Exposed to Influenza H1N1 or H3N2, Christopher Woods, Micah T. Chen, Minhua Chen, Aimee K. Zaas, Bradley P. Varkey, Timothy Veldman, Stephen F. Kingsmore, Robert Lambkin-Williams

There is great potential for host-based gene expression analysis to impact the early diagnosis of infectious diseases. In particular, the influenza pandemic of 2009 highlighted the challenges and limitations of traditional pathogen-based testing for suspected upper respiratory viral infection. We inoculated human volunteers with either influenza A (A/Brisbane/59/2007 (H1N1) or A/Wisconsin/67/2005 (H3N2)), and assayed the peripheral blood transcriptome every 8 hours for 7 days. Of 41 inoculated volunteers, 18 (44%) developed symptomatic infection. Using unbiased sparse latent factor regression analysis we generated a gene signature (or factor) for symptomatic influenza capable of detecting 94% of infected cases. This gene signature is detectable as early as 29 hours post-exposure and achieves maximal accuracy on average 43 hours (p = 0.003 H1N1) and 38 hours (p-value = 0.005, H3N2) before peak clinical symptoms. In order to test the relevance of these findings in naturally acquired disease, a composite influenza A signature built from these challenge studies was applied to Emergency Department patients where it discriminates between swine-origin influenza A/H1N1 (2009) infected and non-infected individuals with 92% accuracy. The host genomic response to Influenza infection is robust and may provide the means for detection before typical clinical symptoms are apparent.

NAVAL HEALTH RESEARCH CENTER SAN DIEGO CA

Gardland, Frank C.; Durham, Edward D.; Cunmion, Steve D.; Miller, Milan R.; Jalal, Louis L.


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INTRODUCTION The first sign of a biological weapons or bioterrorism attack may be as inconspicuous as a flag on a computer screen in a small community. Yet this seemingly innocuous and lonely signal could mark the beginning of a national public health nightmare and response to a biological weapons attack. A bioterrorism attack may sneak up on cat’s paws, following an insidious and unpredictable course and making itself known slowly and intermittently over a period of days or weeks. It may appear in places as disparate as doctor’s offices, health clinics, and hospital emergency rooms. If not contained, its effects could spread to others not initially exposed, causing an epidemic and threat to our national security and the survival of our population.

The threat of bioterrorism and the use of biological weapons against both military personnel and civilian populations has become an increasing concern for governments around the world. The 1984 Rajneeshe Salomonella attack, 2001 anthrax letter attacks, 2003 SARS outbreak, 2009 H1N1 swine flu pandemic, and the current US flu epidemic all illustrate our vulnerability to both deliberate and natural outbreaks of infectious disease and underscore the necessity of effective antimicrobial and antiviral therapeutics. The prevalence of antibiotic resistant strains and the ease by which antibiotic resistance can be engineered into bacteria further highlights the need for continued development of novel antibiotics against new bacterial targets. This research project directly addresses this need through the development of a broad spectrum inhibitor of the biothreat agents Francisella tularensis and Yersinia pestis. During this period of performance, we have successfully cloned, expressed, purified and enzymatically characterized the Yersinia pestis IspC (aka MEP synthase), a validated bacterial target for the development of new broad spectrum antibiotics. This characterization enabled us to establish conditions for screening an in-house natural product library, and through this screening effort we have identified inhibitor-leads for the enzyme. We have performed detailed kinetic evaluation of one of these leads and have deduced that this new inhibitor is the founding member of a novel class of IspC inhibitors; functioning by binding to a previously undiscovered allosteric site on the enzyme (i.e. this new inhibitor binds the enzyme at a site outside of the active site). As an allosteric site has never been described for any IspC homolog, this exciting discovery affords the development of a completely new family of antibiotics targeting the IspC enzyme.

ADAA29770

Bioterrorism Preparedness Through Public Health and Medical Bio-Surveillance

INDUSTRIAL COLL OF THE ARMED FORCES WASHINGTON DC

Neary, Oliver M., III

3/25/2003 20 Not available NDU/ICAF U A - 01

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INFORMATION The first sign of a biological weapons or bioterrorism attack may be as inconspicuous as a flag on a computer screen in a small community. Yet this seemingly innocuous and lonely signal could mark the beginning of a national public health nightmare and response to a biological weapons attack. A bioterrorism attack may sneak up on cat’s paws, following an insidious and unpredictable course and making itself known slowly and intermittently over a period of days or weeks. It may appear in places as disparate as doctor’s offices, health clinics, and hospital emergency rooms. If not contained, its effects could spread to others not initially exposed, causing an epidemic and threat to our national security and the survival of our population.

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ADAA22047

Development of Antibacterials Targeting the MEP Pathway of Select Agents

GEORGE MASON UNIV FAIRFAX VA

Couch, Robin

9/24/1991 27 Not available NARDC U A - 01

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INFORMATION The first sign of a biological weapons or bioterrorism attack may be as inconspicuous as a flag on a computer screen in a small community. Yet this seemingly innocuous and lonely signal could mark the beginning of a national public health nightmare and response to a biological weapons attack. A bioterrorism attack may sneak up on cat’s paws, following an insidious and unpredictable course and making itself known slowly and intermittently over a period of days or weeks. It may appear in places as disparate as doctor’s offices, health clinics, and hospital emergency rooms. If not contained, its effects could spread to others not initially exposed, causing an epidemic and threat to our national security and the survival of our population.

The threat of bioterrorism and the use of biological weapons against both military personnel and civilian populations has become an increasing concern for governments around the world. The 1984 Rajneeshe Salomonella attack, 2001 anthrax letter attacks, 2003 SARS outbreak, 2009 H1N1 swine flu pandemic, and the current US flu epidemic all illustrate our vulnerability to both deliberate and natural outbreaks of infectious disease and underscore the necessity of effective antimicrobial and antiviral therapeutics. The prevalence of antibiotic resistant strains and the ease by which antibiotic resistance can be engineered into bacteria further highlights the need for continued development of novel antibiotics against new bacterial targets. This research project directly addresses this need through the development of a broad spectrum inhibitor of the biothreat agents Francisella tularensis and Yersinia pestis. During this period of performance, we have successfully cloned, expressed, purified and enzymatically characterized the Yersinia pestis IspC (aka MEP synthase), a validated bacterial target for the development of new broad spectrum antibiotics. This characterization enabled us to establish conditions for screening an in-house natural product library, and through this screening effort we have identified inhibitor-leads for the enzyme. We have performed detailed kinetic evaluation of one of these leads and have deduced that this new inhibitor is the founding member of a novel class of IspC inhibitors; functioning by binding to a previously undiscovered allosteric site on the enzyme (i.e. this new inhibitor binds the enzyme at a site outside of the active site). As an allosteric site has never been described for any IspC homolog, this exciting discovery affords the development of a completely new family of antibiotics targeting the IspC enzyme.
Regional Disease Vector Ecology Profile: North Africa

Voluntary medical male circumcision (VMMC) is a cost-effective HIV prevention intervention.

Tick-borne Pathogens with Disease Vector Ecology Profiles (DVEPs) summarize unclassified literature on medically important arthropods, vertebrates and plants that may adversely affect troops in specific countries or regions around the world. Primary emphasis is on the epidemiology of arboviral diseases and the bionomics and control of disease vectors. DVEPs have proved to be of significant value to commanders, medical planners, preventive medicine personnel, and particularly medical entomologists. These people use the information condensed in DVEPs to plan and implement prevention and control measures to protect deployed forces from disease, injury, and annoyance caused by vector and pest arthropods. Because the DVEP audience is also responsible for protecting troops from venomous animals and poisonous plants, as well as zoonotic diseases for which arthropod vectors are unknown, limited material is provided on poisonous snakes, noxious plants, and diseases like hantavirus.

Adult Male Circumcision: Reflections on Successes and Challenges

The studies undertaken are fully counter to the recent and much quoted contention that ticks and domestic animals play a significant role in the ecology of epidemic typhus and, instead, strongly suggest that the seroepidemiological data that have been presented in support of such a hypothesis are based upon artifacts. Thus, out of 861 Ethiopian livestock sera and 2,849 sera from Egyptian domestic animals tested by complement fixation (CF) in the program, none of the samples contained antibodies specific for rickettsiae of either epidemic typhus or murine typhus. Moreover, 821 of 822 sera from Egyptian donkeys were anticomplementary and therefore nonspecifically positive in CF tests. The identical or a similar anticomplementary substance, identified as IgM, accounted for the results reported as ‘positive’ by earlier workers. These results indicate that such domestic animals could not serve as a reservoir or source of infection of ticks with R. prowazeki in nature. (Modified author abstract)

In the context of models for the diffusion of innovation, some themes emerge. Successful scaling-up VMMC, not all are. When VMMC scale-up experiences are viewed in the context of the models for the diffusion of innovation, some themes emerge. Successful VMMC programs have in common locally-tailored campaigns, a cultural tolerance of VMMC, strong political leadership and coordination, and adequate human and material resources. However, challenges with VMMC scale-up have been marked by less flexible implementation models that seek full integration of VMMC services at public medical facilities and struggles with targeting services versus equitable access to services. Innovation diffusion models, especially that seeks full integration of VMMC services at public medical facilities and struggles with targeting services versus equitable access to services, innovation diffusion models, especially the endogenous technology model, and multiple levels of influence on diffusion – individual males and their sex partners communities, and health systems – remind us that the adoption of a prevention intervention, such as VMMC, is costly to start out slowly, and as information spreads, gradually speed up. In addition, the diffusion models suggest that customizing approaches to different populations is likely to accelerate VMMC scale-up and help achieve a long-term, sustainable impact on the HIV epidemic.

The prophylactic measures against dissemination of smallpox, such as inoculation and other sanitary precautions, have not always succeeded in controlling the spread of variola in Brazil, and could not prevent penetration of this extraordinarily infectious disease into distant jungle areas. (Modified author abstract)

The prophylactic measures against dissemination of smallpox, such as inoculation and other sanitary precautions, have not always succeeded in controlling the spread of variola in Brazil, and could not prevent penetration of this extraordinarily infectious disease into distant jungle areas. Infection of Indians in the jungles was followed by infection of simian species (Mycetes seniculus Kuhl and Cebus capucinus Erxl) found relatively often in these distant jungle areas. Infection of Indians in the jungles was followed by infection of simian species (Mycetes seniculus Kuhl and Cebus capucinus Erxl) found relatively often in these distant jungle areas. Diseased and dead animals were covered with numerous variola pustules which due to the furry coat were less visible than in man.
We consider a novel approach for developing a stable operational platform for the rapid production of large quantities of therapeutic and/or preventative countermeasures. The ideas developed here can also serve as the foundations in designing an economical platform for the production of complex protein therapeutics to replace mammalian cell culture production methods used in the pharmaceutical industry. This approach involves recruiting the biochemical machinery in an existing biomass for the production of a vaccine or antibody by infection using a virus carrying a passenger gene for the desired countermeasure. While our motivation derives from efforts related to first response to deliberate bio toxic attacks on populations, the models we develop may also have use in designing prophylactic production systems against epidemics originating naturally in populations which, without intervention, might result in pandemics. While our model is specific to virus growth and vaccine production in shrimp, the implications for other crustaceans are obvious. And of course the shrimp models we investigate can serve as a foundation for understanding viral progression in other species important to marine agriculture.
On June 11, 2009, the House and Senate Appropriations Committees announced a conference agreement on H.R. 2346, a bill providing supplemental appropriations for the remainder of FY2009. The House passed the conference report (226 to 202) on June 16; the Senate passed it (91 to 5) on June 18. President Obama signed it into law (P.L. 111-32) on June 24. On key issues, the agreement includes: $5 billion, as in the Senate bill, to support U.S. loans to the International Monetary Fund, does not include a Senate provision allowing the Secretary of Defense to exempt photos of military detainees from release under the Freedom of Information Act; does not include $80 million requested for the Department of Defense and International Monetary Fund, does not include a Senate provision allowing the Secretary of Defense to exempt photos of military detainees from release under the Freedom of Information Act; does not include $80 million requested for the Department of Defense and International Monetary Fund; prohibits the release of Guantanamo detainees in the United States and prohibits transfers of prisoners except to be prosecuted; provides $3.9 billion for H1N1 pandemic flu preparedness (declared an event by the World Health Organization on June 11), along with $1.8 billion more, contingent on the President determining it is needed; and $1 billion for the Cash for Clunkers program to provide payments to consumers who trade in their inefficient vehicles and purchase more fuel efficient ones.

The purpose of the monthly scanning reports is to assess worldwide environment-related events in order to identify and analyze issues that might trigger future international environmental regulations and/or modifications to the existing ones with potential implications for the military. Environmental security continues to move up on national, regional, and international agendas due to increasing scientific evidence of climate change, extreme weather events, the number and intensity of natural disasters, pollution, potentials for pandemics, and nuclear-biological-chemical threats. The Army Strategy on the Environment reflects this new direction. Environmental diplomacy is increasingly being used to support conflict prevention efforts and to build international confidence, while human security is gaining recognition in both military and diplomatic circles. Environmental security is a link between the two. The Millennium Project defines environmental security as environmental viability for life support, with three sub-elements: "providing or repairing military damage to the environment," "preventing or responding to environmentally caused conflicts," and "protecting the environment due to its inherent moral value." This summarizing paper presents the events and emerging environmental security-related issues identified since May 2005, organized around this definition.

The Department of Defense (DoD) plays a critical role in the national security strategy of the United States, and the military s success is predicated on recruiting highly qualified applicants. Currently recruiting efforts focus on a passive strategy; simply extracting the nearly epidemic obesity among our nation s youth provide a new set of challenges to our recruiting force. In the future, we must focus on a more proactive approach to the resource pool requiring not only mining the current pool of America s youth, but also taking proactive steps to increase the number of qualified applicants. This paper will discuss the background of the AVF and provide recommendations for how DoD can shape the recruiting environment to overcome these challenges.
The paper consists of six sections. The first is devoted to chain binomial methods and their use in the statistical analysis of measles and hepatitis data. A second considers time dependent results for carrier-borne epidemics, and the use of matrix methods in computing probabilities of their final size. The third surveys the application of perturbation techniques to the general stochastic epidemic, and the estimation of infection and removal parameters in this model on the basis of smallpox data. The fourth section summarizes asymptotic results for the general stochastic epidemic when the initial populations of susceptibles and infectives are both very large. In the fifth, some recent results are outlined on the costs of epidemics; these depend on the stochastic path integral under the infective curve. Finally, a brief account is given of the analysis of space-time interactions in epidemic processes.

Genomic Characterization of adenovirus 21 strains associated with outbreaks of Febrile Respiratory Illness in United States military recruit training centers between 2002 and 2005

Mveral Health Research Center San Diego CA

Aspen, Adriana E., Mossley, Jennifer M., Russell, Kevin L., Metzger, David

5/2/2006 37 NMRC-06-15 NMRC-MD

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Adenovirus type 21 (Ad21) is a well-known causative agent of acute respiratory disease among both military recruits and children. In an effort to characterize the molecular epidemiology of Ad21 infections in the military environment, genome-typing work was carried out on a collection of 75 Ad21 strains isolated from the pharyngeal swabs of military recruits presenting with symptoms of febrile respiratory illness between 1996 and 2005 at eight US training centers. One further strain from an ill serviceperson deployed at sea was also characterized. Restriction enzyme analysis with BamHI discriminated two distinct DNA variants, Ad21a and Ad21b. Further analysis with BglII, BglII, BstRI, HindIII, KpnI, and SmaI discriminated two new subtypes, Ad21a1 and Ad21b1. Ad21a1 was the most prevalent genome type, accounting for 69 of the 76 strains examined. Genome type Ad21a1 was identified only among the strains isolated at the Marine Corps Recruit Depot, San Diego, CA. Genome types Ad21b and Ad21b1 were identified among strains isolated in 2005 and seem to have emerged after a 4-year (1999-2002) disappearance of all Ad21 genome types. After the reintroduction of the Ad4/Ad7 vaccine in 2008, Ad21 is expected to become a predominant adenovirus serotype in US recruit training centers once again. Knowledge of circulating genome types and their epidemiologic behavior will be of significant value to ongoing surveillance efforts in these highly susceptible and impacted populations.

Kenya. An outbreak of dengue was investigated on the coast. Initial work to characterize

military and civilian populations, and establish the pattern of antimalarial resistance across
determine the etiologies of sexually transmitted infections and acute febrile illnesses in
etiologies of diarrheal illnesses and the antimicrobial resistance patterns of bacterial causes,
able to characterize respiratory viruses causing influenza-like illness in Kenya, determine

achievements and patterns of bacterial and viral causes, determine the etiologies of sexually transmitted infections and acute febrile illnesses in military and civilian populations, and establish the pattern of antimicrobial resistance across Kenya. An outbreak of dengue was investigated on the coast. Initial work to characterize

leishmaniasis begun.
A group of $n$ susceptible individuals exposed to a contagious disease is considered. It is assumed that at each instant in time one or more susceptible individuals can contract the disease. The progress of this epidemic is modeled by a stochastic process $X_{n}(t)$, $t \in (0, \infty)$ representing the number of infective individuals at time $t$. It is shown that $X_{n}(t)$, with the suitable standardization and under a mild condition, converges in distribution as $n$ approaches infinity to a normal random variable for all $t \in (0, t_0)$, where $t_0$ is an identifiable number. (Author)
Interrogation of Detainees: Overview of the McCain Amendment

Controversy has arisen regarding U.S. treatment of enemy combatants and terrorist suspects detained in Iraq, Afghanistan, and other locations, and whether such treatment complies with U.S. statutes and treaties such as the U.N. Convention Against Torture and Other Forms of Cruel and Inhuman or Degrading Treatment or Punishment (CAT) and the 1949 Geneva Conventions. Congress approved additional guidelines concerning the treatment of detainees via the Detainee Treatment Act (DTA), which was enacted pursuant to both the Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act, 2006 (P.L. 109-148), and the National Defense Authorization Act for FY2006 (P.L. 109-163). Among other things, the DTA contains provisions that (1) require Department of Defense (DOD) personnel to employ United States Army Field Manual guidelines while interrogating detainees, and (2) prohibit the cruel, inhuman and degrading treatment or punishment of persons under the detention, custody, or control of the United States Government. These provisions of the DTA, which were first introduced by Senator John McCain, have popularly been referred to as the McCain Amendment. This report discusses the McCain Amendment, as modified and subsequently enacted into law. This report also discusses the application of the McCain Amendment by the DOD in the updated 2006 version of the Army Field Manual, particularly in light of the Supreme Court’s ruling in Hamdan v. Rumsfeld. In addition, the report discusses recent legislation relating to Al Qaeda detainees that references the McCain Amendment.

COHORT: An Integrated Approach to Decision Support for Military Subpopulation Health Care

COHORT is a series of relevant databases that have been consolidated into a datamart that allow for the continuous monitoring, analysis and early detection of epidemics, disease trends, and health anomalies among and across an infinite selection of cohorts through a variety of data applications. It provides temporal and geographic medical surveillance of every Air Force member from induction through retirement.

A Single Residue in Ebola Virus Receptor NPC1 Influences Cellular Host Range in Reptiles

Filoviruses are the causative agents of an increasing number of disease outbreaks in human populations, including the current unprecedented Ebola virus disease (EVD) outbreak in Western Africa. One obstacle to controlling these epidemics is our poor understanding of the host range of filoviruses and their natural reservoirs. Here, we investigated the role of the intracellular filovirus receptor, Niemann-Pick C1 (NPC1) as a molecular determinant of Ebola virus (EBOV) host range at the cellular level. Whereas human cells can be infected by EBOV, a cell line derived from a Russells viper (Daboia russellii) (VH-2) is resistant to infection in an NPC1-dependent manner. We found that VH-2 cells are resistant to EBOV infection because the Russells viper NPC1 orthologues bound poorly to the EBOV spike glycoprotein (GP). Analysis of panels of viper-human NPC1 chimeras and point mutants allowed us to identify a single amino acid residue in NPC1, at position 503, that directionally influenced both its binding to EBOV GP as well as its viral receptor activity in cells. Significantly, this single residue change perturbed neither NPC1s endosomal localization nor its housekeeping role in cellular cholesterol trafficking. Together with other recent work, these findings identify sequences in NPC1 that are important for viral receptor activity by virtue of their direct interaction with EBOV GP, and suggest that they may influence filovirus host range in nature. Broader surveys of NPC1 orthologues from vertebrates may delineate additional sequence polymorphisms in this gene that control susceptibility to filovirus infection.
| ADA488712 | South Africa: Current Issues and U.S. Relations | Ploch, Lauren | 10/7/2008 | CRS-RL31697 | CRS/DC | U | A - 01 | Approved for public release; distribution is unlimited. | Congressional rept. | Over a decade after the South African majority gained its independence from white minority rule under apartheid, the Republic of South Africa is firmly established as a regional superpower and is considered to be one of the United States’ two strategic partners on the continent, along with Nigeria. With Africa’s largest Gross Domestic Product (GDP) and a government eager to play an active role in the promotion of regional peace and stability, South Africa is poised to have a substantial impact on the economic and political future of Africa. South Africa, twice the size of Texas, has a population of 44 million, of which about 79% is African and 10% white, and a diverse economy. The South African political system is regarded as stable, but it faces serious long-term challenges arising from poverty, unemployment, and the AIDS epidemic. The September 2008 resignation of President Thabo Mbeki, replaced by Interim President Kgalema Motlanthe, is not expected to result in major policy changes prior to the 2009 elections. The African National Congress (ANC), which led the struggle against apartheid, continues to dominate the political scene, controlling the presidency, over two-thirds of the National Assembly, all nine provinces, and five of the nation’s six largest cities. The Congress of South African Trade Unions (COSATU) and the South African Communist Party, key ANC partners, have been critical of the Mbeki government, arguing that its policies have increased unemployment and failed to respond adequately to the HIV/AIDS epidemic. U.S. relations with South Africa are cordial, and South Africa has benefited from export opportunities offered under the African Growth and Opportunity Act. However, the U.S. and South African administrations have expressed differences with respect to the situations in Zimbabwe, Iran, and Iraq, and over South African positions while it served on the UN Security Council. |
| ADA518100 | The Joe 2010 Joint Operating Environment | Mattis, J. N. | 2/18/2010 | 77 | Not available | K3 | U | A - 01 | Approved for public release; distribution is unlimited. | Research rept. | The Joint Operating Environment is intended to inform joint concept development and experimentation throughout the Department of Defense. It provides a perspective on future trends, shocks, contexts, and implications for future joint force commanders and other leaders and professionals in the national security field. This document is speculative in nature and does not purport to predict what will happen in the next twenty-five years. Rather, it is intended to serve as a starting point for discussions about the future security environment at the operational level of war. |
| ADA488712 | Avian Influenza Pandemic May Expand the Military Role in Disaster Relief | Sheriff, II, Frank W. | 3/15/2006 | 27 | Not available | CSARFC | U | A - 01 | Approved for public release; distribution is unlimited. | Research paper | Recent involvement by the U.S. military with hurricane relief and comments by the President on expanding the DOD’s role in disaster relief indicates increased missions for an already stretched military. The next national disaster facing the U.S. could be an influenza pandemic. The bird flu virus H5N1 currently threatening Asia and Europe can potentially mutate into a deadly human influenza pandemic with global consequences. The last major flu pandemic in 1918 killed 50 million people worldwide and 600,000 in the U.S. alone. The United States is not prepared for a human pandemic and the military will have a significant role in any national response. While some departmental level planning has been accomplished recently, interdepartmental coordination and clear identification of the lead federal agency is still lacking. This project explains possible effects of a pandemic on the U.S. and current responsibilities of federal departments involved in disaster relief. Analysis is presented on the evolving role the DOD plays should this event become reality and finally recommends preparations that should be accomplished to prepare the nation for this very real threat. An ad-hoc approach to a pandemic will have severe negative and far reaching affects on our nation and must be avoided. |
The Use of Twitter to Predict the Level of Influenza Activity in the United States

NAVAL POSTGRADUATE SCHOOL MONTEREY CA

Ng, Kok W.

9/1/2014 125 Not available NFS U A - 01 Approved for public release; distribution is unlimited.

Master’s thesis

Controlling the outbreak of epidemic diseases such as influenza has always been a concern for the United States. Traditional surveillance tools such as the ILINet and Virologic provide the Centers for Disease Control and Prevention (CDC) with influenza surveillance statistics at a lag of 1 to 2 weeks. The CDC requires a tool that can forecast the level of influenza activity.

The rise in the popularity of social media websites such as Flickr, Twitter and Facebook has transformed the web into an interactive sharing platform. The huge amount of generated unstructured data has become an invaluable source for detecting patterns or novelties. This research explores the correlation between Twitter messages (tweets) and CDC ILI and Virologic surveillance data. Using 17 months of tweets, regression models are developed to predict influenza-related statistics. The proposed approach aggregates the weekly frequencies of hand-chosen words that are indicative of an influenza attack using separate predictor variables. The predictions generated by the best models are found to have a Pearson’s correlation coefficient of 0.900 (95% CI: 0.732, 0.965) and 0.833 (95% CI: 0.574, 0.940) against the CDC ILI surveillance data and CDC Virologic surveillance data, respectively.


ARMY MEDICAL RESEARCH INST OF INFECTIOUS DISEASES FREDERICK MD

Tran, Guram, French, George, Kormann, Lars, Bei, William R.

6/27/1980 19 Not available Not available U A - 01 Approved for public release; distribution is unlimited.

A newly developed spot slide immunofluorescence method utilizing an in vitro antigen source was used for the first time for the assay of antibodies reactant with the Korean haemorrhagic fever (KHF) agent in sera from patients diagnosed with Scandinavian endemic benign nephropathy (epidemic) nephropathia epidemica, (EBN) and from 42 age-matched control patients living in the same area but suffering from other maladies. KHF antibodies were demonstrated in all of 14 EBN patients who were followed prospectively, 7 of whom exhibited seroconversion, and in 6 of 8 EBN patients studied retrospectively, but in only one of the 42 controls. Similar to that seen in KHF, antibodies in EBN appeared within the first week of onset of symptoms and persisted for long periods of time. The time from the onset of the illness until maximal antibody titre was recorded varied from 9 days to 1 month. On average, the level of the antibody titres measured to EBN was lower than that usually encountered in the Korean disease. The results indicate a close antigenic relationship between the KHF and EBN agents and demonstrate that the reliability of our new spot slide method is similar to that of another previously reported and more laborious immunofluorescence method using lung sections from infected rodents as antigen source.

Quantitative Modeling of Virus Evolutionary Dynamics and Adaptation in Serial Passages Using Empirically Inferred Fitness Landscapes

BIOTECHNOLOGY HIGH PERFORMANCE COMPUTING SOFTWARE APPLICATIONS INST FREDERICK MD

Woo, Hyoung Jun, Reffman, Jacques

1/1/2014 13 Not available ASAALT/DC U A - 01 Approved for public release; distribution is unlimited.

Biorural article

We describe a stochastic virus evolution model representing genomic diversification and within-host selection during experimental serial passages under cell culture or live-host conditions. The model incorporates realistic descriptions of the virus genotypes in nucleotide and amino acid sequence spaces, as well as their diversification from error-prone replications. It quantitatively considers factors such as target cell number, bottleneck size, passage period, infection and cell death rates, and the replication rate of different genotypes, allowing for systematic examinations of how their changes affect the evolutionary dynamics of viruses during passages. The relative probability for a viral population to achieve adaptation under a new host environment, quantified by the rate with which a target sequence frequency rises above 50%, was found to be most sensitive to factors related to sequence structure (distance from the wild type to the target) and selection strength (host cell number and bottleneck size). For parameter values representative of RNA viruses, the likelihood of observing adaptations during passages became negligible as the required number of mutations rose above 50%, was found to be most sensitive to factors related to sequence structure (distance from the wild type to the target) and selection strength (host cell number and bottleneck size). For parameter values representative of RNA viruses, the likelihood of observing adaptations during passages became negligible as the required number of mutations rose above 50%. We modeled the specific adaptation process of influenza A (H1N1) viruses in mammalian hosts by simulating the evolutionary dynamics of H5 strains under the fitness landscape inferred from multiple sequence alignments of H3 proteins. In light of comparisons with experimental findings, we observed that the evolutionary dynamics of adaptation is strongly affected not only by the tendency toward increasing fitness values but also by the accessibility of pathways between genotypes constrained by the genetic code.
One of the most important priorities for any government is to protect society from lethal biological threats. Part of that mission necessarily involves guarding against the havoc that biological forces are capable of wreaking on any population. Such forces can come in the form of pandemics or very serious epidemics-deadly communicable diseases that can ravage communities and potentially threaten the fabric of society. While such diseases have surfaced throughout history in discrete areas of the world, the interdependent, global nature of today’s world can facilitate their rapid spread across oceans and continents. This naturally occurring peril is compounded by the fact that the modern wonders of science and technology enable dangerous individuals and groups to harness these potent biological forces, turning them into actual weapons of mass destruction. While such natural threats as pandemic influenza have yet to reach fully efficient human-to-human transmission, our post-9/11 society faces a more immediate, manmade threat from individuals seeking to unleash destruction. In the wake of 9/11, we saw anthrax attacks at home, and we have since seen ricin attacks in other parts of the world. In response to these dangers, we have taken a number of steps to help mitigate at least some of the risk. And we have begun to think seriously and in a disciplined fashion about how to plan for dealing with a major natural pandemic or biological attacks. The challenge is to act decisively and effectively to minimize damage in an environment in which there will be imperfect information and potentially hundreds of thousands, if not millions, of lives lost. The key to meeting the challenge is to approach it in a systematic, comprehensive way. We must fully examine the biological threats we face, address the capabilities we must continue to build in order to mitigate them, and consider the complex legal and ethical issues that will arise during a biological calamity if ever we have one.

What Are the True Benefits of School-Based Drug Prevention Programs?

The purpose of school-based drug prevention programs is to prevent, or at least diminish, the harms inflicted by licit and illicit substances. For example, a reduction in alcohol use can lead to improved grades and productivity. In fact, most successful school-based drug prevention programs, such as LifeSkills and Project ALERT, are not targeted to specific substances. Which drugs then, in terms of usage, do they affect? Where are the benefits of a drug prevention program realized? Through a reduction in crime related to a contracting cocaine market? Through higher productivity associated with diminished alcohol use? Or through less money spent on health care for smokers? To put the question more provocatively, are school-based drug prevention programs better viewed as a weapon in the war against illegal drug use or as a public health program for decreasing the adverse effects of licit substances?

Some Properties of the Autointerfering Virus Recovered from the Gastric Content of Patients with Epidemic Hepatitis

The report tentatively concludes that, barring a breakdown in society, major epidemics are not likely to result. (Author)

Catastrophic Damage and Communicable Disease with Particular Reference to Tactical Nuclear War in Europe.

This report examines the question of whether major epidemics are likely to follow a tactical nuclear war in Europe. The relationship between the bombing campaign and the increase in communicable diseases during World War II (with special emphasis on Germany) is examined, as well as the limited data relating nuclear radiation and the incidence of disease. The report tentatively concludes that, barring a breakdown in society, major epidemics are not likely to result. (Author)

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The Central American nation of Honduras, one of the hemisphere's poorest countries, faces significant challenges in the areas of crime, human rights, and improving overall economic and living conditions. While traditional agricultural exports of coffee and bananas are still important for the economy, nontraditional sectors, especially the maquiladora, or export-processing industry, have grown significantly over the past decade. Among the country's development challenges are a poverty rate over 60%, high infant mortality, and a significant HIV/AIDS epidemic. Despite these challenges, increased public spending on health and education have reaped significant improvements in development indicators over the past decade. Current President Manuel Zelaya of the Liberal Party won a 4-year term in the November 2005 elections. The country has enjoyed 27 years of uninterrupted elected civilian democratic rule. The economy, which grew 6.3% in 2007 and is expected to have grown 4% in 2008, has benefited from significant debt reduction by international financial institutions that is freeing government resources to finance poverty-reduction programs. However, the U.S. recession and global financial crisis will likely slow Honduran economic growth sharply in 2009. The United States has a close relationship with Honduras, characterized by an important trade partnership, a U.S. military presence in the country, and cooperation on a range of transnational issues, although there have been some recent strains in relations in light of President Zelaya's move toward closer relations with Venezuela. Honduras is a party to the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA). There has been extensive cooperation with Honduras on port security. Some 78,000 Hondurans living in the United States have been provided temporary protected status (TPS) since the country was devastated by Hurricane Mitch in 1998. In October 2008, TPS was extended until July 2010.

During the final weeks of a 6-month epidemic of Ebola hemorrhagic fever in Kikwit, Democratic Republic of the Congo, an extensive collection of arthropods was made in an attempt to learn more of the natural history of the disease. A reconstruction of the activities of the likely primary case, a 42-year-old man who lived in the city, indicated that he probably acquired his infection in a partly forested area 15 km from his home. Collections were made throughout this area, along the route he followed from the city, and at various sites in the city itself. No Ebola virus was isolated, but a description of the collections and the ecotopes involved is given for comparison with future studies of other outbreaks.
Chronic partial sleep loss, due to bedtime restriction, is a hallmark of modern society and highly prevalent in active duty army personnel. During the past few years, evidence from laboratory and epidemiological studies has indicated that decreased sleep duration has an adverse effect on glucose regulation and on the neuroendocrine control of appetite (1-3). Taken together, the findings suggest that chronic partial sleep deprivation may be involved in the current epidemic of obesity and diabetes. Our group has strong evidence for the existence of large individual differences in metabolic as well as cognitive vulnerability to sleep loss. We have recently obtained preliminary data in a small group of young men that suggest that a specific heritable trait of the sleep electroencephalogram (EEG), known as slow-wave activity (SWA), accounts for the majority of individual variability in the adverse effects of sleep loss on diabetes risk. The objectives are to identify SWA as a predictor of diabetes risk in a subject population with a gender, ethnic and age distribution similar to that of active duty army personnel and to test the hypothesis that individuals with low SWA are at much higher risk to develop diabetes following chronic partial sleep restriction than those with higher SWA. The studies will also explore the potential relationships between individual differences in diabetes risk following sleep loss and individual differences in risk of weight gain and in the magnitude of cognitive deficits.
A serosurvey was conducted in Port Sudan and Suakin, Sudan in October and March 1987 to determine the prevalence and risk factors associated with the transmission of hepatitis B, human immunodeficiency virus type 1 (HIV-1), and syphilis among sexually active heterosexuals on the coast of Sudan. A total of 536 subjects, including 202 female prostitutes, 95 long-distance truck drivers, 103 soldiers, 72 Ethiopian refugees, and 54 Sudanese outpatients, were enrolled in the study. Seventy-eight percent (202/259) of the female study subjects were engaged in prostitution, and 57% (157/277) of the men admitted to prior sexual relations with prostitutes. Serologic markers for hepatitis B and syphilis were detected in 68% and 17% of the entire study population, respectively. In contrast, antibody to HIV-1 was detected in none of the 536 sera tested. Risk factors found to be independently predictive of hepatitis B infection by multivariate analysis included prostitution, positive serology for syphilis, and a history of anti-schistosomal therapy. The absence of HIV-1 infection among the prostitutes enrolled in this study is in marked contrast to the current AIDS epidemic in neighboring sub-Saharan countries, suggesting that HIV-1 has not been widely introduced on the coast of Sudan.
Journal article

The Armed Forces Health Surveillance Center's Division of Global Emerging Infections Surveillance and Response System (AFHSC-GEIS) supports and oversees surveillance for emerging infectious diseases, including respiratory diseases, of importance to the U.S. Department of Defense (DoD). AFHSC-GEIS accomplishes this mission by providing funding and oversight to a global network of partners for respiratory disease surveillance. This report details the system's surveillance activities during 2009, with a focus on efforts in responding to the novel H1N1 influenza A(H1N1) pandemic and contributions to global public health. Active surveillance networks established by AFHSC-GEIS partners resulted in the initial detection of novel A/H1N1 influenza in the U.S. and several other countries, and viruses isolated from these activities were used as seed strains for the 2009 pandemic influenza vaccine. Partners also provided diagnostic laboratory training and capacity building to host nations to assist with the novel A/H1N1 pandemic global response, adopted a Food and Drug Administration-approved assay for use on a ruggedized polymerase chain reaction platform for diagnosing novel A/H1N1 in remote settings, and provided estimates of seasonal vaccine effectiveness against novel A/H1N1 illness. Regular reporting of the system's worldwide surveillance findings to the global public health community enabled leaders to make informed decisions on disease mitigation measures and controls for the 2009 A/H1N1 influenza pandemic. AFHSC-GEIS's support of a global network contributes to DoD's force health protection, while supporting global public health.

Journal article

The breakdown of character is the number-one crisis in America. I am not in politics anymore. I have done my time, literally and figuratively, but I can't help watching with dismay what is happening in our country. Watergate was a great shock because so many of us close to the president got in trouble. Now it is routine. Witness what has happened in the last decade. For the first time in history, 10 senators at once were called before the Ethics Committee. A Speaker of the House was forced out of office. Sen Robert Packwood (R-Oreg.) resigned. The Department of Justice bragged that 1,150 state legislators had been successfully prosecuted in one year—the biggest year the department had ever had, as if it were good news. I think it is tragic. But the crisis is not just in politics. It is in business as well. There was a time when a fiduciary handling someone else’s money was a trustee—a respected, honored position of trust. But look at what happened to Ivan Boesky, who went to the UCLA School of Business in 1986 and said, "Greed is a good thing." He ended up in prison. Other examples include Michael Milken and Leona Helmsley.

Journal article

Disease Vector Ecology Profiles (DVEPs) summarize unclassified literature on medically important arthropods, vertebrates and plants that may adversely affect troops in specific countries or regions around the world. Primary emphasis is on the epidemiology of arthropod borne diseases and the biometrics and control of disease vectors. DVEPs have proved to be of significant value to commanders, medical planners, preventive medicine personnel, and particularly medical entomologists. These persons use the information condensed in DVEPs to plan and implement prevention and control measures to protect deployed forces from disease, injury, and annoyance caused by vector and pest arthropods. Because the DVEP target audience is also responsible for protecting troops from venomous animals and poisonous plants, as well as zoonotic diseases for which arthropod vectors are unknown, limited material is provided on poisonous snakes, noxious plants, and diseases like Rift Valley Fever.
A cross-sectional study was conducted among active-duty male soldiers, > 21 years old, in the Rwanda Defense Forces (RDF) and included an anonymous behavioral survey and HIV rapid testing to determine risk factors associated with HIV seroprevalence. Overall prevalence was 2.6% (95% CI 1.8 3.6); personnel who were higher ranking, served >6 years, never deployed, divorced, separated or widowed, uncircumcised, reported STI symptoms, had >6 lifetime sex partners, or screened positive for a drinking problem (via Alcohol Use Disorders Identification Test) had higher HIV prevalence. Ever being divorced/separated/widowed (OR 29.8, 95% CI 5.5 159.9), and STI symptoms (OR 3.4, 95% CI 1.5 7.6) were significantly associated with infection after multivariable adjustment while circumcision was protective (OR 0.4, 95% CI 0.2 0.9). Despite mobility and other factors that uniquely influence HIV transmission in militaries, RPF prevalence was similar to the general population. A reason for this finding may be conservative sexual behavior combined with effective leadership-supported prevention programs. Data suggest a concentrated rather than generalized epidemic with targets identified for intervention.

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Principal Investigator(s)</th>
<th>Location</th>
<th>Dates</th>
<th>Type</th>
<th>Distribution</th>
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<tr>
<td>HIV Seroprevalence, Associated Risk Behavior, and Alcohol Use Among Male Rwanda Defense Forces Military Personnel</td>
<td>Herbertson, Judah, Grillo, Michael, Zimulindo, Eugene, Munro, Charles, Brohine, Stephanie, May, Lovanna, Sakoboh, Marcellin, Araneta, Maria G., Croan, Terry, Shaffer, Richard</td>
<td>NAVAL HEALTH RESEARCH CENTER SAN DIEGO CA</td>
<td>1/1/2013 to 5/30/2012</td>
<td>Research project</td>
<td>Unlimited</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>Journal article</td>
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<td>Speculation Processes and the Design of Large-Scale Wireless Networks</td>
<td>Wa, Edmund</td>
<td>YALE UNIV NEW HAVEN CT</td>
<td>5/30/2012</td>
<td>Journal article</td>
<td>Not available</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>Journal article</td>
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<td>Rapid, Array Assay for Detection and Differentiation of Serotype-Specific Antibodies to Venezuelan Equine Encephalitis Complex Alphaviruses</td>
<td>Wang, Ezra, Paesler, Sebastian, Joseph, Davi, R. Cafliff, Lark L. Kwong, Wei Li, Ultra-Franco, Max, Weaver, Scott C, Aguilar, Patricia X, Pfeffer, Martin, O’Hare, James</td>
<td>TEXAS UNIV MEDICAL BRANCH AT GALVESTON CENTER FOR BIODEFENSE AND EMERGING INFECTIOUS DISEASES (CBEID)</td>
<td>1/1/2005</td>
<td>Journal article</td>
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<td>Approved for public release; distribution is unlimited.</td>
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<td>Alphaviruses</td>
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<td>Journal article</td>
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<td>AIDS and National Security</td>
<td>Manley, David S., Biddle, Tami</td>
<td>ARMY WAR COLL CARLISLE BARRACKS PA</td>
<td>4/17/2003</td>
<td>Research project</td>
<td>Not available</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>Research project</td>
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Cocaine. A Trans-National

The recent avian influenza epidemic in Asia and the H1N1 pandemic demonstrated that

The Armed Forces Health Surveillance Center (AFHSC) was created to centralize Department

Forecasting Disease

Interspecies Interactions and

Data concerning the incidence of certain diagnoses in the Navy population was examined in

in terms of percent correct as well as in terms of percent of pay off, this latter index provides

resistance (AR), and sexually transmitted infections (STI). In an effort to improve the
gastrointestinal infections (GI), febrile and vector-borne infections (FVBI), antimicrobial
diseases: respiratory infections (RI) with an emphasis on avian and pandemic influenza,
care beneficiaries. The surveillance programs of GEIS focus on five categories of infectious
emerging infections while maintaining its focus on protecting the health of all DoD health
and Response System (GEIS) at AFHSC promotes national and international preparedness for
the military and military-associated populations. The Global Emerging Infections Surveillance
provides relevant, timely, actionable, and comprehensive health information and supports
of Defense (DoD) domestic and international healthcare surveillance efforts. The organization
includes a review of predictive procedures and requirements, the history of predictive
epidemiology as relevant to this task, the use of statistical analysis of the data base, and
reference to the larger data base available through publications of the World Health
Organization in order to find justification for specific mathematical models of individual
diseases. On this basis a general mathematical procedure was developed which analyzes the
data in terms of epidemics, regularities within the non-epidemic data base, and provides
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AD0419931 TASK SURPRISE. PROJECT SUMMIT. A STUDY OF AN EPIDEMIC OF STAPHYLOCOCCAL ENTEROTOXIN FOOD POISONING

PENN-STATS: PENNSYLVANIA UNIV PHILADELPHIA INST FOR COOPERATIVE RESEARCH

Not available 10/10/1960 103 Not available USACHPPM/EDS U A - 01 Approved for public release; distribution is unlimited.

Final rept. Not available

AD0469931 Modeling Insurgency Attrition and Population Influence in Irregular Warfare

NAVAL POSTGRADUATE SCHOOL MONTEREY CA

Howell, Jeffrey M. 6/1/2007 77 Not available NPS U A - 01 Approved for public release; distribution is unlimited.

Master’s thesis The author develops a model that is a combination of Lanchester and Deitchman attrition models and population epidemic models. His fundamental premise is that a combination of these two types of models can yield important insights into the key relationships between an insurgency and the contested population. The two models are a base model with constant parameters, and more a advanced model with opportunistic and idealistic recruitment, various levels of government effort against the insurgency, and different ways of modeling population support. He finds, much like the real world, that initial conditions and policy decisions have a strong impact on the outcome of the conflict. Opposing factions that tailor their tactics to the situation (a government focusing on securing the population in a security-minded public) have a much greater chance of success. He also demonstrates the importance of good intelligence. Based on different attrition, recruitment, and transition rules, he studies the relationships between dynamic population flow and insurgency success or failure. The goal of the work is to provide an analytical framework for these situations, and to analyze the effect of different initial conditions and interactions on the success or failure of an insurgency. The models developed here are descriptive, not predictive, and are designed to give decision makers an insight into a complex insurgency process.

AD0657652 Korean Hemorrhagic Fever.

KOREA UNIV SEOUL COLL OF MEDICINE

Lee, Ho Wang 3/1/1978 38 Not available Not available Not available U A - 01 Approved for public release; distribution is unlimited.

Final rept. 1 Jan-31 Dec 77, Epidemic hemorrhagic fever was recognized for the first time in Korea in 1951 and since that time it has been known as Korean hemorrhagic fever (KHF). Diseases similar to KHF have been known in Manchuria, the Soviet Union, Scandinavia, Eurasia and Japan. The purpose of the research was (1) to isolate the etiologic agent of KHF, (2) to propagate the etiologic agent of KHF in animals; and (3) to study the serologic relationship between KHF agent and other acute hemorrhagic fevers of the world. The etiologic agent of KHF was isolated from lung tissues of Apodemus rodents and from acute phase sera of patients by FAT. The agent was successfully propagated in Apodemus agrarius through 26 passages but could not be cultivated in cell cultures nor in laboratory animals.

AD0428584 Fitness and Nutrition, an 8-Week Program for Obese Children and Their Parents

AIR FORCE INST OF TECH WRIGHT PATTERSONAFB OH


Major rept. Pediatric obesity is rising in epidemic proportions in the United States and the implications (social, physical, psychosocial, and emotional burdens on the children and their families. The causes of pediatric obesity are multifaceted and the effect on the children can be profound. There is a need for intervention for these children, yet few studies have been done on the available intervention for the obese pediatric patient. Once the pediatric patient is identified as being obese through the use of the BMI, the patient can then be referred to the appropriate intervention based on the patient and families readiness for change. A literature review was conducted on identification, risk factors, and interventions for pediatric obesity. In addition, a national pediatric weight management program, SHAPEDown was examined. Information regarding the Transtheoretical Model of Change, and The Health Promotion Model of Health was also reviewed. The program was developed with the Health Promotion Model as the framework. The finished product is an 8-week fitness and nutrition program for overweight children and their parents. The program will be for the families who are ready to make a commitment to a plan of care and demonstrate a readiness to make lifestyle changes. The program will be implemented in a military pediatric clinic in southwestern Ohio. At conclusion of the program, the outcomes will be compared to the SHAPEDown outcomes. An evaluation by the referring providers and the participants will be used to make changes to the program. If the program shows improvement in the child’s weight, behaviors, activity and nutrition, the program will then be distributed to other pediatric clinics in the military.
GLOBAL HEALTH: U.S. Agency International Development Fights AIDS in Africa, but Better Data Needed to Measure Impact

GENERAL COATING OFFICE WASHINGTON DC

Not available

3/1/2001

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GAO-01-449 XD

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Approved for public release; distribution is unlimited.

The Human Immunodeficiency Virus/AIDS (HIV/AIDS) epidemic represents a major threat to the health of individuals and societies worldwide. The epidemic has the potential to increase the risk of violence and civil unrest, and to disrupt educational and economic development efforts. The epidemic also has the potential to weaken the military capabilities of countries in sub-Saharan Africa, where more than two-thirds of the people who are infected with HIV live. Despite efforts by the international community to reduce the spread of HIV/AIDS in sub-Saharan Africa, the National Intelligence Council estimates that as many as one-quarter of the population of the hardest-hit countries in that region will die from AIDS over the next 10 years. Further, given the scale of the epidemic, AIDS has grown beyond a public health problem to become a humanitarian and developmental crisis. For example, the National Intelligence Council concluded that the persistence of infectious diseases, such as HIV/AIDS, is likely to aggravate and in some cases provoke economic decline, social fragmentation, and political destabilization. In addition, the Council found that the epidemic threatens to weaken the military capabilities of countries and because of the involvement of sub-Saharan African troops in international peacekeeping efforts it could hinder those activities as well. Since the 1980s, the U.S. Agency for International Development has provided assistance to help fight AIDS in sub-Saharan Africa.

U.S.S. Joint Chiefs of Staff, Before the 111th Congress Senate Armed Services Committee

1/1/1991

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RAND/CPR-4054- LACH

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Approved for public release; distribution is unlimited.

This report documents the results of a survey of the general public conducted for the AIDS Program Office, Los Angeles County Department of Health Services. The purposes of the survey were to provide information about the occurrence within the general population of Los Angeles County of sexual and drug-taking behaviors that can spread human immunodeficiency virus (HIV) infection and to determine the public's knowledge, attitudes, and opinions about the AIDS epidemic. This information may be used to guide programming efforts in planning effective education and prevention activities aimed at reducing the risk of HIV infection in the general public. The survey was conducted by telephone from October 1989 to January 1990 on a random sample of 1,305 residents of Los Angeles County. Black and Hispanic households were oversampled to obtain adequate information about ethnic populations in the county.

Development of a Cholera Epidemiological Risk Assessment Framework

CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL CHAMPAIGN United States

9/1/2019

602

ERDC/CERL-TR-19- 13

Not available

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Approved For Public Release; Technical Report

This report presents technical explanations and specific enumerations for a cholera risk framework developed as a part of a multi-year project funded by the Army Research, Development, Test and Evaluation Program. This effort employed a novel data-conflation technology called the Framework for the Integration of Complex Urban Systems (FICUS), which uses a broad base of peer-reviewed research on established indicators of sociocultural or health-driven risks of interest to intelligence or threat analysis in a given region. Researchers performed a specialized case study that incorporates results and data from previous programmatic work, including FICUS development and an existing theoretical humanitarian crisis (HC) framework. New data required for this framework included identification of conditions for contracting cholera, micro-survey data from global resources, and a digital population model that matches the survey data to existing population census data. The cholera framework research succeeded in using relevant microdata from the HC framework, then manipulating the HC framework to better inform cholera risk modeling. In general, the use of risk-analysis frameworks with FICUS is intended to produce case studies that provide non-obvious insights to the user while accounting for and reducing data gaps and uncertainties.

F restraint Statement of Admiral Michael G. Mullen, USN, Chairman of the Joint Chiefs of Staff, Before the 111th Congress Senate Armed Services Committee

CONTF CHIEFS OF STAFF WASHINGTON DC

2/2/2010

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Congressional testimony

This past year witnessed significant achievements by America's men and women in uniform. Yet the demands of the present remain high, and our military role in national security remains substantial. This will continue for the foreseeable future. Yet as I have testified before this body in past appearances, the military serves America best when we support, rather than lead United States foreign policy.
Zika virus (ZIKV) is a mosquito-borne flavivirus distributed throughout much of Africa and Asia. Infection with the virus may cause acute febrile illness that clinically resembles dengue fever. A recent study indicated the existence of three geographically distinct viral lineages; however, this analysis utilized only a single viral gene. Although ZIKV has been known to circulate in both Africa and Asia since at least the 1950s, little is known about the genetic relationships between geographically distinct virus strains. Moreover, the geographic origin of the strains responsible for the epidemic that occurred on Yap Island, Federated States of Micronesia in 2007, and a 2010 pediatric case in Cambodia, has not been determined. Methodology/Principal Findings: To elucidate the genetic relationships of geographically distinct ZIKV strains and the origin of the strains responsible for the 2007 outbreak on Yap Island and a 2010 Cambodian pediatric case of ZIKV infection, the nucleotide sequences of the open reading frame of five isolates from Cambodia, Malaysia, Nigeria, Uganda, and Senegal collected between 1947 and 2010 were determined. Phylogenetic analyses of these and previously published ZIKV sequences revealed the existence of two main virus lineages (African and Asian) and that the strain responsible for the Yap epidemic and the Cambodian case most likely originated in Southeast Asia. Examination of the nucleotide and amino acid sequence alignments revealed the loss of a potential glycosylation site in some of the virus strains, which may correlate with the passage history of the virus. Conclusions/Significance: The basal position of the ZIKV strain isolated in Malaysia in 1966 suggests that the recent outbreak in Micronesia was initiated by a strain from Southeast Asia. Because ZIKV infection in humans produces an illness clinically similar to dengue fever and many other tropical infectious diseases, it is likely greatly misdiagnosed and underreported.

### Table 1: Genetic Characterization of Zika Virus Strains: Geographic Expansion of the Asian Lineage

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<th>Author(s)</th>
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<th>Methodology/Principal Findings</th>
<th>Conclusions/Significance</th>
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<td>Marketable, Andrew D., Schul, Amy L., Yosil, Chadwick E., Jasper, Matthew R., Huang, Y., Virvak, H.P., Keel, Guzman, M., Dala, Tesh, Robert B., Weaver, Scott C.</td>
<td>Texas Univ Medical Branch At Galveston Center for Biodefense and Emerging Infectious Diseases (CBEID)</td>
<td>2/28/2012</td>
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<td>Chung, Kevin E., Dubick, Michael A.</td>
<td>Army Inst of Surgical Research Fort Sam Houston Tx</td>
<td>4/1/2014</td>
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In this paper, the two population model for a carrier-borne epidemic posed by Bailey (The Mathematical Theory of Infectious Diseases and Its Applications, 1975, p. 211) is formulated in a mathematically tractable manner. This model reflects the epidemiology of diseases such as malaria, where the progress of the disease depends on the interaction of a population of mosquitoes and a population of humans. An expression for the mean duration time of the epidemic is obtained and a computationally feasible algorithm is presented. Results of a study investigating the consequences on the mean duration time of varying the infection and removal rates in the two populations are given. (Author)
Adenoviruses are the leading cause of reported illness and lost work time among basic recruit trainees. Last year, a new serotype of adenovirus (Ad14) emerged in the United States and caused several severe outbreaks of febrile respiratory infection and pneumonia among both recruits and civilians. One death was reported among recruits. This paper describes a novel method for discriminating the otherwise identical strains of this virus circulating at different sites, and describes the epidemiological conclusions reached using the new method to track those strains. Different recruit sites were affected by different strains of Ad14, and those strains were stably associated with specific recruit sites for several months at a time. Several readily discernable variants of the identified strain marker (a microsatellite DNA sequence) were discovered, allowing simple methods to be used to discriminate the observed site-specific strains. These data show that those strains were endemic to those sites, and that transmission between recruits in the training was the primary source of infection (as opposed to redundant re-importation from civilian communities with the incoming recruits). Analysis of the highly variable strain marker described in this work is shown to be an effective way to discriminate otherwise identical adenoviruses.

Many potential chemical, biological, radiological, and nuclear (CBRN) terrorism agents lack available countermeasures. In 2003, President Bush proposed Project BioShield to address this need. The 108th Congress passed the Project BioShield Act of 2004, and President Bush signed it into law on July 21, 2004 (P.L. 108-276). The main provisions of this law include (1) relaxing procedures for some CBRN terrorism-related spending, including hiring and awarding research grants; (2) guaranteeing a federal government market for new medical countermeasures; and (3) permitting emergency use of unapproved countermeasures. The Department of Health and Human Services (HHS) has used each of these authorities. The HHS used expedited review authorities to approve grants related to developing treatments for radiation exposure. The HHS used the authority to guarantee a government market to obligate approximately $2.3 billion to acquire countermeasures against anthrax, botulinum, radiation, and smallpox. In response to the 2009 influenza A (H1N1) swine flu outbreak, the 111th Congress expanded reviewing authorities for some CBRN terrorism-related spending, including hiring and awarding research grants; (2) guaranteeing a federal government market for new medical countermeasures; and (3) permitting emergency use of unapproved countermeasures. The Department of Health and Human Services (HHS) has used each of these authorities. The HHS used expedited review authorities to approve grants related to developing treatments for radiation exposure. The HHS used the authority to guarantee a government market to obligate approximately $2.3 billion to acquire countermeasures against anthrax, botulinum, radiation, and smallpox. In response to the 2009 influenza A (H1N1) swine flu outbreak, the 111th Congress expanded reviewing authorities for some CBRN terrorism-related spending, including hiring and awarding research grants; (2) guaranteeing a federal government market for new medical countermeasures; and (3) permitting emergency use of unapproved countermeasures. The Department of Health and Human Services (HHS) has used each of these authorities.

In order to meet the strategic and operational demands placed upon the U.S. military as a joint war fighting force, service members must be physically fit. Obesity, poor physical fitness and health are seriously threatening the overall readiness and operational effectiveness of our U.S. military. Currently serving military men and women are increasingly overweight and out of shape while many of those who aspire entry into our Armed Forces are alarmingly, Too Fat to Fight. The recent strategic implication of obesity within our Armed Forces is threatening the National Security of this nation. Currently serving military men and women are increasingly overweight and out of shape while many of those who aspire entry into our Armed Forces are alarmingly, Too Fat to Fight. The recent strategic implication of obesity within our Armed Forces is threatening the National Security of this nation.

One fifth of the world’s amphibians now face extinction. A major factor in these declines has been the spread of infection by the chytrid fungus, Batrachochytrium dendrobatidis (Bd), which, as a disease (chytridiomycosis) has been devastating amphibian populations globally. To better understand the spatial and temporal scales of infection by this pathogen, we conducted a transcontinental transect for the presence of Bd. United States Department of Defense (DOD) installations were sampled from west to east along U.S. Highway 66 from California into central Illinois, and continuing eastward from there across to the Atlantic Seaboard along U.S. Interstate 64 (in sum from Camp Pendleton in California to Naval Air Station Oceana in Virginia, between 33 deg and 39 deg N latitude). We sampled each installation across the 2009 warm season using standardized collection and analytical techniques. This study represents the most geographically extensive survey for Bd conducted transcontinentally across much of North America. To better understand the spatial and temporal scales of infection by this pathogen, we conducted a transcontinental transect for the presence of Bd. United States Department of Defense (DOD) installations were sampled from west to east along U.S. Highway 66 from California into central Illinois, and continuing eastward from there across to the Atlantic Seaboard along U.S. Interstate 64 (in sum from Camp Pendleton in California to Naval Air Station Oceana in Virginia, between 33 deg and 39 deg N latitude). We sampled each installation across the 2009 warm season using standardized collection and analytical techniques. This study represents the most geographically extensive survey for Bd conducted transcontinentally across much of North America.
| AD0401378 | Isolation, Purification and Characterization of Neuraminidase. | MICHIGAN UNIV ANN ARBOR | Davenport,Fred M. | 7/2/1974 | 7 | Not available | Not available | U | A - 01 | Approved for public release; distribution is unlimited. | Terminal progress rept. 1 Jul 73-30 Jun 74, 1 Physical-chemical studies of neuraminidase were carried out. An investigation of the peptide nature of the subunits was undertaken by trypsin digestion of neuraminidase subunits treated with 14C-iodoacetamide. 14C-labeled cysteinyl peptides were mapped by successive chromatography and high voltage electrophoresis. Three epidemic strains of influenza virus (1957, 1960 and 1969) were compared in order to detect alterations in their fingerprint patterns which could be correlated with the antigenic differences between the strains. Alternate methods of obtaining solubilized neuraminidase were surveyed. The objective was to increase yield of enzyme from several strains of virus and to release the entire molecule without loss of a fragment. The triton X100 dissociation and dissociation methods are discussed. |
| AD0834640 | KINDERGARTEN EPIDEMIC CAUSED BY ADENO-VIRUS 7 | ARMY INSTITUTE OF RESEARCH LABS FREDERICK MD | Osvath, P., Troth, M. | 11/1/1966 | 10 | TRANS-1910 | SMAFD | U | A - 01 | Approved for public release; distribution is unlimited. Document partially illegible. | A report is presented of a kindergarten epidemic caused by adeno-7 virus and manifesting itself with symptoms of the air passages. Seventy two per cent of the children in the community fell ill with a mild or moderately serious infection of the air passages. It was possible to isolate the virus in 14 of the 22 cases tested virologically. In another 6 cases the conversion of the 'YAG' or 'Complement fixation test' indicated the probability of an analogous etiology. This made it possible to show the course of the adeno-7 infection which showed manifest clinical symptoms as well in 55% of the children. In 35% of the cases a mild pneumonia which appeared mainly in evidence obtained from culture was determined. In the remaining cases the infection appeared as a bronchitis or rhino-pharyngitis. |
| AD0528284 | Increasing Rates of Obesity Among HIV-Infected Persons During the HIV Epidemic | UNIFORMED SERVICES UNIV OF THE HEALTH SCIENCES BETHESDA MD | Crum-Cianflone, Nancy; Roediger, Wilke P.; Sherly, Lynn; Heald, Maryam; Marconi, Vincent; Barnes, Anura; Weinreb, Amy; Barthel, P.; Vesent, Graver, Susan; Agan, Brian K. | 4/1/2010 | 10 | Not available | OSUHS | U | A - 01 | Approved for public release; distribution is unlimited. | Journal article Background: The prevalence and factors associated with overweight/obesity among human immunodeficiency virus (HIV)-infected persons are unknown. Methods: We evaluated prospective data from a U.S. Military HIV Natural History Study (1985-2004) consisting of early diagnosed patients. Statistics included multivariate linear regression and longitudinal linear mixed effects models. Results: Of 1682 patients, 2% were underweight, 37% were overweight, and 9% were obese at HIV diagnosis. Multivariate predictors of a higher body mass index (BMI) at diagnosis included more recent year of HIV diagnosis, older age, African American race, and earlier HIV stage (all p<0.05). The majority of patients (62%) gained weight during HIV infection. Multivariate factors associated with a greater increase in BMI during HIV infection included more recent year of diagnosis, lower BMI at diagnosis, higher CD4 count, lower HIV RNA level, lack of AIDS diagnosis, and longer HIV duration (all p<0.05). Nucleoside agents were associated with less weight gain; other drug classes had no significant impact on weight change in the HAART era. Conclusions: HIV-infected patients are increasingly overweight/obese at diagnosis and during HIV infection. Weight gain appears to reflect improved health status and mirror trends in the general population. Weight management programs may be important components of HIV care. |
| ADB109011 | Double Blind, Placebo Controlled Clinical Trial of Nifurtimox Therapeutic Efficacy in the Treatment of Epidemic Hemorrhagic Fever. | HUBB MEDICAL COLL CHINAN VIRUS RESEARCH INST | Huang, Chin-Min | 11/15/1990 | 11 | Not available | Not available | U | A - 01 | Approved for public release; distribution is unlimited. | Final rept. 1 Nov 85-31 Oct 90, Not available |
Toward the second critical resource in health care, the United States Global Health Initiative, established in 2009, reflects the president's commitment to improving PNs health, underscored by creation of the Office of Global Health Diplomacy in the Department of State (DOS) last year.

An epidemic caused by Ebola virus (EBOV) continues in West Africa, demonstrating the significant public health burden of filovirus infections and highlighting the need for preventive measures to combat the associated disease. Since, no vaccines or antivirals are currently FDA approved, we sought to assess protection conferred by an EBOV vaccine composed of noninfectious vesicular stomatitis virus (VSV) pseudovirions bearing EBOV glycoprotein (GP). A prime/boost vaccination regime protected mice against lethal challenge with mouse-adapted Ebola virus (MA-EBOV) in a dose-dependent manner. As N-linked glycans are thought to shield conserved regions of GP, we also tested if pseudovirions containing GPs lacking N-linked glycans on GP1 would provide effective immunity. High doses of GP/VSV partially or fully demulced N-linked glycans on GP1 protected mice against MA-EBOV challenge. However, deglycosylated mutants proved less effective than WT GP/VSV at lower doses. Further, neither N-linked glycan deficient GP/VSV provided significant cross protection against Sudan virus. As others have reported, serum from vaccinated mice that were protected against lethal challenge had few to no detectable neutralizing antibodies, indicating that EBOV vaccines do not need to elicit neutralizing antibodies to protect against lethal challenge. A strong correlation was found between the amount of vaccine-induced GP-specific Ig and protection. Our results show that non-infectious GP/VSV pseudovirions serve as a successful vaccination platform, but reduction of the glycan shield is not an effective means of enhancing immunogenicity of EBOV GP. Further, we identify that GP-specific Ig levels provide a good immunologic correlate of protection.

A confluence of fiscal challenges, lessons learned from Afghanistan and Iraq, and increased emphasis on US influence in the Asia-Pacific region has significantly shaped national strategic guidance in recent years. One emergent theme is the importance of integrated diplomacy, development, and defense (3D) to prevent conflict and build partner nation (PN) capacity. The 2010 National Security Strategy mandated enhancing regional security through sponsoring economic growth, strengthening[ing] weak and failing states, life[ing] people out of poverty, combat[ing] … epidemic disease, and strengthening[ing] … governance. Reinforcing that imperative, Presidential Policy Directive 23, published in 2013, aims to help partner nations build the sustainable capacity to address common security challenges; promote partner support for the policies and interests of the United States; strengthen collective security and … promote universal values. Building PN infrastructure is a complex task involving a myriad of interdependent facets of a nation’s resources, including aviation. The United States helps PNs develop their whole-of-nation aviation enterprise to improve governance and economy. Doing so requires the coordinated expertise of a wide variety of US resources such as the US Trade and Development Agency, which has advanced public-private aviation partnerships overseas for over 20 years, linking industry leaders with US government resources such as the Federal Aviation Administration. A second critical resource is health care. The United States Global Health Initiative, established in 2009, reflects the president’s commitment to improving PNs health, underscored by creation of the Office of Global Health Diplomacy in the Department of State (DOS) last year.
There are many types of models for counterterrorism, explaining different problems that the military faces in the fight against terrorism. This thesis proposes that one of the fundamental assumptions underlying existing models of counterterrorism is that the struggle with terrorists can be understood as a war in the traditional sense of the term. We propose to rethink the struggle against terrorism as a fight against an infection. The epidemic of terrorist ideology within part of the world is a result, from this perspective, of the infectiousness of that ideology. Using the insights of the field of the epidemiology of ideas, this research looks into the models and methods used to understand and fight biological epidemics. We work with the SIR model from mathematical epidemiology, which partitions populations into susceptible, infected, and recovered categories, and apply that model with notional starting rates to the epidemic of terrorist ideology. This research allows another set of assumptions for models used in counterterrorism because the insights gained from viewing terrorism as a symptom of an epidemic can expand our understanding of the problem that we fight.
High Depth, Whole-Genome Sequencing of Cholera Isolates from Haiti and the Dominican Republic

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<td>Whole-genome sequencing is an important tool for understanding microbial evolution and identifying the emergence of functionally important variants over the course of epidemics. In October 2010, a severe cholera epidemic began in Haiti, with additional cases identified in the neighboring Dominican Republic. We used whole-genome approaches to sequence four viable cholerae isolates from Haiti and the Dominican Republic and three additional V. cholerae isolates to a high depth of coverage (&gt;2000x); four of the seven isolates were previously sequenced.</td>
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Urbanization is one of the most important megatrends of the 21st century. Consequently, the possiblity of U.S. military involvement in a megacity or sub-megacity is an eventuality that cannot be ignored. After elucidating the nature of urbanization and developing a typology in terms of smart, fragile, and feral cities, we give consideration to the kinds of contingencies that the U.S. military, especially the Army, needs to think about and prepare for. Six kinds of contingencies have since been identified: humanitarian disaster relief; military support for civil authorities in a restoration of order; intervention in whatever reasoning a strategic city (also termed a critical or alpha city); military involvement in a city in the context of counter-insurgency; use of military force in a city in an interstate conflict; and containment or quarantine of an urban pandemic. Many debates arise concerning whether the appropriate focus should be predominantly on megacities or on smaller, but possibly more important, cities or perhaps on both. If the U.S. Army has the capacity to intervene militarily in a megacity, then it is likely that it could do so in a smaller city. Consequently, the authors of this monograph focus on megacities and sub-megacities.

The primary purpose of this study was to assess the proportion of U.S. physicians who are Always/Often conducting HIV risk assessments. The second purpose of our study was to understand the factors that are associated with physician compliance. Despite increased options for HIV treatment, it has been more than a decade since any research on provider compliance with risk assessment practices has been published. Purpose: The primary purpose of this study was to assess the proportion of U.S. physicians who are Always/Often conducting HIV risk assessments. The second purpose of our study was to understand the factors that are associated with physician compliance. Finally, we assessed the proportion of physicians who Always/Often asked eight risk assessment questions for four at-risk patient groups (i.e., men who have sex with men [MSM], injection drug users [IDU], HIV+ and patients with symptom or diagnosis of a sexually transmitted disease [STD]) and continuing adult patients.

Interagency Collaboration

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<td>Approved for public release; distribution is unlimited.</td>
<td>Development and management strategies; (2) the creation of collaborative organizations; (3) the development of a well-trained workforce; and (4) the sharing and integration of national security information across agencies. This report is based largely on a body of GAO work issued since 2005.</td>
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While national security activities, which range from planning for an influenza pandemic to Iraq reconstruction, require collaboration among multiple agencies, the mechanisms used for such activities may not provide the means for interagency collaboration needed to meet modern national security challenges. To assist the 111th Congress and the new administration in developing their oversight and management agendas, this report, which was performed under the Comptroller General’s authority, addresses actions needed to enhance interagency collaboration for national security activities: (1) the development and implementation of overarching, integrated strategies; (2) the creation of collaborative organizations; (3) the development of a well-trained workforce; and (4) the sharing and integration of national security information across agencies. This report is based largely on a body of GAO work issued since 2005.
Inbred Rat Strains Mimic the Disparate Human Response to Rift Valley Fever Virus Infection

Haired Rat Strains Mimic the Disparate Human Response to Rift Valley Fever Virus Infection

We propose and analyze a class of trust management protocols for encounter-based routing in delay tolerant networks (DTNs). The underlying idea is to incorporate trust evaluation in the routing protocol, considering not only quality-of-service (QoS) trust properties (connectivity) but also social trust properties (honesty and unselfishness) to evaluate other nodes encountered. Two versions of trust management protocols are considered: an equal-weight QoS and social trust management protocol (called trust-based routing) and a QoS only trust management protocol (called connectivity-based routing). By utilizing a stochastic Petri net model describing a DTN behavior, we analyze the performance characteristics of these two routing protocols in terms of message delivery ratio, latency, and message overhead. We also perform a comparative performance analysis with epidemic routing for a DTN consisting of heterogeneous mobile nodes with vastly different social and networking behaviors. The results indicate that trust-based routing approaches the ideal performance of epidemic routing in delivery ratio, while connectivity-based routing approaches the ideal performance in message delay of epidemic routing, especially as the percentage of selfish and malicious nodes present in the DTN system increases. By properly selecting weights associated with social trust properties, the authors claim that this protocol can significantly improve the performance of DTNs in terms of message delivery ratio, latency, and message overhead.

In 1977 the disease invaded Egypt for the first time in recorded history, resulting in an extensive epizootic/epidemic and threatening additional spread into the Middle East. Because of this unprecedented geographical extension and the fluid human disease associated with it, we have studied the pathogenicity of an Egyptian isolate (Zagazig hospital 505) for laboratory animals. During the course of these studies, inbred rat strains were found to have three distinct patterns of response. Wistar-Furth and Brown Norway rats were especially susceptible to the virus and died with extensive hepatic necrosis 3 to 5 days after inoculation of only 5 plaque-forming units (pfu). Lewis, Buffalo, DA, and Fischer 344 rats resisted subcutaneous infection with 5 x 10^5 (expn 5) pfu. ACI and Maxx rats were moderately susceptible to the lethal effects of 5 x 10^5 (expn 5) to 5 x 10^6 (expn 5) pfu of the virus and died within 2 to 3 weeks with encephalitis. These findings suggest that the genetic susceptibility of the host is responsible for the markedly different evolution of RVF in the rats. The clinical and etiologic events following rat inoculation resembled the course of benign, encephalitic, or fulminant human disease. The inbred rat model may be useful in defining the critical determinants of severe human RVF and suggests that more attention should be directed to understanding the factors that govern the evolution of Rift Valley Fever Virus infection in humans.
The first detailed description of Rift Valley Fever (RVF) was based on a sheep epizootic in an area where the great Rift Valley runs through Kenya. RVF is a viral disease causing arthropod-borne epidemics of domestic animals during which man is also infected. Sheep epizootics resembling RVF occurred in Kenya during the first two decades of the 20th century, but it was not until 1930 that Daubney and coworkers studied the disease in detail and established the viral etiology of RVF. Initial scientific progress was rapid. Field operations and laboratory studies revealed that (a) a wide variety of domestic, wild, and laboratory animals were susceptible to RVF virus infection with the characteristic pathological lesion being focal liver necrosis; (b) the virus could be isolated from, and transmitted by, a number of mosquito species; and (c) many African nations had serological evidence of human or animal infection by RVF virus. The disease continued to cause periodic epidemics, but until 1977 it was geographically limited to Sub-Saharan Africa. During many epidemics (and as a result of numerous laboratory infections), human RVF was described a a mild, dengue-like, febrile illness. However, during the 1975 epizootic in South Africa, severe clinical disease was reported in a small number of people, and the first fatalities directly attributable to RVF were documented. In 1977, an outbreak of the disease was reported in the Nile delta, a new geographic area and extensive human involvement with numerous fatalities occurred during the epizootic. The Egyptian epizootic re-emphasized the importance of this disease, as well as our lack of detailed understanding of the epidemiology, virology and pathogenesis of RVF. It also served as a graphic example of the potential of RVF to circulate in a number of differing geographic and climatic settings, since the virus has now spread in a 7,000-km north-south range throughout Africa. Although we do not know whether the virus will...
| ADA441180 | The Bug Stops Here: Force Protection and Emerging Infectious Diseases | NATIONAL DEFENSE UNIV WASHINGTON DC CENTER FOR TECHNOLOGY AND NATIONAL SECURITY POLICY | Thompson, Donald E., Wardlow, Joel L., Loeb, Cheryl A. | 11/1/2005 | 71 | Not available | NDU/CTNSP | U | A-01 | Approved for public release; distribution is unlimited. | Monograph | Despite significant advances in medical research and treatment in the past century, infectious diseases remain among the leading causes of death worldwide. These diseases are appearing in places they have never been seen before or were thought to have been eradicated, are spreading faster and more frequently, and are posing an increasing global health threat that will affect national and international security in both the near- and long-term future, even affecting the success of U.S. military missions and operations. Force health protection is an urgent priority for the Department of Defense (DoD), as increasing threats of natural outbreaks of infectious disease could seriously undermine mission readiness and success. U.S. national security might be impacted by military operations in regions with endemic and epidemic occurrences of infectious disease, where disease activity may prevent the successful completion of a mission or operation or may even result in infected soldiers carrying a contagious disease back to the United States. Changing military doctrine and tactics call for a fresh approach to force protection. The purpose of this paper is to review important lessons that have been learned in the past, and to revisit the older but proven principles of force protection that are in danger of being forgotten in today’s technology-focused military environment. Recognizing that infectious diseases could have a significant impact on military operations, this report provides a series of case studies that analyze health threats to each regional combatant command and presents both tactical and strategic recommendations that will better prepare the entire DoD for future outbreaks of disease. These recommendations focus on procedural changes that will allow the U.S. military to regain its competitive advantage. |
| ADA511354 | The 2009 Influenza Pandemic: An Overview | LIBRARY OF CONGRESS WASHINGTON DC CONGRESSIONAL RESEARCH SERVICE | Lister, Sarah A., Redhead, C. S. | 10/15/2009 | 38 | CRS-R40554 | CRS/DC | U | A-01 | Approved for public release; distribution is unlimited. | Congressional Report | From a diagnostic point of view, serology and skin tests, permitted identification of the Malassez and Vignal bacillus in six reported observations. The antibody titer found in these patients although weak were significant. The skin hypersensitivity test was specific. From the clinical viewpoint, these 6 observations show the extreme polymorphism of the infection by the Malassez and Vignal bacillus. They also show the absence of boundaries between the localized forms (mesenteric or iliac) and the generalized forms. |
| AD0B18933T | AN EPIDEMIC DUE TO THE MALASSEZ AND VIGNAL BACILLUS | ARMY BIOLOGICAL LABS FREDERICK MD | Mollaret, Henri H., Berthon, P. | 4/15/1965 | 15 | TRANS-1542 | SMA/DF | U | A-01 | Approved for public release; distribution is unlimited. Document partially illegible. | Not available | Policies for Biodefense Revisited: The Prioritized Vaccination Process for Smallpox | NAVAL POSTGRADUATE SCHOOL MONTEREY CA DEPT OF OPERATIONS RESEARCH | Kress, Moshe | 5/1/2005 | 38 | Not available | NPS | U | A-01 | Approved for public release; distribution is unlimited. | Not available | Handling bioterror events that involve contagious agents is a major concern in the war against terrorism, and is a cause for debate among policymakers about the best response policy. At the core of this debate stands the question which of the two post-event policies to adopt: mass vaccination where maximum vaccination capacity is utilized to uniformly inoculate the entire population, or trace (also called ring or targeted) vaccination where mass vaccination capabilities are traded off with tracing capabilities to selectively inoculate only contacts (or suspected contacts) of infective individuals. We present a dynamic epidemic-intervention model that expands previous models by capturing some additional key features of the situation and by generalizing some assumptions regarding the probability distributions of inter-temporal parameters. The model comprises a set of difference equations. It is shown that a mixture of mass and trace vaccination policies—the prioritized vaccination policy—is more effective than either of the two aforementioned policies. |
An examination of a major portion of the legal provisions for the Colombian Republic’s military establishment. Among the findings are that virtually all aspects of Colombian military life are regulated by law. The Constitution provides for the establishment of a permanent army, and statutory and decree law regulate in detail the recruitment, assignment, training, promotion, retirement, compensation, and discipline of military personnel. When disputes arise over the enforcement of military rights and duties, they are adjudicated by both military and nonmilitary tribunals. The Colombian military appear to have easier access to the legislative process than other sectors of Colombian society, and laws affecting the military tend to be enacted with unusual dispatch. Legislative sources also point to increased military participation in such activities as building roads, manufacturing weapons, handling animal and air freight, fighting epidemics, and building and managing hotels.

A major concern among healthcare experts is a shortage of supplies during a pandemic. An item of particular interest is the N95 filtering facepiece respirator (FFR), which is responsible for protecting individuals from infectious aerosols. Most experts agree there will be a shortage of N95 FFRs if a severe pandemic occurs and one option for mitigating an FFR shortage is to decontaminate and reuse the devices. Many parameters must be studied to verify the effectiveness of this strategy: biocidal efficacy of the decontamination treatment, filtration performance, pressure drop, fit, and toxicity to the end user post treatment. The focus of this research effort was to measure chemical off-gassing of six types of FFRs following decontamination. Our data indicate that for disinfectants, such as hydrogen peroxide and bleach, the amount of residual decontaminants is below the Permissible Exposure Limit (PEL). Toxic by-products were also evaluated, and they were detected for ethylene oxide treatment of FFR rubber straps. These data are encouraging and may contribute to the evolution of effective strategies for decontamination and reuse of FFRs.
Unclassified/Unlimited Distribution

The purpose of this contract is to carry out emerging infectious disease surveillance in Kenya. Specific areas in which work is performed include respiratory illness surveillance (particularly influenza), acute febrile illness surveillance, malaria resistance surveillance, diarrhea etiology and antimicrobial resistance surveillance, sexually transmitted illness surveillance, and capacity building. KEMRI maintained surveillance sites in both Kenyan Defense Forces and Ministry of Health clinics and hospitals throughout Kenya. KEMRI operated reference laboratories for this work in Nairobi, Kericho, and Kisumu, including the arbovirus reference laboratory, the antimicrobial resistance laboratory, entomology facilities, the Center of Excellence in Microscopy, the microbiology reference laboratory. Capacity development projects include outbreak investigations, Ebola and Marburg virus testing, and continuation of a laboratory and medical maintenance student attachment program. The program was able to serve as the hemorrhagic virus reference laboratory for East Africa, determine etiologies of diarrheal illnesses and the antimicrobial resistance patterns of bacterial causes, determine the etiologies of sexually transmitted infections and acute febrile illnesses in military and civilian populations, and monitor the pattern of antimicrobial resistance across Kenya.

ADA4613288 Global Emerging Infection Surveillance and Response (GEIS)- Avian Influenza (AI)/Pandemic Influenza (PI) Program KENYA MEDICAL RESEARCH INST NAIROBI Mpoke, Solomon, Coldren, Rodney L 10/1/2014 19 Not available USAMMRMC U A- 01 Approved for public release; distribution is unlimited. Annual rept. 13 Sep 2013-12 Sep 2014


ADA4442341 Beauty is in the Eyes of the Beholder: Definitions of Attractiveness among African American and Caucasian Women UNIFORMED SERVICES UNIV OF THE HEALTH SCIENCES BETHESDA MD DEPT OF MEDICAL AND CLINICAL PSYCHOLOGY Davis, Dawnavan S. 1/1/2005 193 Not available USUHS U A- 01 Approved for public release; distribution is unlimited. Doctoral thesis

Obesity is a national epidemic affecting more than 127 million people (CDC, 2003). Nearly 70% of African American women in the nation are currently overweight or obese. Despite the negative health consequences associated with obesity, culturally mediated views of attractiveness and body image may serve as risk factors for obesity among certain ethnic groups. The traditional body image literature has been constrained by entirely focusing on body thinness as the only component of attractiveness. There is evidence to suggest that some African American women hold a multicomponent definition of attractiveness (Harris, 1990, Parker, 1995). A culturally sensitive silhouette assessment method is needed to assess these components. The current study used a Model Rating Task (MRT) that extended previous silhouette measures to include: (1) dressed models, (2) models of heavier BMI categories, and (3) shaded models to represent African Americans. With the MRT, the impact of attire, body size, and model ethnicity on definitions of attractiveness could be examined. Participants were 80 African American and 80 Caucasian women with a mean age of 41.40 years, a mean body mass index of 28.30 kg/sq m, an average educational level of 15.43 years, and average yearly income of $50,000. Mean attractiveness rating scores (ranging from 1 to 8) were compared between ethnic groups for dressed and undressed models across five BMI categories ranging from underweight to class II obesity. Participant ethnicity did not affect overall attractiveness scores. However, model presentation did with both African Americans and Caucasians rating dressed models more attractive than undressed models. Contrary to expectations, participant ethnic identity and SES did not differentially impact the effects of participant ethnicity or model attire status on attractiveness. Using regression analysis, model dress was the only significant predictor of attractiveness with higher ratings for dressed models.
The more we develop, the more people gather in enormous urban conglomerates, the more we become intertwined in a complex society characterized by large availability of means of transportation, and the more the disruptive effects of a global plague stemming from an unknown infection will be. It is necessary to address this new type of menace in order to know the enemy we face, and once known, find feasible, acceptable, and suitable course of actions to defeat it or, at least, minimize the undesirable effects to our complex society. To fight this kind of war is not only the duty of a few researchers or doctors. The Army, as the ultimate bulwark between order and chaos when a threat becomes disruptive for the entire society, has a big role to play in order to assure order, deliver goods and medicines, control the stream of infected people, and maintain open vital communication’s routes. The threat of pandemic does not find place in the The Spectrum of Conflict, and requires new tasks to be accomplished by the Armed Forces. This paper has been developed to address this kind of problem.

The world is threatened with a pandemic. Such an event, considered by many to be the greatest public health risk the world faces, has the potential to kill up to forty or fifty million people, sicken hundreds of millions, and significantly impact the global economy. Countries and health organizations throughout the world are monitoring the threat and developing strategic plans and systems to prepare for what many consider an inevitable and possibly imminent event. The United States has made it a national priority to develop strategic plans to coordinate preparedness and response efforts at the federal, state, and local levels. A relatively small but critical aspect of these plans calls for the utilization of the National Disaster Medical System’s (NDMS) civilian-based medical teams, to assist state and local governments in the event of a pandemic. Generally, past deployments of these federal assets have had positive results; however, the reliance on these civilian-based medical teams for response in a pandemic is problematic. The medical professionals who primarily comprise the team may be more reluctant to participate in a pandemic due to the increased health risks to themselves and their families. Moreover, the hospitals and medical systems that employ these civilian responders may be unwilling or unable to allow their participation in the federal response system. The federal government should reconsider its reliance on this civilian-based resource in the event of a pandemic, and focus instead on enhancing existing state and local public health and medical capabilities and resources.

Adenoviruses have been an important cause of febrile acute respiratory disease (ARD) in military recruits since they were first implicated as a cause of ARD in 1953 in an epidemic at Fort Leonard Wood, MO. Since then, adenovirus type 4 and 7 have been the most important cause of ARD among military recruits in the United States, resulting in significant morbidity, loss of training time, and in rare instances, mortality. Prior to the introduction of live oral adenovirus vaccines in 1975, adenoviral infections caused the hospitalizations of 10% of military recruits, 90% of pneumonia hospitalizations, and more than 67% of all respiratory diseases in basic training. Outbreaks in the civilian population, though rare, have occurred.
The word frontier evokes an image of such distant borders as the American frontier of the nineteenth century or the beckoning unknown of space. It also suggests austerity, hardship, and lawlessness. The frontier of 2025 will be the streets and fields of the developing world. The battle will be for cooperation of people ravaged by poverty, disease, hunger, and crime. These problems will be epidemic, in some regions driving the US to choose wisely where, when, and how to act. The dilemma of 2025 will mirror today: whether to meet force with force or prevent violence by preempting it. Within a domestic environment of increasing fiscal discipline and regard for life, the most efficient way to defend our national interest is to act before a situation flares into violence. One possibility is to dampen these violent flare-ups with a force dedicated to preventing or resolving conflict. However, this option requires a profound shift in focus and an unprecedented appreciation of degrees of conflict and hostility. Within each situation, there are instances where the application of lethal military force is appropriate. There are also instances where force is counterproductive. A murky void separates the two. We need to bridge that void. This paper advocates creating a small, rugged, and specialized composite force dedicated to creating and operating in the physical and psychological state we will call the peacespace. The size and composition of the force will be crucial to success or failure. In 30 years, we envision that a composite force will consist of military, civil service, contractor, and international personnel. Aided by technological possibilities and new conceptual thinking, a security assurance force (SAF; pronounced Safe) will foster institutions required for long-term stability in a region.

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The world is changing every day. As a result of this change, State Defense Forces are experiencing a period of dynamic change. As of this writing (October 2006) several national events with significant impact are occurring. The war on terrorism is in full swing, pandemic flu is an emerging threat, wild fires are burning in many locations in the western United States, and the Gulf States are still trying to recover from the effects of hurricanes Katrina and Rita before the next hurricane season starts. This does not take into account state-specific issues like security for major sporting events, Army and Air Guard units mobilized to support Federal missions overseas, and Homeland Security duty on U.S. borders. Strained resources are becoming more the norm than the exception. How can State Defense Forces (SDFs) support these various missions as a viable force multiplier? In response to these challenges, the State Guard Association of the United States (SGAUS) developed a specialized Emergency Management qualification program for State Defense Forces and other authorized individuals titled Military Emergency Management Specialist (MEMS) Academy. This program prepares SDF personnel to effectively operate and function in a local or state-wide military emergency management mobilization. Individuals with MEMS qualification gain the knowledge

The qualitative performance and timely completion, prior to the onset of a regular outbreak, of a triple immunization encompassing the largest number of collectives, are considered the main conditions for exposing the epidemiological effectiveness of live influenza vaccine. The results of the immunization of 12,600 adult persons, distributed among 33 separate collectives, were studied during two successive epidemics of influenza type A2 and B in January–April 1962. During this a significantly more intense incidence rate with type A2 and B influenza was observed in the control noninoculated collectives than in the collectives which were encompassed by the almost complete administration of live influenza vaccine.
The correct treatment of tuberculosis as an individual and epidemic disease is discussed. A
Mouse hepatitis virus strain A59 (MEV-A59), a murine coronavirus, infects different murine
The ER Epidemic": Scope and
Mouse hepatitis virus receptor (MHVR) glycoprotein and related glycoproteins in determining the outcome of
4/13/1995 262 Not available Not available U A - 01
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Approved for public release; distribution is unlimited.
Several strategies are available to increase the mechanical ventilation capability at institutions where the supply of ICU ventilators becomes inadequate to meet the needs of COVID-19 patients with respiratory failure. The examination of rodents does not give basis to consider them reservoirs of lengthy transmission of the virus from one generation to the other. Therefore, the epidemic which broke out in 1919 and 1920 in southern Russia furnished a menacing epidemic which broke out in 1939 and 1940 in southern Russia furnished evidence that the number of devices that can be available, the timeframe and how they will be distributed are essential questions to address. Those questions remain to be answered and will require a coordinated task force with the responsibility and authority to take action.
This report is divided into four independent sections. Section 1 contains a theorem giving sufficient conditions for the asymptotic distribution of a standardized location-scale random variable to have the distribution of a power of the random variable, and examples showing that the conditions are not necessary. Section 2 gives illustrations of the problem of deciding whether or not one random variable is a transform of another; and, in each case in which a transformation of the one random variable into the other is assured, the set of all such transformations is investigated. Section 3 consists of an example of the notion of robustness of a test as well as a tentative general definition of the concept of robustness of a test, and a brief study of the Kolmogorov metric on the space of location-parameter distributions. Section 4 presents simple iterative solutions of special systems of differential-difference equations, in which the constant coefficient matrices are triangular and satisfy conditions sufficient to insure that the solutions involve only exponential terms or terms that are products of linear factors and exponential factors. These methods are applied to the simple stochastic epidemics and to the general stochastic epidemic.

The study was undertaken in order to determine whether persons, once infected with epidemic typhus could subsequently suffer relapses, without clinical signs which could be detected by rises in antibody titer. Such cases of recrudescent typhus could presumably serve as sources of the microorganism in the interepidemic period and therefore be responsible for the initiation of new epidemics. The study was conducted among individuals most of whom had contracted epidemic typhus in Eastern Europe and immigrated to Israel after the Second World War. In enlisting volunteers for the study particular attention was paid to the reliability of their histories and the absence of murine typhus in their present environment. 294 individuals were thus selected. Interviews and sampling of bloods were conducted at regular two-three month's intervals. Six blood samples were obtained from 262 individuals and at least three samples from the rest. All sera obtained from any individual were examined in the same test as well as a tentative general definition of the concept of robustness of a test, and a brief study of the Kolmogorov metric on the space of location-parameter distributions. Section 4 presents simple iterative solutions of special systems of differential-difference equations, in which the constant coefficient matrices are triangular and satisfy conditions sufficient to insure that the solutions involve only exponential terms or terms that are products of linear factors and exponential factors. These methods are applied to the simple stochastic epidemics and to the general stochastic epidemic.
Microbial forensics is a relatively new scientific discipline dedicated to analysing microbiological evidence from a crime for attribution purposes. It builds on traditional microbiology and epidemiology but within a legal framework. Important motives for forensic investigations include interdiction of criminals, prosecution of justice, and ideally, deterrence of others from committing similar acts. Forensic capabilities in animal health should focus on building capacity for detection and reporting of increases in infectious disease morbidity and mortality among animals that might reflect a covert release of a pathogen. Suspicion should be raised when epidemiological patterns are different from those expected for the animal population and the pathogen in question. Existing capacities for the detection and reporting of epidemic and even endemic diseases should be an international priority for the prevention of catastrophic losses in animal and potentially in human life. The veterinary community needs to be more aware of the legal requirements related to forensic investigations so that veterinarians will be prepared to handle evidence properly within their own fields.
### Finding Near-Optimal Groups of Epidemic Spreaders in a Complex Network

#### AD0157616

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<td>Finding Near-Optimal Groups of Epidemic Spreaders in a Complex Network</td>
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<tr>
<td>Author(s)</td>
<td>Voyager, Geoffrey, Shai, Paul, Macdonald, Brian, Howard, Richard, Anne L.</td>
</tr>
<tr>
<td>Date</td>
<td>4/2/2014</td>
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In this paper, we present algorithms to find near-optimal sets of epidemic spreaders in complex networks. We extend the notion of local-centrality, a centrality measure previously shown to correspond with a node's ability to spread an epidemic, to sets of nodes by introducing combinational local centrality. Though we prove that finding a set of nodes that maximizes this new measure is NP-hard, good approximations are available. We show that a strictly greedy approach obtains the best approximation ratio unless \( P = NP \) and then formulate a modified version of this approach that leverages qualities of the network to achieve a faster runtime while maintaining this theoretical guarantee. We perform an experimental evaluation on samples from several different network structures which demonstrate that our algorithm maximizes combinational local centrality and consistently chooses the most effective set of nodes to spread infection under the SIR model, relative to selecting the top nodes using many common centrality measures. We also demonstrate that the optimized algorithm we develop scales effectively.

### Effectiveness of Three Decontamination Treatments Against Influenza Virus Contaminated Filtering Facepiece Respirators

#### AD0489554

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<td>Author(s)</td>
<td>Voyager, Geoffrey, Shai, Paul, Macdonald, Brian, Howard, Richard, Anne L.</td>
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Single-use filtering facepiece respirators (FFRs) are effective precautions against airborne pathogens; however, during pandemics the demand for FFRs may far exceed availability. Reuse of FFRs following decontamination has been suggested but few studies to date have addressed the feasibility. Concerns regarding biocidal efficacy, filter performance post decontamination and cost of decontamination may affect the adoption of reuse measures. This study examined the effectiveness of three energetic decontamination methods (ultraviolet germicidal irradiation, microwave-generated steam and moist heat) on two NIOSH certified N95 FFRs contaminated with H5N1. An aerosol settling chamber was used to apply virus-laden droplets to FFRs in a method designed to simulate respiratory droplet deposition of viruses onto surfaces. Results differed based on the method used for detection of the virus. When the FFRs were examined post decontamination by virus culture, all three decontamination methods worked equally well and reduced virus load by >4 log TCID50. Analysis of the treated FFRs using a quantitative molecular amplification assay (qRT-PCR) indicated that the UVGI decontamination method provided lower levels of detectable genome copies than the other two methods. Filter performance was evaluated before and after decontamination using a 2% NaCl aerosol. All FFRs displayed penetration below 5% at the 300- nm particle size. No reduction in filtration performance was found in FFRs that had been exposed to virus and subsequently decontaminated. These findings indicate that, when properly implemented, decontamination methods are effective for FFRs and do not affect their filtering function; however, other factors may affect the decision to re-use FFRs.
Hemorrhagic Fever with Renal Syndrome (Korean Hemorrhagic Fever)

Wang, Lee H.

6/29/1990

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Approved for public release; distribution is unlimited.

Annual summary rept. 10 Dec 1989-9 Feb 1990

World-wide, about 200,00 people are hospitalized with Hemorrhagic fever with renal syndrome (HFRS) (S.0189246) each year. The etiologic agents of HFRS are Hantavirus, Seoul and Puumala viruses of the genus Hantavirus, family Bunyaviridae. A severe form of HFRS, caused by Hantavirus, occurs in Asia and eastern parts of Europe, a moderate form, caused by Seoul virus, occurs in Asia, and a mild form, caused by Puumala virus, occurs in Europe. The reservoirs of hantaviruses are rodents and other small mammals. Global surveys of the distribution of hantaviruses and surveillance of HFRS are important for prevention of this highly fatal disease. A simple and rapid serologic diagnostic test for HFRS in the areas where hantaviruses exist is urgently needed. It is also important to investigate antigenic differences of strains of Hantavirus isolated from rodents caught in on-endemic areas of the world because HFRS patients have never been documented in many areas despite the finding of positive rodents there. The methods of diagnosis of HFRS, isolation of hantaviruses from man and rodents are described previously. A new high density silicone particles were used for a rapid serologic diagnostic test for HFRS. There were 430 cases of HFRS in Korea in 1989 and large outbreaks of scrub typhus, spotted fever and leptospirosis occurred before and during the epidemic season of HFRS. Antibody against hantaviruses was measured within forty minutes by a passive agglutination procedure using high density composite particles coated with purified Hantavirus antigen.

Epidemic Process

1. IMMIGRATION

2. THE MODEL WITH EQUATION OF EPIDEMIC

3. IMMUNOLOGIC STUDY OF HEMORRHAGIC FEVER

Hemorrhagic Fever (HFRS) (3-10% fatality) each year. The etiologic agents of HFRS are Hantavirus, Seoul and Puumala viruses of the genus Hantavirus, family Bunyaviridae. A severe form of HFRS, caused by Hantavirus, occurs in Asia and eastern parts of Europe, a moderate form, caused by Seoul virus, occurs in Asia, and a mild form, caused by Puumala virus, occurs in Europe. The reservoirs of hantaviruses are rodents and other small mammals. Global surveys of the distribution of hantaviruses and surveillance of HFRS are important for prevention of this highly fatal disease. A simple and rapid serologic diagnostic test for HFRS in the areas where hantaviruses exist is urgently needed. It is also important to investigate antigenic differences of strains of Hantavirus isolated from rodents caught in on-endemic areas of the world because HFRS patients have never been documented in many areas despite the finding of positive rodents there. The methods of diagnosis of HFRS, isolation of hantaviruses from man and rodents are described previously. A new high density silicone particles were used for a rapid serologic diagnostic test for HFRS. There were 430 cases of HFRS in Korea in 1989 and large outbreaks of scrub typhus, spotted fever and leptospirosis occurred before and during the epidemic season of HFRS. Antibody against hantaviruses was measured within forty minutes by a passive agglutination procedure using high density composite particles coated with purified Hantavirus antigen. Antigenic structures of the Korean HFRS virus were compared with those of six other Hantavirus of the world. All six Hantavirus isolated from Korea were antigenically similar to five of the six previously isolated in Israel. (Author)

Hantavirus ( Csva )

Yone, D. C., Kimelkar, D. J.

5/31/1963

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Measures of lifespan were determined for a population of male Sprague-Dawley derived male rats, comprised of 747 animals from eighteen experiments. Variations in ln measures among experiments were found even under stable environmental conditions in a single strain of rats with no known epidemic infections. Measures of central tendency and dispersion appeared to be uncorrelated with each other and, normally distributed among experiments. Within most experiments there was a definite tendency for an excess (above the normal distribution) of shorter lifespans, and in seven experiments this resulted in significant deviations from the normal distribution. On a composite basis, the frequency distribution of lifespans, and the associated survival curve, were not those of a normally distributed variate. Consideration of statistical procedures for analysis of lifespan information.

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AD04588320
DoD Global Emerging Infections System – Partnering in the Fight Against Emerging Infections, Fiscal Year 2004
ARMED FORCES HEALTH SURVEILLANCE CENTER, SILVER SPRING MD
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3/1/2005
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Not available
AFHSC
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Approved for public release; distribution is unlimited.
Annual rept.
The FY04 DoD-GEIS Consolidated Annual Report presents a description of GEIS-related activities during this, its eighth year of funded operations. Global surveillance for emerging infectious disease threats, timely recognition of and response to outbreaks, together with the key laboratory and communications infrastructure supporting public health are cornerstones of national and global security. Events of 2001 (September 11th, anthrax incidents) continue to resonate; strengthening public health systems to address naturally occurring threats and preparations for bioterrorism are underway in many nations, including the US, and in DoD. The importance of global partnerships in prevention is evident in the world’s success in controlling the SARS outbreak. Originating in China in 2002, it spread globally with 8,088 probable cases directly affecting 28 countries before it came under control. The global economic impact was immense. Avian influenza currently threatens large areas of Asia and national leaders recognize that it may trigger the next influenza pandemic. The vision of DoD-GEIS in the 1998 strategic plan was To Enhance Force Protection and Preventive Defense; communication and coordination have been seen as key to this vision.

AD0661267
MORTUOUS ORGANIC, EPIDEMIOLOGICAL, AND CLINICAL FACTORS IN A STREPTOCOCCAL PHARYNGITIS OUTBREAK AT A NATO MILITARY TRAINING CENTER
DEPARTMENT OF THE AIR FORCE APO NEW YORK 09224 TUSLOG DETACHMENT 36 (LUSA/E)
Norden, John P.; Johnson, Albert L.
10/23/1967
22
 DET-36-TR-67-7
 DET-36
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Approved for public release; distribution is unlimited.
Professional rept.
An explosive outbreak of pharyngitis involving 1954 trainees at the Turkish Army Engineering Training Center, near Izmir, Turkey, between 8 and 14 May 1967, was determined to have been caused by a massive introduction of bacitracin-sensitive, beta-hemolytic streptococci into the three training battalions comprising the center, probably by means of a contaminated food item consumed on or two days before the onset of symptoms. The course of the epidemic may have been influenced by the change from spring to summer weather conditions which occurred between 5 and 9 May 1967, and by the prompt and efficacious chemotherapy administered by the Turkish medical staff.

AD0101839
Targeted next generation sequencing for the detection of ciprofloxacin resistance markers using molecular inversion probes
OHMSTR-Frederick United States
Stefan, Christopher P.; Keel, Jeffrey W.; Minoque, Timothy D.
7/8/2016
22
TR-16-130
Not available
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Approved for public release; distribution is unlimited.
Journal Article
Antibiotic resistance (AR) is an epidemic of increasing magnitude requiring rapid identification and profiling for appropriate and timely therapeutic measures and containment strategies. In this context, ciprofloxacin is part of the first-line of countermeasures against numerous high consequence bacteria. Significant resistance can occur via single nucleotide polymorphisms (SNP) and deletions within ciprofloxacin targeted genes. Ideally, use of ciprofloxacin would be prefaced with AR determination to avoid overuse or misuse of the antibiotic. Here, we describe the development and evaluation of a panel of 44 single stranded molecular inversion probes (MIPs) coupled to next generation sequencing (NGS) for the detection of genetic variants known to confer ciprofloxacin resistance in Bacillus anthracis, Yersinia pestis, and Francisella tularensis. Sequencing results demonstrate MIPs capture and amplify targeted regions of interest at significant levels of coverage. Depending on the genetic variant, limits of detection (LOD) for high-throughput pooled sequencing ranged from approximately 300-1800 input genome copies. LODs increased 10-fold in the presence of contaminating human DNA. In addition, we show that MIPs can be used as an enrichment step with high resolution melt (HRM) real-time PCR which is a sensitive assay with a rapid time-to-answer. Overall, this technology is a multiplexable upfront enrichment applicable with multiple downstream molecular assays for the detection of targeted genetic regions.

AD4091097
The Discrete Asymptomatic Behavior of a Simple Batch Epidemic Process.
FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS
Richard L. Lacayo; N. Lan; Gary; N. A.
7/14/1979
9
AFOSR-TR-80-0994
TR-80-0994
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The framework for sharing and finding resources in a JBI. The framework uses an extensible approach to information authentication and sharing. This approach to resource sharing is motivational. This was initially to be used by the JBI. This is a motivational approach to information authentication and sharing. This approach to resource sharing is motivational.

AD0441200
Implementing an Information Retrieval and Visualization Framework for Heterogeneous Data Types
AF-Force Inst of TECH WRIGHT-PATTERSON AFB OH SCHOOL OF ENGINEERING AND MANAGEMENT
Kowalchuk, Anthony J.
3/1/2003
83
AFOSR-U/GCS/IT/GDS-03
MIT
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A - 01
Approved for public release; distribution is unlimited. Availability: Hard copy only.
Master’s thesis
In today’s information focused world, there is no lack of entities focused on information gathering. However, there is still a widespread epidemic of information starvation in the Department of Defense (DoD). This starvation is attributed to the lack of interoperability between information gatherers and information consumers. To alleviate this problem, the DoD has put forth a vision of a Joint Battlespace Infosphere (JBI). This research proposes a framework for sharing and finding resources in the JBI. The framework uses an extensible metadata specification, agent technology, and the Control of Agent Based Systems (CoABS). It provides several tools for publication and subscription of resources, including a visual query wizard and a visualization of the results. This framework and tools provide visual query capability for the heterogeneous resources within the JBI.
Dynamic Trust Management and Its Application to Secure Routing

Chen, Ying-Ray, Bao, Jin-Fee

9/28/2012 19 ARD-61420-NS-II-1 LARO U A - 01 Approved for public release; distribution is unlimited.

Delay tolerant networks (DTNs) are characterized by high end-to-end latency, frequent disconnection, and opportunistic communication over unreliable wireless links. In this paper, we design and validate a dynamic trust management protocol for secure routing optimization in DTN environments in the presence of well-behaved, selfish and malicious nodes. We develop a novel model-based methodology based on Stochastic Petri Net (SPN) techniques for the analysis of our trust protocol and validate it via extensive simulation. Moreover, we address dynamic trust management, i.e., determining and applying the best operational settings at runtime in response to dynamically changing network conditions to minimize trust bias and to maximize the routing application performance. We perform a comparative analysis of our proposed routing protocol against existing trust-based (SRoD) and non-trust based (PROPHET and epidemic) protocols. The results demonstrate that our protocol is able to deal with selfish behaviors and is resilient against trust-related attacks. Furthermore, our trust-based routing protocol can effectively trade off message overhead and message delay for a significant gain in delivery ratio. Our trust-based routing protocol operating under identified best settings outperforms SRoD and PROPHET, and approaches the ideal performance of epidemic routing in delivery ratio and message delay without incurring high message or protocol maintenance overhead.

The rapid diffusion of information and communication technologies (ICTs) during the last two decades has had a profound impact on all spheres of human endeavors, changes that are collectively referred to as the Information Revolution (IR). But the revolution has been uneven, with some countries being far ahead and others far behind in IR, resulting in the so called digital divide. Laggard countries need means to move ahead if they are to access the benefits that IR offers and not suffer the consequences of being left out. This study identifies stages of IR, classifies countries according to their various stages, and using country-level data, identifies the drivers that are important across stages of IR. This is done at two levels: (1) drivers of diffusion of IR artifacts (short term dynamics) and drivers of the broader IR concept (long term dynamics). This study finds that at lower stages, the factors that drive the information revolution tend to be those that have to do with the development of markets. In the intermediate stages, demand factors are the key drivers. At higher stages, supply factors are the key drivers of IR. Current use level or epidemic effects are the key drivers of the short term diffusion of ICT artifacts. The overriding drivers at all stages seem to be levels of human capital, quality of governance and the extent of urbanization. This analysis unifies long term adoption drivers with short term diffusion drivers to develop a road map that points the way for laggard countries as they ride the information revolution.


POLICY PUBLICATIONS RESEARCH SERVICE ARLINGTON VA

Not available 4/18/1989 41 OSR-TEP-89-007 X0 U A - 01 Approved for public release; distribution is unlimited.

Partial Contents: Leprosy Treatment, HIV, Meningitis, Epidemic Diseases, Hepatitis B, Rabies, Death, Clinical Medicine, Infectious Diseases, Blood Transfusion, Children, Medical Research.
This report describes the methods used by a virology laboratory in a laboratory diagnosis of smallpox during the epidemic which broke out in Poland during the third quarter of 1963.

The report contains details on the methods used for the laboratory diagnosis of smallpox. It includes information on the virology laboratory in Gdansk, the Army Biological Labs in Frederick, MD, and other relevant institutions involved in the diagnosis process. The report also discusses the epidemiological and medical aspects of the smallpox outbreak, including the methods used for identifying and isolating the virus.

The information provided in this report is valuable for understanding the historical context of smallpox diagnosis and the role of virology laboratories in public health response to infectious diseases. It serves as a reference for professionals in virology, microbiology, and public health, as well as for historians and scientists interested in the history of medicine and epidemiology.

The report is part of a series of documents that cover various aspects of smallpox, including its history, diagnostic methods, and the impact of the disease on public health. These documents provide a comprehensive overview of the challenges and advancements in the field of virology and public health during the time of the smallpox epidemic.
The Pandemic Influenza Policy Model: A Planning Tool for Military Public Health Officials

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Dengue is characterized by fever, rash, severe headache, and joint pain. Its mortality rate is low. However, over the past few decades, a more severe form of dengue, characterized by hemorrhage and shock has been observed with increasing frequency in children and young adults. This severe form of dengue has a high mortality rate. Despite years of intensive research, an effective vaccine is still not available for prevention of dengue infection. For these reasons, research on dengue viruses and development of safe and effective vaccines have been given a high priority by the World Health Organization. The United States enters the 21st Century facing many challenges and threats. Several commissions, such as the US Commission on National Security/21st Century, cite a myriad of threats including ballistic missiles, cyber-attacks against our infrastructure, attacks using conventional weapons and attacks using weapons of mass destruction (WMD). With the exception of thermonuclear war, the threat posing the greatest risk to the U.S. is a biological attack on the homeland. It is the only other one that can threaten our national survival because of its potential catastrophic results. The threat of a bio-attack is very real. The capability of nation states and terrorists to acquire, cultivate, and disseminate pathogens is widespread. Past events and present knowledge indicate that nations and terrorists possess the intent to use such weapons. The decline of the U.S.’s public health system leaves it unable to respond to a large natural epidemic, much less an intentional one, and further suggests a vulnerability to a bio-attack greater than anytime in recent history. Both the Administration and Congress have taken well-intentioned piecemeal actions to address this threat, but none reflect a comprehensive strategy. The contradictory laws and directives result in redundancies, inefficiencies, a waste of money, and confusion among federal, state, and local authorities responsible for responding to a bio-attack. The lack of a comprehensive national security strategy countering a bio-attack on the homeland places U.S. citizens, the very core of our national vital interests, and the nation itself at great peril. This paper assesses the credibility of the bio-threat to the U.S. homeland, reviews and assesses past Government actions to address the threat, and offers suggestions to establish a comprehensive and coherent national strategy to counter such a threat.
Melanoma: A Decision Analysis to Estimate the Effectiveness and Cost-Effectiveness of Screening and an Analysis of the Relevant Epidemiology of the Disease

**Title:** ADA412148

**Authors:** Beddingfield, Frederick C., III

**Institution:** RAND CORP SANTA MONICA CA

**Abstract:**

Much has been written about the epidemic of melanoma in the United States and elsewhere in the world. Often debate has centered on the causes and consequences of recent epidemiological trends and even whether there truly has been an epidemic. Skin screening examinations by visual inspection are thought by many to be a reasonably simple, minimally invasive means by which melanoma morbidity and mortality could be reduced. However, some actually see increased melanoma screening as one of the causes of an apparent, though not real epidemic. Surprisingly few studies on effectiveness or cost-effectiveness of melanoma screening are available to guide policy makers on decisions regarding screening and thus there is little consensus among various groups regarding recommendations for such screening. This dissertation’s main goal was to estimate the effectiveness and cost-effectiveness of melanoma screening from the best available data. The effectiveness and cost-effectiveness of melanoma screening were estimated using a decision analysis model. The reference case model represented outpatient screening for melanoma Using visual inspection of the skin by dermatologists in 1998 in a self-selected, higher-than-average-risk population by incorporating data from the American Academy of Dermatology (AAD) screenings and the National Cancer Institute’s Surveillance and Epidemiology End Results (SEER) with estimates from the literature. The AAD screening results were compared to the SEER usual care from the societal perspective and the results were reported as cost per year-of-life-saved (YLS). Other hypothetical cases targeting populations by age and gender were analyzed. A sensitivity analysis was performed to examine the influence of varying key estimates on the cost-effectiveness.

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This Intelligence Community Assessment (ICA) highlights the rising HIV/AIDS problem through 2010 in five countries of strategic importance to the United States that have large populations at risk for HIV infection: Nigeria, Ethiopia, Russia, India, and China. The paper does not attempt to make aggregate projections about global trends. The five countries were selected because they are among the world’s most populous countries, together representing over 40 percent of the world population; in the early-to-mid-stages of an HIV/AIDS epidemic; and led by governments that have not yet given the issue the sustained high priority that has been key to stemming the tide of the disease in other countries. This paper builds on the December 1999 unclassified National Intelligence Estimate, The Global Infectious Disease Threat and Its Implications for the United States.

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This final technical report summarizes the research activities and technical results produced by SRI International for the ONR research project. The key objective of this project is to develop a principled approach toward understanding the structural and dynamic properties of large-scale malware pandemics in the Internet. In particular, there is an emphasis on studying the structural properties (network address translation (NATs), proxies, dynamic host configuration protocol (DHCP) effects) and dynamic properties (pandemic evolution), and how these properties evolve during the different phases of a malware life cycle. We conducted an in-depth reverse engineering of the peer-to-peer (P2P) protocol of Conficker and published this in the form of a web report [28]. Our efforts toward developing new techniques for tracking the structural properties of the Conficker population (such as percent of NAT and DHCP hosts) and building epidemic models for predicting the long-term influence of worms such as Conficker are detailed in this report.
Connectivity and Resilience in Large-Scale Mobile Wireless Networks

NORTHEASTERN UNIV
BOSTON MA

Yeh, Edmund M.

9/12/2012 9

AFRL-OSR-VA-TR-2012-1075

TR-2012-1075,AFRL-OSR-VA

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Final rept. 1 Mar 2009-30 Nov 2011

This project has supported the analysis and design of large-scale mobile wireless networks for Air Force applications, including information dissemination algorithms for fixed wireless and mobile wireless networks, energy management algorithms for sensor networks, resilience of wireless networks to virus epidemics, network coding capacity of wireless networks, coding for mobile wireless networks, polar coding for multiple-access networks, and the capacity of wireless relay networks. The project has supported the education and research activities of a postdoctoral fellow and a graduate student.

The 2009 H1N1 Swine Flu Outbreak: An Overview

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CONGRESSIONAL RESEARCH SERVICE

Lister, Sarah A., Redhead, C. S.

4/30/2009 16

CRS-R40554 CRS/DC

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Approved for public release; distribution is unlimited.

Congressional Report

Worldwide Report, Epidemiology, No. 327

UNITED STATES DEPARTMENT OF COMMERCE

Not available 8/10/1983 71

JPRS-84086 XD

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Approved for public release; distribution is unlimited.

Not available

Partial Contents: Epidemiology, Human Diseases, Health, Malaria, AIDS, Homosexual Male, Medical Administration, Rabies, Tuberculosis, Encephalitis Statistics, Gastroenteritis, Mystery Diseases, Children, Epidemics, Chickenpox, Measles, Eye Diseases, Dengue Fever, Infection, Meningitis, Death, Cancer, Children's Hospitals, Medical Supplies, Medical Equipment, Anthrax, Pneumonia Cases, Food Shortages, Herpes, Youth, Gonorrhea, Typhoid, Cholera, Leptosy Treatment.

Connecting the Dots: How U.S. Global Health Programs Can Improve International Health Regulation Compliance

NAVAL POSTGRADUATE SCHOOL MONTEREY CA DEPT OF NATIONAL SECURITY AFFAIRS

Wesley, Brad A.

12/1/2014 127

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Master's thesis

With a 2012 deadline, the majority of the World Health Organization (WHO) member states failed to achieve the legal obligations mandated under the International Health Regulations (IHR) of 2005. This lack of compliance coincides with the increased recognition of the threats posed by pandemics and infectious diseases. As the largest contributor of foreign global health assistance, the United States can serve an instrumental role in supporting global IHR compliance. This thesis analyzes, by U.S. government agency, which current global health programs and efforts align to the core capacities WHO member states are required to develop per the IHR. The agencies analyzed are the United States Agency for International Development, the U.S. Department of Defense, and the Centers for Disease Control and Prevention. As indicated in this thesis, all three agencies have cross-cutting efforts to assist WHO member states; however, four key programs align greatly to specific IHR core capacities. Moving forward, decision makers can utilize these key U.S. global health programs to address WHO member states core capacity deficiencies in surveillance, response, laboratory, and human resources. Finally, recommendations are given to address IHR monitoring and reporting, as well as gaps in critical core capacities and U.S. global health programs.

Sub-Saharan African Military and Development Activities

AFRICAN INSTITUTE FOR SECURITY STUDIES SENGAL

Diop, Brame

12/1/2011 12

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Journal Article

For the last two decades, African states have been facing more internal threats than external ones. In fact, the African continent is now dealing with ethnic-based conflicts, poverty, health issues, hunger, and, most recently, radicalization and violent extremism. In summary, security challenges throughout Africa have evolved in nature and are a lot more complex. In the health domain, for example, Africa has been decimated by multiple epidemics and pandemics, notably tuberculosis, malaria, and HIV/AIDS. For HIV/AIDS, sub-Saharan Africa alone is home to more than 22.5 million people infected with the disease, which is two-thirds of the total for the entire planet. Not only is the rate of infection high, but the quality of treatment has been woefully low. In 2009, 1.3 million Africans died from AIDS, while another 1.8 million became infected. Even though the rate of infection has been steadily declining in recent years, the situation remains dire, and its impact is felt throughout all sectors of African life, from education and agriculture to the general economic well-being of the African states.
DISTRIBUTED MEDICAL INTELLIGENCE LLC
WASHINGTON DC

Distributed Medical Intelligence (DMI): Disaster and Preparedness - From Hurricanes to Infectious Disease. Held in New Orleans, Louisiana on 19-21 April 2006 (DVD)

Maiolo, Lori

DISTRIBUTED MEDICAL INTELLIGENCE LLC
WASHINGTON DC

Explain how the principles of distributed medical intelligence can improve community readiness and situational awareness during disasters.

Cold-Chain Logistics: A Study of the Department of the Defense OCONUS Pre-Pandemic Influenza Vaccine Distribution Network

Jones, Daniel, Tecmire, Christopher

NAVAL POSTGRADUATE SCHOOL MONTEREY CA

Explain how cold-chain logistics can be used to distribute pandemic influenza vaccines effectively.

A National Model for Diabetes Prevention and Treatment Program in Civilian and Military Beneficiary Populations (FY07)

Barnes, Barbara, Simmerio, Linda, Linner, Kaye, Kitiska, Andrea, Storti, Kristen, Kanter, Justin

PITTSBURGH UNIV MEDICAL CENTER PA

Explain how a comprehensive, evidence-based approach can be used to prevent and treat diabetes in civilian and military populations.
We consider the problem of sampling a node-weighted graph. The objective is to infer the values of all nodes from that of a minimum subset of nodes by exploiting correlations in node values. We first introduce the concept of information dominating set (IDS). A subset of nodes in a given graph is an IDS if the value of these nodes is sufficient to infer the information state of the entire graph. We focus on two fundamental algorithmic problems: (i) how to determine whether a given subset of vertices is an IDS (ii) how to construct a minimum IDS. Assuming binary node values and the local majority rule, we show that the first problem is co-NP-complete and the second problem is NP-hard in a general network. We then show that in acyclic graphs, both problems admit linear-complexity solutions by establishing a connection between the IDS problems and the vertex cover problem. For general graphs, we develop algorithms for solving both problems based on the concept of essential differential set. These results find applications in opinion sampling such as political polling and market survey in social-economic networks, and inferring epidemics and cascading failures in communication and infrastructure networks.

We consider the effects of noise on a model of epidemic outbreaks, where the outbreaks appear randomly. Using a constructive transition approach that predicts large outbreaks prior to their occurrence, we derive an adaptive control scheme that prevents large outbreaks from occurring. The theory is applicable to a wide range of stochastic processes with underlying deterministic structure.

When will a message go viral? This is one of the most important questions one can ask when analyzing and trying to understand social media. Our one-year AOARD project tackles this question from two perspectives: understanding individual user preferences, and understanding message popularity from collective user behavior. Our work focuses on building models that predict user behavior and overall popularity. In addition, we also present and analyze observations that explain such behavior from content characteristics and social interactions.

This thesis develops a mathematical model to explore epidemic spread through the Ground Combat Element (GCE) of the Marine Expeditionary Unit (MEU). The model will simulate an epidemic caused by a biological attack using an agent that has the ability to spread through person-to-person contact (small pox hemorrhagic fever, etc.). A stochastic modeling process will be used along with widely accepted mathematical formulas an SEIR (Susceptible-Exposed-Infectious-Removed) epidemic model. A heterogeneous population composed of numerous homogenous subgroups with varying interaction rates simulates the unique structure of military combat units. The model will be evaluated to determine which units facilitate the most rapid spread of the epidemic. The model will then test a number of different scenarios to determine the effects of varying quarantine techniques, vaccination strategies and protective postures on the spread of the diseases.
Bacterial skin infections in the tropics are the predominant cause of dermatological disease in civilians and are directly related to temperature, humidity, exposure, and living conditions. Substandard housing and poor hygiene, biting and vector insects contribute to high rates of infection. Tropical skin infections are usually streptococcal. In military populations, personnel on field operations are at highest risk. Support troops, even in the tropics, have a much lower incidence of streptococcal pyoderma. Currently available deodorant soaps do not prevent skin infections, but chlorhexidine gluconate looks promising. Epidemic furunculosis is related to close social contact, and may be more common than most physicians realize. Early treatment with antibiotics plays a significant role in prevention of new furuncles among contacts. Antibiotic resistant strains of bacteria pose new problems in cutaneous microbiology. Severe fungal infections of the skin may attack up to 70% of military personnel on hot humid environments. Occlusion is the most significant factor, and appears to be related to accumulation of CO2 under damp clothing. Combined therapy of tinea corporis/cruris with topical miconazole hydrocortisone is highly effective. Hydrocortisone alone makes these infections worse in the tropics. Topical clotrimazole is effective in the treatment of dermatophytosis, but tinea pedis is difficult to treat and usually recurs.

Epidemics are a recognized threat to national security. It is assumed that an epidemic can lead to war. Epidemics threaten national security by impacting the economic, political, and social aspects of national power. The AIDS epidemic in Sub-Saharan Africa bears stark witness to the magnitude of this threat. It also offers the opportunity for prospective study of the phenomenon of antibiotic resistance, bringing to light the magnitude of the threat both to national security and deployed forces.

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In 2004, Congress passed the Project BioShield Act (P.L. 108-276) to encourage the private sector to develop medical countermeasures to chemical, biological, radiological, and nuclear (CBRN) terrorism agents and to provide a novel mechanism for federal acquisition of those newly developed countermeasures. Although some countermeasures have been acquired through this law, Congress continues to address several Project BioShield-related policy issues. These include whether to continue diverting Project BioShield acquisition funding to other purposes; whether to change the countermeasure development and acquisition process; how to replace stockpiled countermeasures as they expire; and whether to alter federal efforts to encourage the development of broad-spectrum countermeasures. This law provides three main authorities: (1) relaxing regulatory requirements for some CBRN countermeasure research and development; (2) permitting terrorism-related spending, including hiring personnel and awarding research grants; (3) permitting emergency use of unapproved countermeasures. The Department of Health and Human Services has also employed the emergency use authority several times, including during the 2009 H1N1 influenza pandemic. The HHS has also employed the emergency use authority several times, including during the 2009 H1N1 influenza pandemic. The Tanzania Peoples Defense Forces (TPDF) like any other institution in Tanzania has been experiencing an increase in the burden caused by HIV/AIDS pandemic. Like all uniformed services in the world, the incidence and prevalence of HIV/AIDS is expected to be higher in this institution compared to that in the civilian population. The TPDF medical services support a total of over 30,000 enlisted personnel and their dependents and civilians living in the communities around the military health facilities. TPDF hospitals do not only serve military personnel and their dependents, but also civilians living in the vicinity of the health facilities. In March 2002, Lugulus, the National Military Referral Hospital in Dar es Salaam started one of the first ART programs in Tanzania, with support of PharmAccess. Care and treatment services at Lugulus have expanded with EP funds since 2004. With FIDS and FY06 funds PAI and TPDF have managed to organize a comprehensive HIV/AIDS prevention program, counseling and testing, PMTCT and care and treatment services in eight military hospitals (Lugulus, Mibali, Mawana, Mvunga, Mvesa, Ruvumu, Mirambo, Bububu) and additional six military health centers. All military hospitals and health centers, except Lugulus, Mawana and Mbuluzi, where the Program has been initiated were in a more or less dilapidated state and medical and administrative staff was not prepared for HIV/AIDS services. Renovation of rooms for VCT, PMTCT, Care and Treatment and HIV/TB services, laboratory and pharmacy space and seating areas was and is unequa-pro for every new facility in the Program.
The 1918 influenza pandemic serves as a poignant reminder of how devastating influenza can be. Its ability to generate enormous numbers of casualties, probable travel restrictions, and affects on civilian support infrastructure poses a serious threat to military operations. More recently, in 1996, a United States ship of the line was taken out of service and forced into a foreign port for 2 days while waiting for enough crew members to recover before resuming normal operations. In light of this threat, the U.S. Department of Defense (DoD) maintains a globe-gridding influenza surveillance system, seeking to identify antigenic shifts and drifts at the earliest possible moment. Frighteningly, the threat is not limited to influenza. Emerging infectious diseases such as the Severe Acute Respiratory Syndrome (SARS) coronavirus and, possibly, biological warfare agents loom ahead. The early stages of many of these infections resemble influenza and are often categorized as influenza-like illnesses (ILI). Given these threats, there has been a concerted effort to adapt existing surveillance systems to provide near-real-time surveillance that could identify covert attacks involving biological agents or the emergence of new respiratory pathogens as well as improve the DoD’s capabilities to monitor naturally occurring influenza.
Insurrection Act Restored: States Likely to Maintain Authority over National Guard in Domestic Emergencies

Beckler, Mark M.

5/22/2008

78

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OSAGSSC/SAMS

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Monograph

Before 2006, the President had multiple legal bases available to authorize his use of federal military forces in a variety of law enforcement and natural disaster circumstances. Nevertheless, Congress amended the Insurrection Act in 2006 to create the Enforcement of the Laws to Restore Public Order. This statute stirred controversy as it arguably represented an unwarranted expansion of Presidential power. Additionally, while the statute attempted to address the kind of lawlessness seen in New Orleans immediately following Hurricane Katrina in 2005, the provision arguably offered no improvement over the Insurrection Act in instances of lawlessness or the Stafford Act in instances of disaster. Without ever having been invoked, and in the face of strong opposition, the Enforcement of the Laws to Restore Public Order was repealed on January 28, 2008 and the previous Insurrection Act was restored. This monograph reviews the Enforcement of the Laws to Restore Public Order statute and concludes that it was prudent to repeal this legislation. Moreover, author recommends that future laws and policies to improve disaster response across the whole-of-government and the private sector should be consistent with the principles in the 2008 National Response Framework, which advocates tiered response rather than a primarily federal response in most instances. The rare instances of catastrophic disaster that might require the President to shortcut tiered response and assume federal control at the outset of the situation should be clearly defined in law.
Rickettsia prowazekii, the causative agent of epidemic typhus, has been responsible for millions of human deaths. Madrid E is an attenuated strain of R. prowazekii, while Breinl is a virulent strain. The genomic DNA sequence of Madrid E has recently been published. To study the genomic variations between Madrid E (reference) and Breinl (test) DNAs, cohybridization experiments were performed on a DNA microarray containing all 834 protein-coding genes of Madrid E. Of the 834 genes assessed, 24 genes showed 1.5-to 2.0-fold increases in hybridization signals in Breinl DNA compared to Madrid E DNA, indicating the presence of genomic variations in ~3% of the total genes. Eighteen of these 24 genes are predicted to be involved in different functions. Southern blot analysis of five genes, virB4, ftsK, rfbE, lpxA, and rpoH, suggested the presence of an additional paralog(s) in Breinl, which might be related to the observed increase in hybridization signals. Studies by real-time reverse transcription-PCR revealed an increase in expression of the above-mentioned five genes and five other genes. In addition to the elevated hybridization signals of 24 genes observed in the Breinl strain, one gene (rp084) showed only 1/10 the hybridization signal of Madrid E. Further analysis of this gene by PCR and sequencing revealed a large deletion flanking the whole rp084 gene and part of the rp083 gene in the virulent Breinl strain. The results of this first rickettsial DNA microarray may provide some important information for the elucidation of pathogenic mechanisms of R. prowazekii.
The overall goal of this report is to improve understanding of public responses to domestic threats. Project 1 focuses on pandemic influenza and dirty bomb threats, aiming to understand the role of emotions in anticipated behavioral responses. Project 2 examines a situation in which people are evacuated from a community to avoid exposure to radioactive fallout from an upwind nuclear explosion. This project aims to understand the factors that affect people's decisions about how long to wait until returning to their homes, given the gradual decline in radiation levels resulting from radioactive decay. First, the authors present an overview of each problem using models that summarize scientific knowledge. The models use logic of influence diagrams with nodes that reflect relevant variables affecting risk, and mitigating it, and links showing how they are connected. The models differ from traditional risk models because they include emotional and behavioral components that affect how a risk event unfolds. The Project 1 models focus on the interplay between emotional and behavioral responses to domestic threats, particularly fear and anger. The model for Project 2 focuses on the health, social, and economic factors that may affect people's decision to return to a community with residual radiation levels that elevate cancer risk. Second, they report on surveys of Canadian and U.S. participants based on these models. For Project 1, they found that, independent of anger and trait emotions, fear was related to seeing more risk of morbidity and mortality, and predicting less resilience, more compliance with mitigation strategies, and higher likelihood of being absent from work in the case of pandemic influenza. For Project 2, they found that people's decision to return were affected by the cancer risk of radioactive fallout as well as the availability of free housing in the evacuation zone.
| ADA461979 | Project Vanguard Diabetes Management Project | GEORGETOWN UNIV WASHINGTON DC | Mun, Seong K. | 10/1/2005 | 24 | Not available | USAMRICDC | U | A - 01 | Approved for public release; distribution is unlimited. |
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**ADA461979**

The objective of this research is to exploit the findings of Project Vanguard Phase I and II to produce more robust scientific tools for graded alerting of transnational biological threats using Venezuelan Equine Encephalitis (VEE), a mosquito borne viral disease, as a case study. These new tools will play an essential role in future research and contribute to advancing TATRC’s mission in the use of Indications and Warnings (I&Ws) biosurveillance for biodefense. Indications and Warnings (I&Ws) potentially alert U.S. responders of an imminent foreign bioevent weeks to months in advance. I&Ws are markers occurring globally outside of U.S. borders, before an outbreak can affect U.S. interests, forces or domestic territory, thus allowing the U.S. time to respond. In effect, I&Ws can prime the national response infrastructure by alerting agencies of an evolving threat that could ultimately be highly disruptive or catastrophic. Venezuelan equine encephalitis (VEE) virus is a zoonotic, mosquito-borne, viral disease affecting humans and equines where equines serve as amplifying hosts. It is an RNA alphavirus of the Togaviridae genus that is serologically classified into six antigenic subtypes: I-VI and six varieties: A, AB, C, D, E, F (1). Epizootic/epidemic type IAB and IC are the only subtypes associated with significant human and equine outbreaks (1,2). VEE has caused periodic outbreaks in humans and equines in Latin America since the early 1920s. Considering that epizootic VEE has not been diagnosed or isolated in the United States since 1971, there are concerns that VEE would make an effective bioterrorist agent (1,3,4). VEE is considered an incapacitating agent rather than a lethal agent such as anthrax or plague. Past outbreaks have suggested that a low infective dose is necessary for transmission (4,5).

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This Intelligence Community Assessment (ICA) highlights the evolution of Severe Acute Respiratory Syndrome (SARS) and the potential implications of the disease for the United States under future scenarios. Even though SARS has infected and killed far fewer people than other common infectious diseases, it has had a disproportionately large economic and political impact because it spread in areas with broad international commercial links and received intense media attention as a mysterious new illness that seemed able to go anywhere and hit anyone. As the first infectious disease to emerge as a new cause of human illness in the 21st century, SARS underscores the growing importance of health issues in a globalized world. The future course of SARS will depend on a host of complex variables, making forecasting difficult. We constructed three scenarios to highlight various challenges that SARS might pose in the future. Scenario 1: SARS could resurface this fall but be limited to random outbreaks in a few countries, rendering it more of a public health nuisance than a crisis. Rapid activation of local and international surveillance systems would be key to containing the spread. Scenario 2: SARS could spread to poor countries in Africa or Asia, potentially generating more infections and deaths than before, but with relatively little international economic impact. The risk of spread would continue, however, even if SARS emerged in poor countries or isolated regions of Russia and China with weak health care systems. Scenario 3: SARS could come back this fall in the places it hit before — such as China, Taiwan, Canada, and Singapore — or hit harder in other well-connected places like the United States, Japan, Europe, India, or Brazil. Even if the number of infected persons were not significantly greater, the resurgence of the disease in globally linked countries probably would generate a significant impact again.
The pronounced change in haemolytic activities observed on examining cholera isolates from different geographical areas in the Far East during 1961-64 makes it apparent that this single biochemical activity is not a reliable criterion for the separation of a biotype or subspecies of vibrio. Furthermore, the measurement of haemolytic activity is a problem of degree and may vary with different laboratories depending upon the availability or selection of media and adherence to the physical requirements of the test procedures employed. Also, it appears doubtful that any reliable epidemiological data can be derived because of the variable results obtained from serial cholera admissions occurring in the same epidemic area. The complete agreement obtained throughout the past three years with the haemagglutination and phage sensitivity tests provides two excellent methods for the rapid differentiation between the classic cholera vibrios and the vibrios isolated recently in the Far East. The rapidity and simplicity of the chicken cell agglutination test make it suitable for field work or for use by laboratories with limited facilities.

The future geo-strategic implications of the HIV/AIDS crisis in South Africa

South Africa is identified by the United States as an anchor country and a benchmark example of democratic reform and economic success. However, while serving as an example for regional countries on progressive success towards economic political and democratic reform, South Africa is struggling with a significant underlying problem that if not resolved could result in the country becoming a failed state: the HIV/AIDS epidemic. The purpose of this paper is to evaluate United States policy and interests towards South Africa and determine its relevance in preventing the regionally destabilizing humanitarian crisis threatened by the pervasive effects of the HIV/AIDS epidemic on the country. This paper additionally examines the costs, risks, and future geo-strategic implications of the HIV/AIDS crisis on South Africa if adequate resources are not programmed and initiatives are not implemented to immediately resolve the crisis.

Molecular Pathogenesis of Rickettsioses and Development of Novel Anti-Rickettsia Treatment by Combinatorial Peptide-Based Libraries

The purpose of this study is to utilize adaptin libraries coded within pantropic retroviral vectors that confer protection against rickettsial pathogens and to study the molecular pathogenesis of rickettsioses. The following specific aims were proposed: 1) To establish heterogeneous cell populations, with each cell expressing a unique member of a complex combinational peptide-based (e.g., adaptin) library and challenge with R. prowazekii, R. rickettsii, and O. tsutsugamushi; 2) To determine the role of NF-κB, cytokines, ROS and NO in intracellular killing of rickettsia-infected monolayers containing adaptins; and 3) To characterize signal transduction pathways modulating the cytoskeletal events responsible for the increased vascular permeability. During the third year of the project, rickettsial challenges performed with the transfected rat derived microvascular endothelial cells and the human brain primary microvascular endothelial cells were somewhat disappointing. Expansion of the resistant colonies was not possible. Two other human microvascular endothelial cell lines were acquired (cerebral and dermal). These cell lines are far more susceptible to rickettsial infection than their predecessors. We have transfected successfully both cell lines with the adaptin-containing retroviral vectors and ‘resistant colonies’ were obtained after three consecutive challenges. However
The purpose of the monthly scanning reports is to assess worldwide environment-related events in order to identify and analyse issues that might trigger future international environmental regulations and/or modifications to the existing ones with potential implications for the military. Environmental security continues to move up on national, regional, and international agendas due to increasing scientific evidence of climate change, extreme weather events, the number and intensity of natural disasters, pollution, potentials for pandemics, and nuclear- and biological-chemical threats. The Army Strategic on the Environment reflects this new direction. Calls for improving international environmental governance are increasing. The technological ability to identify environmental threats and crimes is becoming cost-effective through new sensors and communications. The UN Security Council and other international bodies are expected to pay more attention to problems of environmental security. Environmental damages that people and organizations get away with in the past are less likely to escape detection and punishment in the future. Environmental diplomacy is increasingly being used to support conflict prevention efforts and to build international confidence, while human security is gaining recognition in both military and diplomatic circles. Environmental security is a link between the two.

Most wheat varieties growing in the vicinity of Hays, Kansas, are susceptible to races of 
Puccinia graminis f. sp. tritici that are common in central United States. However, they are 
not favorable for establishment and development of stem rust. In 1960 to 1965 the 
epidemiology of stem rust was studied at Hays in fields of Cheyenne wheat inoculated with 
urediospores of race 56 when the plants were in tillering to boot stages of growth. Infection 
occurred in all 6 years. Rust increase was related to the frequency of days when conditions 
were favorable for infection. Plots with initial intensities of 2.5 to 20 pustules per 100 culms 
were compared. In the 6 consecutive years (1960 to 1965) severities at soft dough stage were 
about 30, 25, 7, 2, 2, and 20%; yields for rusted plots were 20, 19, 25, 34, 22, and 18 bu/acre;
and yields for adjacent control areas were 46, 29, 35, 29, and 62 bu/acre, respectively. In 
1965, a natural epidemic of stem rust caused severe damage to wheat in Kansas and 
Nebraska. In 1965, the crop ripened late in the season. In 5 of the 6 years, weather was 
favorable for rust epidemics. Late natural infection appeared to be the primary factor limiting 
severity of the rust epidemics.
The Drug Rehabilitation Center at Miramar, California, was established in June 1971 in order to meet the needs of this heterogeneous population. These programs are designed to address the social behavior before and during their military service. Five distinct therapy programs were established in response to acute concern with the epidemic of drug abuse, including heroin use, that developed in Southeast Asia during 1970-1971. The population received during the first year included many men who had become addicted to heroin and large numbers of polydrug users. A large proportion of this Miramar population had records of delinquency and anti-social behavior before and during their military service. Five distinct therapy programs were established in order to meet the needs of this heterogeneous population. These programs are described, and the problems encountered and progress achieved during the first year of operation are described. (Author Modified Abstract)

Volunteers (11.1%) presenting with influenza-like illness. Influenza A (H1N1 and H3N2) and B viruses were detected at all sites. Peak prevalence tended to coincide with the respective rainy seasons, regardless of location. In light of the recent epidemic of severe acute respiratory syndromes, continued influenza surveillance would be useful in strengthening the infrastructure of the Indonesian public health system.

The Drug Rehabilitation Center at Miramar, California, was established in June 1971 in order to meet the needs of this heterogeneous population. These programs are designed to address the social behavior before and during their military service. Five distinct therapy programs were established in response to acute concern with the epidemic of drug abuse, including heroin use, that developed in Southeast Asia during 1970-1971. The population received during the first year included many men who had become addicted to heroin and large numbers of polydrug users. A large proportion of this Miramar population had records of delinquency and anti-social behavior before and during their military service. Five distinct therapy programs were established in order to meet the needs of this heterogeneous population. These programs are described, and the problems encountered and progress achieved during the first year of operation are described. (Author Modified Abstract)
Evidence for the Spread of the Human Immunodeficiency Virus Epidemic into Low Prevalence Areas of the United States

WALTER REED ARMY INST COMMAND RESEARCH AND OPERATIONS WASHINGTON DC

Gardner, Jr., Lytt L.; Branchage, John F.; Burke, Donald L.; McNeil, John St.; Vintze, Robert; Miller, Richard N.

1/1/1989 13 Not available WRAR U A-01 Approved for public release; distribution is unlimited. Final rept. Reports of an increased proportion of AIDS cases occurring in small medium-sized cities suggest that the HIV epidemic may be spreading into locations that were previously characterized by their low HIV antibody prevalences. Studying the question of the geographic spread of the HIV infection epidemic (rather than the AIDS epidemic) has been difficult largely because most serial seroprevalence data have been gathered from cohorts of high risk individuals (e.g., homosexual, bisexual cohorts) in New York City, San Francisco, and other geographically circumscribed areas. The U.S. military applicant HIV screening data were used in the current report to examine rates and 24 month temporal trends in geographic areas characterized by their HIV endemities. The data examined concern the seven most populous states and four hyperendemic metropolitan areas located with those states (New York City, Miami, Houston, and San Francisco). In the nonepidemic regions, seroprevalence rates increased among black and white applicants. Reprints.

Extending the Phase Zero Campaign Mindset

UNITED STATES NAVY COMMAND APO NEW YORK 09128

Galvin, Thomas P.

1/1/2007 7 Not available SECGOM U A-01 Approved for public release; distribution is unlimited. Journal article The above statement succinctly explains the central purpose behind Theater Security Cooperation (TSC) programs. In the U.S. European Command (USEUCOM) area of responsibility (AOR) alone, there exist dozens of nations whose stability is in serious question and whose problems affect not only surrounding nations but also the AOR as a whole. For example, ungoverned and misgoverned areas in Africa are providing safe havens for transnational terrorists and organized criminal elements seeking to attack U.S. properties and interests. Armed conflict is severely destabilizing, and often it arises from factors such as poor governance and struggles for power, endemic corruption, limited economic opportunities, long standing practices and traditions that violate human dignity, and humanitarian problems such as drugs, pandemic disease, HIV/AIDS, severe drought, or famine.

User’s and Operator’s Manual for the Local and Aggregate Total Emergency Health Care System Models. Volume II

RESEARCH TRIANGLE INST DURHAM N C RESEARCH AND OPERATIONS RESEARCH AND ECONOMICS DIV

Puchta,John N.; Lytle, Russell O.; Jr.,Joklin,Gerald M.; Anderson, Helen S.

10/1/1970 179 RTI-DC-AD07-Ver Not available U A-01 Approved for public release; distribution is unlimited. Final rept. Jun 68-Oct 70. The purpose of this volume, is to provide the detailed instructions required to use the eight computer programs developed under this study. As reported in Volume I, two models were designed to assist medical preparedness planners in analyzing postattack health consequences. One of these models, the Aggregate Total Emergency Health Care System Model (the Aggregate Model), can be applied in the study of health related problems at the ODC area, state, ODC regional, or national levels. The other model, the Local Total Emergency Health Care System Model (the Local Model), is designed for single locality studies; i.e., any geographic area in which detailed results are desired for each Standard Location Area (SLA). The Local and Aggregate Models, although differing considerably in logic flow, are of similar design in that each consists of two submodels or programs that provide essentially the same type of output for their respective geographic areas: (1) an Immediate Effects Submodel that covers the period (days 0 through 30) during which the medical effort is directed toward improving the progress of the immediate weapon effects injuries, and (b) a Communicable Disease Submodel that covers days 31 through 365 and is directed toward prevention and cure of disease epidemics. These programs were designed as separate modules in order to save computer time while providing flexibility with regard to varying option parameters within each program without having to rerun all four programs. (Author)

Original Reprints

NHC Update. Issue Number 5-5

NAVAL RESEARCH CENTER NAV AL DIESGO CA

Not available 4/1/1997 21 Not available NHRC U A-01 Approved for public release; distribution is unlimited. Bulletins for Mar 96-Apr 97. CAPT Stephanie Brodie and her colleagues, including Dr. Frank Garland and Stan Bo from NHRC, and researchers from Walter Reed Army Institute of Research Retrovirology Lab, identified the first cases of U.S. natives infected with the HIV strains causing the African and Asian epidemics. This study, published in the November 5, 1995 issue of Lancet, used new state-of-the-art laboratory techniques to identify the specific strains or subtypes of HIV. In the U.S. and Europe, nearly all of the HIV viruses are subtype B, whereas the predominant subtypes in Africa are A, C, and D. Subtype E predominates in Thailand. Differentiating HIV subtypes may have important implications in vaccine development, HIV diagnosis, and the epidemiology of the epidemic. Given the wide dispersal of HIV-1 subgroups internationally and the routine occurrence of international travel, it seems inevitable that strains other than subtype B eventually will spread in the USA. NHRC is in a unique position to address the question of the introduction of these divergent HIV subtypes into the U.S. as our HIV Central Registry allows identification of recently acquired HIV infections and our powerful databases enable tracking of personnel and their ships' movements.
### Anticipating Viral Species Jumps: Bioinformatics and Data Needs

**Authors:** Flanagan, Meg L., Leighton, Terrance J., Dudley, Joseph P.

**Date:** 6/1/2011

**Summary:**
Viral species jumps (also called host jumps) occur when a virus acquires the ability to infect and spread among individuals of a new host species. Historical examples of animal viruses that jumped into human hosts include HIV, SARS coronavirus and influenza A virus. Globally, these viruses have exacted high socioeconomic and health costs. The ability to predict viral species jumps can reduce such costs by enabling swifter outbreak mitigation strategies and prevention of initial or secondary human infection. Currently, most emerging infectious disease surveillance efforts seek the ecological drivers behind spillover events - factors like climate, land use and population migrations driving infections that do not spread between humans. By contrast, we focus here on the evolutionary drivers behind species jumps - the genetic changes over time driving infections that spread efficiently among humans. We see an opportunity to apply field surveillance and laboratory data to better understand how viral species jumps occur. There are publicly available extant data that can be marshaled. To build a mechanistic framework of understanding, data must be integrated and accessible to users for analysis and modeling, as well as formulation and testing of hypotheses. In short, bioinformatics must be applied. To that end, the Defense Threat Reduction Agency’s Advanced Systems and Concepts Office hosted a workshop that gathered computational biologists and information scientists to explore the types of data needed, the computational methods required, and suitable platforms to share information among interdisciplinary stakeholders.

### Human Immunodeficiency Virus Type 1 (HIV-1) Viral Protein R (Vpr)-Mediated Cell Cycle Arrest: An Analysis of Current Mechanistic Models

**Authors:** Sercovich, Mark J.

**Date:** 6/8/2006

**Summary:**
Human immunodeficiency virus type I (HIV-1) infection causes acquired immunodeficiency syndrome (AIDS), the most globally devastating viral disease of the past 25 years. Development of effective HIV-1 preventative and therapeutic regimens has proven exceedingly difficult, as the virus has evolved sophisticated mechanisms for thwarting control efforts. A detailed understanding of HIV-1 molecular biology is therefore necessary in order to generate the effective and inexpensive prevention and treatment strategies required for AIDS pandemic curtailment. HIV-1 optimizes its transmissibility and propagation through continual change and coordination of its components' functions and life cycle processes with one another and with those of cellular components and processes. Comprehending the molecular bases for HIV-1's abilities to manipulate host cell components and processes is key to the identification of the virus's vulnerabilities. This thesis focuses on one identified effect, G2/M cell cycle arrest induction [1-5], of one highly conserved HIV-1 component, viral protein R (Vpr) [6, 7]. A mechanistic understanding of this function is important because arrest at this cell cycle stage provides a selective advantage for the virus: transcription from the viral promoter more active during G2, allowing for increased viral replication [8-14]. Other reasons for the selective advantage of G2/M arrest, e.g. prevention or delay of cell death by mitotic catastrophe or apoptosis, are also possible [8, 15-23]. Covering scientific publications through November 2005, this thesis explores the state of knowledge of the mechanism(s) underlying Vpr's ability to induce G2/M cell cycle arrest. The author's goal is to provide a disinterested analysis of the available mechanistic models and their supporting data with the hope of being helpful to the reader in some manner.
A High Explanatory Power Model of Foot and Mouth Disease Spread in Central California

NAVAL POSTGRADUATE SCHOOL MONTEREY CA

Alok, Divya

3/1/2013 107 Not available NPS U A - 01 Approved for public release; distribution is unlimited. Master’s thesis

A study conducted by Carpenter, O Brien, Hagerman and McCarl in 2011 estimates the economic impact of a foot and mouth disease (FMD) epidemic in the United States to be $2.3 billion. We simulate an outbreak of FMD across central California using the InterSpread Plus simulation package. We use an experimental design that produces 102,400 epidemic simulation runs. Using the data from the simulations, we identify 16 critical disease and control parameters that have the greatest effect on the spread of FMD. A statistical model based on these 16 parameters and their interactions captures approximately 85% of the variability of the simulation model. The main takeaways of our analysis of FMD spread are as follows. The two most critical disease parameters are initial condition and local spread. The most critical disease control parameters are market movement and surveillance. Our experimental results indicate that if a typical premise sends an animal to market every 2.2 days instead of every day, we will see a 25% reduction in the mean number of cattle infected. Similarly, if there is less than a three day delay in between suspecting an FMD outbreak and declaring an FMD outbreak at dairylike facilities, we see a 50% reduction in the number of infected cattle. Control measures cannot be taken in isolation. Our models show significant interaction effects between the most effective control measures market movement, and surveillance and other control measures such as tracing, vaccination and depopulation.

Possible Reservoirs of Rickettsia Prowazeki in Nature

NAVAL MEDICAL RESEARCH UNIT NO 3 CAIRO (EGYPT) DEPT OF MEDICAL ZOOLOGY

Dolgov, G. F., Dutova, G. M., Balaeva, N. M., Vyukov, V. N., Zhameva, Z. M.

1/1/1969 1 NAMRU-3 Trans-325 Trans-325 U A - 01 Approved for public release; distribution is unlimited.

In recent years the appearance of many works has raised the question of revision of the anthroponotic concept of epidemic typhus fever. By complement-fixation reactions, we tested about 1600 head of cattle, horses, and sheep. Some sera were examined parallel with the Weil-Felix reaction and by neutralization of rickettsial toxic substances. Over 400 ticks (Hyalomma asiaticum P. and E. Schl., H. plumbeum Panz., Rhipicephalus turanicus B. Pom., and Dermacentor nuttalli 01.) were also collected and tested virologically. Results of serum analyses and tick examination in Khakass were negative. We also failed to isolate Rickettsia prowazeki from ticks in Kirgizia. Analysis of animal sera gave weak positive results in dilutions of 1:10 in 0.5-3% of cases. Thus, no data were obtained for the presence of natural foci of typhus fever in Khakass and Kirgizia. (Author)

Covering the Seams in U.S. National Security by Applying Network and Team Attributes

AIR WAR COLLEGE MAXWELL AFB United States

Ludington, John III R

4/6/2017 35 Not available Not available U A - 01 Technical Report

Since its establishment by the National Security Act of 1947, the modern U.S. national security system has evolved as a result of legislation, presidential preference, and because of changes in the U.S. and international security environments. With each evolution, the system has found ways to function in dealing with a wide range of threats facing the country. At the same time, each evolution has created unintended consequences and even some weaknesses. Today, one such weakness is the seams that exist in the system. Organizational criteria like geography, functions, and responsibilities often create these seams. These seams are exactly the kinds of weaknesses that are exploited by modern transnational and transregional threats, such as terrorists, criminals, and peer military competitors. Even, non-traditional threats like pandemics and environmental challenges are often made worse because of seams in the U.S. national security system. Simple reorganization or restructuring of the system is unlikely to achieve a more optimum outcome, and would likely just create different seams. However, considering that the U.S. national security system is itself a network, focusing on improving on attributes advantageous to networks and teams has the potential to reduce the seams, enable the U.S. to seize and retain initiative, and make the U.S. system—the U.S. network—stronger, more responsive, and more adaptable as the security challenges of the modern environment continue to evolve and adapt.
With increasing frequency, more service members deployed to combat zones are encountering ambushes on their flanks and rear by their closest allies: their spouses. Imagine the plight of a member of the United States military serving abroad in a combat zone: while deployed, his spouse leaves him, files for divorce, moves his children, and sells his possessions. During his deployment, he is frozen in a state of legal stasis, unable to defend himself. The convergence of no-fault divorce, imputed valuation of child support and adjustments, deployments, and the Uniformed Services Former Spouses Protection Act (USFSPA) has created a lucrative opportunity for civilian spouses. Existing laws and increased deployments are creating epidemic divorce rates and disparate impacts among the military. Immediate reform of existing divorce laws is required to reduce the inequality existent in military divorces today. Clearly the United States military needs to address these issues to ensure that military personnel can serve their country without distraction.
Global Surveillance of Emerging Influenza Virus Genotypes by Mass Spectrometry

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<th>Global Surveillance of Emerging Influenza Virus Genotypes by Mass Spectrometry</th>
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<td>Sampath, Rangarajan, Russell, Kevin L. Masire, Christian, Eshoo, Mark W. Hargan, Vanessa, Ely, Lawrence B. Melton, Rachel L. Ivy, Giulin, Pennella, Thuy, Li, Feng</td>
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5/30/2007 11 TR-07-010 USAMRIID U A - 01 Approved for public release; distribution is unlimited. Journal article

Effective influenza surveillance requires new methods capable of rapid and inexpensive genomic analysis of evolving viral species for pandemic preparedness, to understand the evolution of circulating viral species, and for vaccine strain selection. We have developed one such approach based on previously described broad-range reverse transcription PCR/electrospray ionization mass spectrometry (RT-PCR/ESI-MS) technology. Methods and Principal Findings: Analysis of base compositions of RT-PCR amplicons from influenza core gene segments (PB 1, PB 2, PA, M, NS, NP) are used to provide sub-species identification and infer influenza virus H and N subtypes. Using this approach, we detected and correctly identified 92 mammalian and avian influenza isolates, representing 30 different H and N types, including 29 avian H5N1 isolates. Further, direct analysis of 656 human clinical respiratory specimens collected over a seven-year period (1999-2006) showed correct identification of the viral species and subtypes (>97% sensitivity and specificity). Base composition derived clusters inferred from this analysis showed 100% concordance to previously established clades. Ongoing surveillance of samples from the recent influenza virus seasons (2005-2006) showed evidence for emergence and establishment of new genotypes of circulating H3N2 strains worldwide. Mixed viral quasispecies were found in approximately 1% of these recent samples providing a view into viral evolution. Conclusion/Significance: Thus, rapid RT-PCR/ESI-MS analysis can be used to simultaneously identify all species of influenza viruses with clade-level resolution, identify mixed viral populations and monitor global spread and emergence of novel viral genotypes. This high throughput method promises to become an integral component of influenza surveillance.

Worldwide Emerging Environmental Issues Affecting the U.S. Military September 2005 Report

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<th>Author(s)</th>
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<td>Federation of UN Associations Washington, DC Millennium Project</td>
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9/1/2005 17 Not available ME/VA U A - 01 Approved for public release; distribution is unlimited. Not available

Environment and global warming issues were mentioned in several speeches delivered by Heads of State and Governments at the UN Summit, however it was not a dominant theme. There were calls to ratify international treaties designed to tackle environmental and global warming problems, and agreement was reached to create a worldwide early warning system for all natural hazards and improve the Central Emergency Revolving Fund to ensure timely relief. Leaders of small island states warned that unless aggressive action is taken to deal with climate change to protect small island states, their people will become environmental refugees due to rising ocean levels. The Guiding Principles on Internal Displacement were recognized as an important international framework for the protection of internally displaced persons. Environment was listed along with the International Criminal Court, human rights, and disarmament as an issue that was not addressed strongly enough in the 2005 World Summit Outcome. It could be a mistake to interpret this as a decrease in environmental interest. Much political energy was dedicated to UN Security Council reform and international lobbying to reverse the US initial position to delete the Millennium Development Goals. Although environmental issues were relatively less prominent in this final UN Summit document than in the previous one, it is likely that environment-related actions and regulations will go beyond the agreed document due to momentum of improving international environmental agreements documented previously in these reports.

National Science and Technology Council (NSTC) Committee on Homeland and National Security
Washington United States

Not available 5/1/2016 18 Not available Not available U A - 01 Approved for public release; distribution is unlimited.

Technical Report

I am pleased to transmit to you A 21st Century Science, Technology, and Innovation Strategy for Americas National Security (the Strategy). Led by the National Science and Technology Council (NSTC) Committee on Homeland and National Security, in coordination with the Office of Science and Technology Policy, this Strategy reflects input from and deliberation among the science, technology, and innovation components of the Departments and Agencies responsible for carrying out the Nations national security mission. This Strategy sets forth how the U.S. national security science, technology, and innovation enterprise should evolve to address the challenges and opportunities imposed by a new landscape of national security technology concerns in the 21st century. The Strategy is informed by the central premise of the Presidents 2015 National Security Strategy: national security involves much more than military power and homeland defense. The Strategy recognizes that the national security science, technology, and innovation enterprise includes not just the scientists and engineers working in Federal and national laboratories, but also a much larger ecosystem of academic and industry stakeholders. The Strategy acknowledges that the enterprise must continue to drive advances in science, technology, and innovation to assure that the Nations military and homeland defense remains without peer. But the enterprise also must be able to respond effectively to new challenges, such as asymmetric threats enabled by the globalization of science and technology; threats to stability, such as natural disasters and the effects of climate change; other humanitarian and security crises, such as epidemic disease.

Decreas Seropositivity in Vaccinated Military Recruits during 2011 Corresponding to Generic Drift in Concurrent Circulating Pandemic A/H1N1 Viruses

NAVAL HEALTH RESEARCH CENTER SAN DIEGO CA

Faw, Dennis
Hanselworth, Anthony W.
Myers, Christopher A.
Hansen, David A.
Schwartz, Laura A.
Rebecca, Laura E.
Wentworth, Ryan G.
Garcia, Eric D.
Shaw, Denis Faix

4/13/2012 12 NHRC-12-09 NAMC/MD A A - 01 Approved for public release; distribution is unlimited.

Journal article

Background: Population-based febrile respiratory illness surveillance conducted by the Department of Defense contributes to an estimate of vaccine effectiveness. Between January and March 2011, 64 cases of 2009 A/H1N1 (pH1N1), including one fatality, were confirmed in immunized recruits at Fort Jackson, South Carolina, suggesting insufficient efficacy for the pH1N1 component of the live attenuated influenza vaccine (LAIV). Methodology/Principal Findings: To test serologic protection, serum samples were collected at least 30 days postvaccination from recruits at Fort Jackson (LAIV), Parris Island (LAIV and trivalent inactivated vaccine [TIV]) at Cape May, New Jersey (TIV) and responses measured against pre-vaccination sera. A subset of 78 LAIV and 64 TIV sera pairs from recruits who reported neither influenza vaccination in the prior year nor fever during training were tested by microneutralization (MN) and hemagglutination inhibition (HI) assays. MN results demonstrated that serumconversion in paired sera was greater in those who received TIV versus LAIV (74% and 37%). Additionally, the fold change associated with TIV vaccination was significantly different between circulating (2011) versus the vaccine strain (2009) of pH1N1 viruses (ANOVA p value = 0.0008). HI analyses revealed similar trends. Surface plasmon resonance (SPR) analysis revealed that the quantity, IgG/IgM ratios, and affinity of anti-HA antibodies were significantly greater in TIV vaccinees. Finally, sequence analysis of the HA1 gene in concurrent circulating 2011 pH1N1 isolates from Fort Jackson exhibited modest amino acid divergence from the vaccine strain. Conclusions/Significance: Among military recruits in 2011, serum antibody response differed by vaccine type (LAIV vs. TIV) and pH1N1 amino acid divergence from the vaccine strain. The LAIV used at Fort Jackson was an ineffective vaccine against circulating pH1N1 viruses.

History and Geography of Plague in China

AMERICAN BIOLOGICAL DEFENSE RESEARCH CENTERFREDERICK MD

Kraminskii, V. A.

12/1/1964 28 TRANS-1257 ABL/MD A A - 01 Approved for public release; distribution is unlimited.

Document partially unlimited. Availability: Release; distribution is unlimited.

Journal article

Study of Chinese manuscripts and classic works of Chinese medicine shows that plague as a pestilential disease has been known in China since antiquity. During the intensive development of trade routes by means of sailing (wooden fleets, and also unsanitarily maintained steam fleets) numerous cases of ship-born infected rats from plague foci of the southern seas occurred, leading to outbreaks and epidemics of port plague. Progress in ship-building, and also in the system of rat extermination and quarantine measures sharply remedied the situation. At present, the entry of plagues by sea is extremely rare (only 2% of ocean-going ships are infested with rats). As a result, port plague in China during the last several decades has essentially disappeared. This permits a better understanding of the structure of foci which have retained their activity until recent times.

History and Geography of Plague in China

AMERICAN BIOLOGICAL DEFENSE RESEARCH CENTERFREDERICK MD

Kraminskii, V. A.

12/1/1964 28 TRANS-1257 ABL/MD A A - 01 Approved for public release; distribution is unlimited.

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Journal article

Study of Chinese manuscripts and classic works of Chinese medicine shows that plague as a pestilential disease has been known in China since antiquity. During the intensive development of trade routes by means of sailing (wooden fleets, and also unsanitarily maintained steam fleets) numerous cases of ship-born infected rats from plague foci of the southern seas occurred, leading to outbreaks and epidemics of port plague. Progress in ship-building, and also in the system of rat extermination and quarantine measures sharply remedied the situation. At present, the entry of plagues by sea is extremely rare (only 2% of ocean-going ships are infested with rats). As a result, port plague in China during the last several decades has essentially disappeared. This permits a better understanding of the structure of foci which have retained their activity until recent times.
Interactions of HIV-1 and HIV-2

Human immunodeficiency virus (HIV) type 1 (HIV-1) and type 2 (HIV-2) are genetically and antigenically related viruses with distinct epidemiologic and biologic properties. Since its discovery in West Africa in 1982, various studies have suggested differences between HIV-2 and HIV-1 in geographic distribution, distinct temporal trends in the epidemic spread, and dramatic differences in perinatal and sexual transmission. Studies of HIV-2 infected individuals have shown a significantly slower progression to AIDS. This dramatic difference in pathogenicity provides a unique opportunity to identify oral and host immune mechanisms involved in a closely related virus system that is predicted to have an attenuated phenotype in vivo. This viewpoint arose in the hypothesis that infection with HIV-2 might provide protection against subsequent infection with the more pathogenic HIV-1. The striking conclusion was that HIV-2 did provide approximately 60% protection against subsequent infection with HIV-1, now evaluated for over 13 years of study. The natural experiment of HIV-2's observed protection against HIV-1 infection represents an invaluable model in which important correlates of HIV-1 protection can be identified and characterized. We are hopeful that further comparative studies of these related immunodeficiency viruses will yield important information on the pathogenic mechanisms employed by HIV viruses and lead the way to the development of effective interventions for the prevention and control of the AIDS pandemic.
In the last decade of military conflict, the United States Army has dealt with an epidemic of influenza. The influenza pandemic of 1918 killed more people than died in World War I. True. WWI

Critical infrastructure consists of systems and assets so vital to the United States that their incapacity would harm the nation's physical security, economic security, or public health. Critical infrastructure is often geographically concentrated, so it may be distinctly vulnerable to events like natural disasters, epidemics, and certain kinds of terrorist attacks. Disruption of concentrated infrastructure could have greatly disproportionate effects, with costs potentially running into billions of dollars and spreading far beyond the immediate area of disturbance. Hurricanes Katrina and Rita demonstrated this kind of geographic vulnerability by disrupting a substantial part of the U.S. energy and chemical sectors in 2005. As the nation’s response to recent hurricanes and other disasters continues, and as its homeland security activities evolve, Congress is examining federal policies affecting the geographic concentration and vulnerability of critical infrastructure, including prescriptive siting, economic incentives, environmental regulation, and economic regulation. Some analysts may argue that little government intervention is necessary to alleviate geographic vulnerabilities of critical infrastructure because the private sector will adjust its practices out of its own financial interest. However, if Congress concludes that federal intervention is needed, it may employ a number of policy options to encourage geographic dispersion, ensure survivability, or ensure that effective infrastructure recovery capabilities are in place to mitigate impacts of concentrated infrastructure disruption. Addressing geographic vulnerabilities may call for a combination of options. Congress may also consider whether other legislative proposals with the potential to affect critical infrastructure development are likely to relieve or exacerbate geographic vulnerability.

Russia's ability to project power, even within its historical sphere of influence, may come under strain because of this population decline. Long-term population decline may force Russia to focus internally, potentially affecting its ability to remain a significant influence in the global arena. The population decline has the potential to adversely impact Russia's military manpower levels, its ability to effectively police its borders, and ensure future military force capabilities sufficient to maintain its status as a Great Power.

The failure of success often contributes to the downfall of leaders at all levels of the military. This thesis examined four case studies to determine if there was a possibility that the success of these leaders, the Emotional Intelligence that each of them seemed to possess, and the organizational-level leaders committing moral and ethical violations. Many of these leaders ranged from adulterous behavior in the case of General David H. Petraeus and General Kevin P. Byrnes, to abuse of government funds and privileges by General William E. Boykin, to finally the fostering of inappropriate command climates and abuse of subordinates with Lieutenant General Patrick J. O Reilly. The four case studies demonstrated that each of these leaders was susceptible or displayed the conditions of the Bathsheba Syndrome and the Emotional Intelligence that each of them possessed was a factor in their failures.
Dynamic Resource Allocation
Challenges associated with the allocation of limited resources to mitigate the impact of disasters inspire fundamentally new theoretical questions for dynamic decision making in coupled human and natural systems. Wildfires are one of several types of disaster phenomena, including oil spills and disease epidemics, where (1) the disaster evolves on the same timescales as the response effort, and (2) delays in response can lead to increased disaster severity and thus greater demand for resources. We introduce a minimal stochastic process to represent wildfire progression that nonetheless accurately captures the heavy tailed statistical distribution of fire sizes observed in nature. We then couple this model for fire spread to a series of response models that isolate fundamental tradeoffs both in the strength and timing of response and also in division of limited resources across multiple competing suppression efforts. Using this framework, we compute optimal strategies for decision making scenarios that arise in fire response policy.

Two alternative nonproliferation precedents were set in 2003: in Iraq, a change of regime; in Libya, a change in a regime. In March, U.S. and British military forces invaded Iraq to coercively disarm that country of its presumed weapons of mass destruction (WMD) stockpiles. In December, only eight months after the fall of Baghdad, the British and U.S. governments jointly announced the startling revelation that secret negotiations had yielded a commitment by Libyan leader Muammar Gaddafi to verifiably relinquish his country's covert WMD capabilities. President Bush stated that by this commitment to conform to international nonproliferation norms, Libya had begun the process of rejoining the community of nations. Administration officials were quick to link the Libyan development to the Iraq war.
Airborne Transmission of Obesity: A United States Strategic Imperative

The prevalence of obesity within the United States is widely recognized as a leading cause of death, chronic disease and health care costs. In 2010, 35.7% of adults and 16.9% of children were obese, approximately 90 million Americans. The American Heart Association estimates medical costs from obesity in 2030 will be 861-957 billion dollars, or 16-18% of the United States health budget. However, this only scratches the surface of the total economic and medical costs from obesity in 2030 will be 861-957 billion dollars, or 16-18% of the United States health budget. However, this only scratches the surface of the total economic and medic
Evaluation of a National Call Center and a Local Alerts System for Detection of New Cases of Ebola Virus Disease in Guinea, 2014-2015

The epidemic of Ebola virus disease (Ebola) in West Africa began in Guinea in late 2013, and on August 8, 2014, the World Health Organization (WHO) declared the epidemic a Public Health Emergency of International Concern. Guinea was declared Ebola-free on December 29, 2015, and is on a 90-day period of enhanced surveillance, following 3,351 confirmed and 4,533 probable cases of Ebola and 2,536 deaths. Passive surveillance for Ebola in Guinea has been conducted principally through the use of a telephone alert system. Community health workers and health facilities report deaths and suspected Ebola cases to local alert numbers operated by prefecture health departments or to a national toll-free call center. The national call center additionally functions as a source of public health information by responding to questions from the public about Ebola. To evaluate the sensitivity of the two systems and compare the sensitivity of the national call center with the local alerts system, the CDC country team performed probabilistic record linkage of the combined prefecture alerts database, as well as the national call center database, with the national viral hemorrhagic fever (VHF) database. The VHF database contains records of all known confirmed Ebola cases. Among 17,309 alert calls analyzed from the national call center, 71 were linked to 1,838 confirmed Ebola cases in the VHF database, yielding a sensitivity of 5.9%. The sensitivity of the national call center was highest in the capital city of Conakry (11.4%) and lower in other prefectures. In comparison, the local alerts system had a sensitivity of 51.1%. Local public health infrastructure plays an important role in surveillance in an epidemic setting.

ADA269568
Use of an Electronic Monitoring System for Self-administered Smallpox Vaccine Reactions
RAND CORP PITTSBURGH PA
Gillies, Stuart S., Grabenstein, John D., Jern, Arvind K., Cameron, William, Gambis, Pamela, Johnson, Pamela, Mopsik, Judith, Zimmerman, S. E., Jurie, Nicole
1/3/2005 10 Not available OSG U A - 01 Approved for public release; distribution is unlimited.
Journal article
Tracking vaccine reactions and adverse events during a large-scale vaccination program such as the recent smallpox program or a pandemic flu outbreak will be a challenge. We report on vaccine reaction data collected using a novel telephone- and web-based electronic reporting system. The system was used to monitor vaccines during the U.S. Army’s smallpox vaccination campaign, which was part of the national program to prepare against biological attack. In addition, we report on the time course of events after smallpox vaccination based on the self-reported data and evaluate the validity and reliability of self-reported take information after smallpox vaccination.

ADA285044
DOT/PUBLICATIONS RESEARCH SERVICE ARLINGTON VA
Not available 5/6/1989 182 SRS-89-010 XD U A - 01 Approved for public release; distribution is unlimited.
Not available
This report contains translations/abstracts of articles and/or broadcasts on science and technology from China. Titles include: State of Science, Technology Legislation Reviewed; Kind of Predictive Intercept for Terminal Guidance; Conductive Polyacene-Carbon Fiber Composites; Eduline Analgesia, Its Mechanism of Action; Preliminary Study of Hepatitis Delta Virus Infection in China; Overall Situation Described for Computer Industry Planning; Guided Missile Storage/Transport System; Dynamic Error Analysis of Radar Antenna Asial Angle Encoder; Military Telephone Exchange Completed; Beijing Electron-Positron Collider; and others.

ADA285923
Identity: A Strategic and Leadership Challenge for the Chinese Army
Not available 3/26/2013 48 Not available CSARIC U A - 01 Approved for public release; distribution is unlimited.
Research paper
Closely has been declared a pandemic of the 21st Century.

ADA373127
Prospects: Cybernetics Review. Volume 1, Number 6,
RAND CORP SANTA MONICA CALIF
Holland,Wade B. 11/1/1971 68 S-700/5-PR Not available U A - 02 Approved for public release; distribution is unlimited.
Note: Among many articles on implementing the Party Congress directives to push automation is a Science and Technology editorial warning against a narrow, production-oriented approach—a broad, socio-economic approach is needed. A Pravda editorial recounts barriers to automated production control; a Socialist Industry article specifies them with unusual directness—lack of authority to match responsibility for automation, unrealistic barriers to automated production control; a Socialist Industry article specifies them with unusual directness—lack of authority to match responsibility for automation, unrealistic
HISTORICAL INCIDENTS OF TERRORIST OVERCROWDING

BUREAU OF SOCIAL SCIENCE RESEARCH
INC WASHINGTON DC

3/1/1963 201 BSSR-354-5

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Table: Historical Incidents of Terrorist Overcrowding

<table>
<thead>
<tr>
<th>Incident Description</th>
<th>Date</th>
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<td>...</td>
<td>3/1/1963</td>
<td>BSSR-354-5</td>
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</table>

The primary orientation of the review was to gain knowledge of possible hazards to life and health under conditions of overcrowding that might occur in civil defense shelters. Various types of historical incidents have produced degrees of crowding—along with associated noxious and deprivational circumstances—for more severe and of longer duration than has been or can be subject to experimental test. Conditions beyond those ordinarily accepted as the limits of human tolerance have been witnessed on many occasions by large proportions of the victims of certain catastrophic occurrences. In a number of other circumstances, including some involving only moderately intense crowding, very high death and impairment rates have been present. Physical crowding, per se, is not regarded as a fruitful unitary concept for examining the differences between high and low casualty events. For most of the range of densities, physical crowding has significance only in interdependent relationship with many other variable features of the entire situation, including environmental, structural, temporal, psychological, and social features. The acts of oppressive captors and epidemic disease were the most frequent direct causes of high fatality in the incidents reviewed.

Decision: The recommender is responsible for generating the Emergency Plan. The plan should be based on the results of the review and should include specific recommendations for mitigating the risks identified.

Seasonal Influenza Vaccine

ARMED FORCES HEALTH SURVEILLANCE CENTER
SILVER SPRINGS MD

5/1/2010 9 Not available

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Article: Seasonal Influenza Vaccine

A novel A/H1N1 virus is the cause of the present influenza pandemic; vaccination is a key countermeasure however, few data assessing prior seasonal vaccine effectiveness (VE) against the pandemic strain of H1N1 (pH1N1) virus are available. Materials and Methods: Surveillance of influenza-related medical encounter data of active duty military service members stationed in the United States during the period of April-October 2009 with comparison of pH1N1-confirmed cases and location and date-matched controls. Crude odds ratios (OR) and VE estimates for immunized versus non-immunized were calculated as well as adjusted OR (AOR) controlling for sex, age group, and history of prior influenza vaccination. Separate stratified VE analyses by vaccine type (trivalent inactivated [TIV] or live attenuated [LAIV]), age groups and hospitalization status were also performed. For the period of April 20 to October 15, 2009, a total of 1,205 cases of pH1N1-confirmed cases were reported, 966 (80%) among males and over one-half (58%) under 25 years of age. Overall VE for service members was found to be 45% (95% CI, 33 to 55%), Immunization with prior season's TIV (VE = 44%, 95% CI, 32 to 54%) as well as LAIV (VE = 24%, 95% CI, 6 to 38%) were both found to be associated with protection. Of significance, VE against a severe disease outcome was higher (VE = 62%, 95% CI, 14 to 84%) than against milder outcomes (VE = 42%, 95% CI, 29 to 53%). Conclusion: A moderate association with protection against clinically apparent, laboratory-confirmed Pandemic (H1N1) 2009-associated illness was found for immunization with either TIV or LAIV 2008-09 seasonal influenza vaccines. This association with protection was found to be especially apparent for severe disease as compared to milder outcome, as well as in the youngest and older populations.

Honduran-U.S. Relations

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6/8/2009 19 CRS-RS34027

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Congressional rept.

The Central American nation of Honduras, one of the hemisphere's poorest countries, faces significant challenges in the areas of crime, human rights, and improving overall economic and living conditions. While traditional agricultural exports of coffee and bananas are still important for the economy, nontraditional sectors, especially the maquiladora, or export-processing industry, have grown significantly over the past decade. Among the country's development challenges are a poverty rate over 60%, high infant mortality, and a significant HIV/AIDS epidemic. Despite these challenges, increased public spending on health and education have reaped significant improvements in development indicators over the past decade. Among the country's challenges are a poverty rate over 60%, high infant mortality, and a significant HIV/AIDS epidemic. The country has enjoyed 27 years of uninterrupted elected civilian rule. The economy, which grew 6.3% in 2007 and is expected to have grown 4% in 2008, has benefited from significant debt reduction by the international financial institutions that is freeing government resources to finance poverty-reduction programs. The U.S. recession and global financial crisis, however, are expected to slow Honduran economic growth sharply in 2009.

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Defense Health Board

Approved for public

Providing security for the nation and for its citizens remains the most important responsibility

At the request of Dr. Winkenwerder in a memorandum dated 1 December 2005, the Select

Maridi Haemorrhagic Fever,

In the period from June to November 1976, there occurred in the Sudan and in Zaire - at first

21

3/1/2008 65 Not available MIN-DEF U A - 01

ARMY MEDICAL

The National Security Strategy

Preparedness and Response

approved for public

4/3/1994 46 Not available USAMRIID-MUL-

ARMED FORCES

Biological Characterization of

In 1990-1991, a number of blood samples were collected from patients in Senegal who had

Our data on the biology of HIV-2 suggest that this virus has a distinct biology from that of its

Final rept. 28 Sep 1990-

27 Sep 1993

The National Security Strategy

of the United Kingdom:

Security in an Interdependent

World

continued comparative studies contribute to our overall understanding of HIV pathogenesis. Human retroviruses, AIDS, HIV-1, HIV-2, SIV, West Africa, Viruses, Biodote, Biotechnology, R&D I

Our data on the biology of HIV-2 suggest that this virus has a distinct biology from that of its

virological, histological and immuno-diagnostic analyses that show that this was a disease

isolated, and then in epidemic form - cases of a disease with a high mortality rate that,

energy, poverty and poor governance, demographic changes and globalisation.

and interconnected set of underlying factors, including climate change, competition for

pandemics, and transnational crime. These and other threats and risks are driven by a diverse

landscape. No state threatens the United Kingdom directly. The Cold War threat has been

landscape as a whole is increasingly complex and unpredictable, so too is the security

organisations and whole nations. But they also create new challenges. If the international

and technological trends, particularly in communications, have strengthened the connections

between individuals, businesses, societies and economies. Travel is faster and cheaper than

ever, the flow of ideas and capital around the world can be almost instantaneous, and

distances between people and events are becoming less relevant. All those are positive

between individuals, businesses, societies and economies. Travel is faster and cheaper than

virus-host interactions between HIV-2 and HIV-1. Continued comparative studies contribute to our overall

understanding of HIV pathogenesis. Human retroviruses, AIDS, HIV-1, HIV-2, SIV, West Africa, Viruses, Biodote, Biotechnology, R&D I

virologic and immunologic differences between these viral infections have been described

which may play a role in these different pathogenic potentials and biologics. Our studies

conducted to date, have already indicated differences in the above virus-host interactions

Between 1976 and 1978, blood samples were collected from patients in Senegal who had

Our data on the biology of HIV-2 suggest that this virus has a distinct biology from that of its

interpolated with other patient samples, were used for our comparative studies of HIV-2. A single

Vaccines, Biology, Biotechnology, R&D I

M. Peters, D., Nielsen, K., Knobloch, J., Dietrich, G., Schumacher, H. H.

1/1/1977

824

Not available

Kanki, Phyllis J.

27 Sep 1993

Final rept.

During the period from June to November 1976, there occurred in the Sudan and in Zaire - at first

In this contract we have described differences in the heterosexual transmission,

incubation period to disease and epidemic curves of HIV-2 compared to HIV-1. A number of

From this, we have derived conclusions about the pathogenesis of HIV-2, and its implications for

to advise the Surgeons General and Assistant Secretary of Defense for Health Affairs on

recommendations for optimizing influenza surveillance processes and preparations for a

recommendations for optimizing influenza surveillance processes and preparations for a

DHB.

Ministry of Defence

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United Kingdom

MINISTRY OF DEFENCE

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27 Sep 1993

Final rept.

During the period from June to November 1976, there occurred in the Sudan and in Zaire - at first

in epidemic form - cases of a disease with a high mortality rate that,

the Marburg virus disease that first appeared in 1967. We obtained blood samples

Our data on the biology of HIV-2 suggest that this virus has a distinct biology from that of its

interpolated with other patient samples, were used for our comparative studies of HIV-2. A single

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M. Peters, D., Nielsen, K., Knobloch, J., Dietrich, G., Schumacher, H. H.

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Not available

Kanki, Phyllis J.

27 Sep 1993

Final rept.
ON THE QUESTION OF MOLECULAR CHARACTERIZATION OF THE ATTACHMENT OF MOUSE HEPATITIS VIRUS (MHV), A CORONAVIRUS, TO ITS CELLULAR RECEPTOR ON THE UAA-01

This thesis explores the foundation of modern Disruption Tolerant Protocols. It introduces a previously unpublished protocol with high probability of delivery called the Geolocation Assisted Predictive Routing (GAPR) Protocol and implements Vector Routing for The ONE Assisted Predictive Routing (GAPR2) Protocol and implements Vector Routing for The ONE

At present, the infection mechanism of tickborne encephalitis cannot be established in 15-20% of cases. Until now there are no indications of the epidemiologic role played by Ixodes persulcatus P. Sch. males. Special tests have shown that I. persulcatus males attack warmblooded animals and man. The duration of their feeding depends on the proximity of the blood vessels and lasts from 5 minutes to 1-1/2 hours. Males begin to attack on the back surface of a human forearm 10-12 minutes after being placed there and feed for 15-30 minutes. Upon being disturbed, they rapidly withdraw their hypostome and can reattach after 3-7 minutes. Tickborne encephalitis virus is isolated from suspensions of males with the same frequency as from females. In 1958 and 1961, the infection was induced in white mice from males of male ticks. It is obvious that certain cases of encephalitis can be associated with asidial mice, the bites of which are of short duration and painless. It is also possible, that the epidemic occurrence among the population depends precisely on male tick bites.

Molecular Characterization of the Attenuated Junin Virus Variants

Junin virus, one of the few human pathogenic arenaviruses, is the etiologic agent of Argentine hemorrhagic fever (AHF). The clinical symptoms of AHF include hemorragic shock, cardiovascular, renal and immunologic alterations. The mortality rate may be as high as 30%, but early treatment with immune plasma reduces the fatal cases to less than 2%. In order to control the endemo-epidemics in the richest farming land in Argentina, a collaborative effort conducted by US and Argentine Governments led to the production of a live, attenuated Junin virus vaccine. After rigorous biological testing in rhesus monkeys, the highly attenuated Junin virus variant named Candid 1 was used in human volunteers, followed by an extensive clinical trial in the AHF endemic area. In order to characterize the vaccine strain Candid 1 at the molecular level and initiate studies on the biochemical basis of attenuation of virulence, the glycoprotein precursor (GPC) gene of this attenuated virus was cloned and sequenced. The flanking 5' and 3' untranslated regions of the GPC gene do not differ significantly from the homologous regions in the S RNA of the wild type MC2 strain. However, major changes in the amino acid sequence occur in the amino terminal region of GPC as a result of several insertions and deletions in the nucleotide sequence.

Characterisation of the Virus and Monoclonal Antibody Binding Sites of the Mouse Hepatitis Virus Receptor

The attachment of Mouse Hepatitis Virus (MHV), a coronavirus, to its cellular receptor on the host cell membrane is the first step leading to viral infection. The best characterized receptor for MHV is a 120 kDa glycoprotein encoded by the viral glycoprotein (Eggo la gene). Other mouse Eggo glycoproteins also serve as receptors for MHV but with less efficiency. Eggo proteins belong to the carboxyesterase family and have been shown to bind to the Hepatitis B Virus strain AS1 (HBV-AS1).
Since assuming command in 1998 of the first Civil Support Team (CST) Weapons of Mass Destruction (WMD), Colonel Stewart witnessed and experienced dramatic changes in homeland security theory, policy, and practice. Understandably, the most significant changes have occurred since the horrific attacks on September 11, 2001, which violently demonstrated how turbulent today's world strategic environment is. Widely available chemical, biological, radiological, nuclear, high yield explosive, and cyberspace security (CBRNE-C) materials, technologies, and equipment often have dual uses. Preventing rogue states and terrorist organizations from acquiring these materials is a necessary but formidable challenge. Additionally, the cyber domain has grown tremendously and may be used to target key infrastructure and resources. In addition to these threats, dramatic weather changes have caused unusual and devastating shifts in weather patterns, which in turn have triggered catastrophic events. This paper proposes the establishment of All-Hazard Training Centers (AHTC) in the 10 Federal Emergency Management Agency (FEMA) regions to train CST WMD and emergency responders for CBRNE-C events or natural catastrophes.
The rapid transition of critical business processes to computer networks potentially exposes...
Treadmill Exercise Testing at USAF School of Aerospace Medicine: Physiological Response in Aircrewmen and Detection of Latent Coronary Artery Disease, ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT PARI (FRANCE) 5/1/1975 65 AGARDograph Not available U A - 01 Approved for public release; distribution is unlimited. Not available Coronary heart disease (CHD) has reached epidemic proportions in all developed countries; it accounts for over 1,000,000 deaths in the United States each year, which is more than all other diseases combined. Over half of these deaths are unexpected in that they occur without preceding symptoms of CHD. Despite the selective nature of the USAF flying population, CHD is the leading disease cause of death, disability and removal from flying duties. It appears that USAF aircrewmen very well fit the national statistics. Because of the critical nature of flying duties and the perishability of flying safety, the early detection of CHD is essential in the USAF flying population. The AGARDograph presents the experience of the United States Air Force School of Aerospace Medicine (USAFSAM) in the use of treadmill exercises for evaluating asymptomatic aircrewmen. It consists of separate studies involving different aspects of treadmill testing experience at the USAFSAM, including descriptions of techniques used at the USAFSAM.

Summary of the Infectious Diseases and Disaster Response Conference in Abu Dhabi, AMELED FORCES HEALTH SURVEILLANCE CENTER SILVER SPRINGS MD 1/1/2012 10 Not available ARSIC U A - 01 Approved for public release; distribution is unlimited. Journal article Due to the interconnectedness of the world today and the ease with which infectious diseases can spread globally collaboration within and among countries around the world on pandemic planning and response is immensely important. One of the first steps for pandemic planning involves identifying existing gaps in a nation’s current plans, and examining previous outbreaks for lessons learned. To identify such gaps, the World Health Organization (WHO) created a framework with 5 main components for assessing disaster and pandemic planning and response: surveillance, healthcare response, public health intervention, communication, and command.

Prevention of Influenza and other Respiratory Diseases, COLORADO UNIV AT DENVER MEDICAL CENTER 2/1/1979 45 Not available U A - 01 Approved for public release; distribution unlimited. Annual progress rept. 1 Feb 78-30 Jan 79, An explosive epidemic of H1N1 influenza occurred at Lowry AFB during February 1978. No H1N1 vaccine had been available and personnel under 25 were almost uniformly seronegative. Influenza (Hibric) attack rates were estimated to be about 30% in students, who ranged in age from 17 to 23. An additional 20% were probably infected during the epidemic. The permanent party, most of which is over 25 years of age had far lower attack rates than the students. A small number of cases of H3N2 influenza occurred between 30 November 1977 and 30 January 1978, but the spread of this disease was very limited in this vaccinated population. The H3N2 virus strains differed from H1N1 strains in many ways. Isolation and identification were more difficult and lack of avidity of the prototype A/USSR/90/77 strain created difficulty in serodiagnosis. The most useful antigen for HI tests was an ether-split vaccine concentrate (PD) prepared from A/USSR/92/78. Surveys of HI antibody levels of military and civilian populations between 17 and 24 years of age indicated that approximately one half had been infected during or following the February 1978 epidemic. Studies of experimental H1N1 vaccines of 50 microgram and 20 microgram potencies showed that the former, whether split or whole virus, produced seroconversion in a very high proportion of persons.

Worldwide Emerging Environmental Issues Affecting the U.S. Military, April 2006 Report, FEDERATION OF UN ASSOCIATIONS WASHINGTON DC MILLENNIUM PROJECT 4/1/2006 18 Not available SEP/VA U A - 01 Approved for public release; distribution is unlimited. Not available The People’s Liberation Army of China has been directed by President Hu Jintao to submit its April 2006 Report on worldwide emerging environmental issues affecting the U.S. military. This report includes a table of contents and various sections on specific environmental issues, including climate change, biodiversity, and national security.

Battle Trauma and DBMII, GEFERNARAT DER VETERINÆRFÖHMLEGENHEIDE (GERMANY) 5/1/2001 4 Not available NATO U A - 01 Approved for public release; distribution is unlimited. NATO. Not available New NATO force structures and strategic concepts emphasize mobility interoperability sustainability (jointness and Multinationality), i.e., deployment of multinational forces to any area for any mission. The very nature of those operations calls for the likelihood of missions in locations far from those of the sending nations, areas that may have challenging factors of geographical conditions, lack of infrastructure, or indigenous populations suffering from hunger, thirst, epidemic and endemic diseases, trauma or disability. Special environmental and occupational hazards, given in the mission area, have to be considered. Therefore appropriate Force health protection is a core competency. It must ensure a full spectrum health authorities. - emphasise fitness, preparedness and preventive measures - improve the monitoring and surveillance of forces engaged in military operations - enhance service members’ and commanders awareness of health threats before they can effect the force and support the health needs of the military forces and their families across the continuum of medical services.
After the successful testing of the MinION nanopore sequencer at the international community testing event, researchers moved on to evaluate its performance in various applications. The MinION was used to test respiratory samples, specifically those from upper respiratory tract infections, to accurately identify and differentiate clinical bacterial and viral pathogens. This was achieved through targeted sequencing and whole genome sequencing of the viral samples tested.

In the mathematical model for the simple epidemic, it is assumed that the population at time $t$ consists of $X(t)$ infectives and $N-X(t)$ susceptibles, and the $X(t)$ is a pure birth process with transition probabilities. There is quite an extensive literature devoted to the analysis of the simple epidemic model.

In this paper, a valid asymptotic distribution theory for large values of $N$ is derived. The author concludes with the analysis of a more general model for the simple epidemic in which the population is divided into a number of homogeneous groups. (Author) The challenges to continuity of recruit training during a Category 4/5 influenza pandemic are formidable, and the non-pharmaceutical interventions to counter them so limited, complicated, and prone to error in implementation that we reluctantly conclude that the most sensible course, in the absence of an effective vaccine or reliable and safe antiviral prophylaxis, may be to rely on personnel actions other than recruit input to maintain force levels during a pandemic this severe.

We propose and analyze a class of integrated social and QoS trust-based routing protocols in mobile ad-hoc delay tolerant networks. The underlying idea is to incorporate trust evaluation in the routing protocol, considering not only QoS trust properties but also social trust properties to evaluate other nodes encountered. We prove that our protocol is resilient against bad-mouthing, good-mouthing and whitewashing attacks performed by malicious nodes. By utilizing a stochastic Petri net model describing a delay tolerant network consisting of heterogeneous mobile nodes with vastly different social and networking behaviors, we analyze the performance characteristics of trust-based routing protocols in terms of message delivery ratio, message delay, and message overhead against connectivity-based, epidemic and PROPAGET routing protocols. The results indicate that our trust-based routing protocols outperform PROPAGET and can approach the ideal performance obtainable by epidemic routing in delivery ratio and message delay, without incurring high message overhead. Further, integrated social and QoS trust-based protocols can effectively trade off message delay for a significant gain in message delivery ratio and message overhead over traditional connectivity-based routing protocols.

We find that raw sensory data linked with the content of users' online communication, the explicit as well as the implicit online social interactions, and interpersonal relationships are rich information sources upon which strong machine learning models can be built. Example domains where such models apply include understanding human activities, predicting people's location and social ties from their online behavior, and predicting the emergence of global epidemics from day-to-day interpersonal interactions.

We propose a new flow cell design for the MinION sequencer to improve its performance in sequencing respiratory samples. The new flow cell is capable of sequencing a variety of respiratory diseases, including influenza, which is a major concern during pandemics. The MinION technology has limitations with respect to error rate but has steadily improved with development of new flow cells and library kits.
Targeting the Adipocyte–Tumor Cell Interaction in Prostate Cancer Treatment

Sanford-Burnham Medical Research Institute La Jolla United States

Moscot, Jorge

12/1/2016 90 Not available Not available U A - 01 Approved for public release; distribution is unlimited.


Prostate cancer (PCA) is one of the leading causes of death among men in the United States. Obesity is another growing epidemic health problem in Western societies and in developing nations, and represents one of the greatest threats to global human health. Several epidemiological studies during the last decade have pointed to an association between obesity and increased risk factor for PCA progression and aggressiveness. However, despite the relatively high amount of epidemiological data available, little is known about the molecular basis underlying the association between PCA progression, obesity and inflammation, and the role of the adipocyte-cancer cell interaction in this process. The goal of this proposal is to test the hypothesis that obesity induces prostate cancer progression will have a great impact in our understanding of this process, and its relevance for potential more targeted and efficacious therapies in PCa.

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Rickettsia prowazeki were assessed for their in vitro susceptibility to phagocytosis by rabbit polymorphonuclear leukocytes (PMN). ATP labeling was used to quantitatively determine phagocytosis and adsorption. Rickettsiae were less susceptible to phagocytosis than were Escherichia coli and Neisseria gonorrhoeae. Although rickettsiae were similar to E. coli in susceptibility to superoxide and activated halide, few phagocytized rickettsiae were inactivated 45 min after being ingested by PMN and some rickettsiae were observed free in the PMN cytoplasm. At low rickettsiae:PMN multiplicities, phagocytosis increased as a linear function of time, but at high multiplicities (MOI=50) rickettsiae were phagocytozed during only the first 10 min of incubation. PMN were damaged in the presence of high rickettsial multiplicities such that they released lactate dehydrogenase into the medium and lost the ability to phagocytize both rickettsiae and E. coli. This rickettsial leukotoxic activity was associated with phospholipase activity which was similar to the phospholipase activity associated with rickettsial hemolysis, and the amount of leukotoxic activity in a given rickettsial sample correlated with the relative hemolytic activity of that sample.

In 1997, a novel influenza A/H5N1 virus strain infected Hong Kong residents exposed to poultry. In 2003, a closely related influenza A/H5N1 strain, also derived from poultry, infected residents of Hong Kong. As of March 2008, the World Health Organization reported 157 cases and 255 deaths in humans across 14 countries. More importantly, the virus in poultry and wild birds has continued to mutate and evolve such that several diverse clades are now apparent. In past influenza virus threats (eg: 1957, 1968, and 1976) the Department of Defense (DoD) was directly involved with the Centers for Disease Control and Prevention (CDC), the National Institutes of Health and the Food and Drug Administration (FDA) in developing and evaluating surveillance and epidemiologic data, vaccine selection, evaluating vaccine immunogenicity and reactogenicity, as well as performing vaccine efficacy studies. In the 1980s, the DoD began to play a less active role in national influenza vaccine research and development. In 2005, prompted by Secretary Winkler, a subcommittee was formed under the previous Armed Forces Epidemiological Board (AFEB) to advise Surgeons Generals and other DoD members on matters relating to pandemic influenza (PI), including providing recommendations for optimizing surveillance and preparation.

Obesity has reached epidemic levels and yet the incidence continues to rise. This study examines the hypothesis that obesity may reflect a dysfunction of the hypothalamic-pituitary-adrenal (HPA) axis in response to stressors. African American persons are at greatest risk, but reasons for this difference are unknown. The authors will study 127 men and women of Caucasian and African American ethnicity to examine their responses to physiologic stressors: exercise and ingestion of a meal. The HPA axis will be studied in some detail by using two stressor paradigms and two steroid regimens. They expect to be able to detect subtle differences in HPA axis reactivity in obese individuals that might contribute to morbidity and perhaps even make individuals resistant to therapeutic interventions. So far they have enrolled 160 participants. Of those, 123 subjects have completed the study and 4 are in progress; 33 subjects have dropped out. Data collection and analyses are proceeding on schedule. Two abstracts were presented in 2006, one was presented in 2007, and one was submitted and accepted for presentation in the Summer of 2008. The authors are on schedule for all study milestones and look forward to being able to answer the important questions regarding the potential role of the HPA axis in obesity.
2009 has been a year of extraordinary growth for the Center for the Study of Traumatic Stress.

To seek, review, identify, and retrieve repository materials (slides, blocks, wet tissues, and information) of cases fulfilling the CDC definition of AIDS in the absence of demonstrable HIV infection.

Beginning in April 2009 with the outbreak and rapid spread of the H1N1 swine flu.

The Role of Special Operations Forces in Counter-Narcotics Operations.

In 2009, the Center for the Study of Traumatic Stress (CSTS) in recognition of the rise in suicide and behavioral health problems among service members who have served in Iraq and Afghanistan, the National Institute of Mental Health (NIMH) awarded CSTS an unprecedented grant of $50 million to assess and develop scientific approaches to reverse this trend. In coordination with the Secretary of the Army, the Vice Chief of Staff of the Army, the Surgeon General of the Army, and NIMH, CSTS is positioned to lead an interdisciplinary team including prominent researchers from Harvard, Columbia and the University of Michigan to support the U.S. Army’s advancement of trauma knowledge and trauma informed care for our nation. Since the Center’s establishment in 1987, CSTS has shaped the landscape of disaster and military psychiatry and bridged these disciplines to inform planning, response and recovery of public health threats or recovery from pandemic and H1N1 outbreaks. As part of the Department of Psychiatry of Uniformed Services University (USU), CSTS also has examined traumatic stress through laboratory research on animals and humans. This pioneering work in neuroscience and the neurobiology of traumatic stress resulted in the Center’s recent identification of a potential biomarker for post-traumatic stress disorder (PTSD), a protein and its associated gene known as p11. These findings have important implications for prevention and treatment of PTSD and other trauma-related disorders that face our service members and nation. CSTS’s approach - to integrate trauma research across genes, brain, individual, family, community and policy, and our strong collaborative networks will assist in helping find and apply evidence-based approaches and treatments to prevent and minimize the impact of traumatic disorder from depression, PTSD, substance abuse, family violence and traumatic brain injury (TBI).

The thesis deals with the suitability of using Army Special Operations Forces in a counter-narcotics role. It describes briefly the legislative reforms which have authorized increased US military involvement in a law enforcement role. It also describes the present drug epidemic in the US and in the area referred to as the Andean Ridge. A presentation of information is provided as to the social, political, and economic, both positive and negative, that the cultivation of coca and cocaine production has had in the countries of Peru, Bolivia and Colombia. The thesis describes the present structure of US army Special Operations Forces and their capabilities. It recommends missions for each member of the SOF community to perform. Using the CARVER Target Analysis system, the thesis presents the drug trafficking organizations in terms of vulnerabilities that can be exploited by SOF. The thesis concludes that the present missions of SOF are compatible with the increased military counter-narcotic missions. The unique capabilities of SOF, when combined with present law enforcement assets will greatly enhance the US capability to interdict illegal narcotics. Keywords: Special Operations Forces; Counter-narcotics; Drug interdiction; Drug enforcement; Andean Ridge; Army Special Operations Forces.
Comparison of an Agent-Surviving the Storm: 

Availability: This document is not available from DTIC in microfiche.

Approved for public release; distribution is unlimited.

Technical report

Social contacts are an important channel for the propagation of disease through a population and should be considered in conjunction with traditional epidemic diffusion. Such channels should always be taken into account for a realistic estimation of a long-term impact of a disease outbreak (natural or malicious) and for the best response options. This paper describes our recent experience in developing a simple agent-based model to simulate disease propagation through a social network and validating the results of the agent-based simulation by reconciling it with a well-known mathematical model.

The current cocaine epidemic in the United States started in the late 1960s, picked up momentum during the 1970s, and is still going strong in the 1990s. The number of cocaine users peaked in the early 1980s at about 9 million, and has gradually decreased to a little more than 7 million today. However, that downward trend in the total number of users is misleading, because a decline in the number of light users has masked an increase in the number of heavy users. Heavy users consume cocaine at a rate approximately eight times that of light users, so the upward trend in consumption by heavy users roughly cancels the downward trend in consumption by light users. The result is that total consumption of cocaine in the United States has remained at its mid-1980s peak for almost a decade.

As the planet's population continues to grow at a rate that will see a global population of nine billion people by the year 2050, is an era being entered into which pandemics involving novel viruses are the new norm? If that idea is possible, then are drug therapies (approved by the FDA or in the pipeline for its approval) available that either limit virus replication within a host cell, or reduce the body's hyper-immune response (also known as cytokine storm) to novel or pandemic strain viruses with which states could supplement their existing stockpiles? This research explores six classes of medications that could potentially assist state-level governments in expanding their state-level stockpiles, to include more treatment and prophylaxis options, in the face of pandemics involving novel viruses. The results of this research were filtered through three criteria (medic efficacy, cost, logical considerations) that narrow the field of candidate therapies down to four specific findings: one generic version of the antiviral called Ribavirin, and generic versions of the statins called Lipitor, Zocor and Gemfibrozil. This research may be applied to state and local-level public health agencies interested in bolstering their existing stockpiles for pandemic preparedness.

The current cocaine system in the United States started in the late 1960s, picked up momentum during the 1970s, and is still going strong in the 1990s. The number of cocaine users peaked in the early 1980s at about 9 million, and has gradually decreased to a little more than 7 million today. However, that downward trend in the total number of users is misleading, because a decline in the number of light users has masked an increase in the number of heavy users. Heavy users consume cocaine at a rate approximately eight times that of light users, so the upward trend in consumption by heavy users roughly cancels the downward trend in consumption by light users. The result is that total consumption of cocaine in the United States has remained at its mid-1980s peak for almost a decade.
Rape Awareness and Prevention Training

NAVAL TRAINING SYSTEMS CENTER ORLANDO, FL

Baker, Sandra S.; Gonos, Gregory H.; Healey, Janet W.

12/2/1991 59 DTSC-SR-91-005 DTSC

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A02474174

Final rept.

The incidents of rape have reached epidemic proportions in the United States. The U.S. Department of Justice reports that a woman in the United States is 20 times more likely to be raped than in Japan; 13 times higher than Great Britain; and 4 times higher than Germany. It is estimated that a woman is raped every 6 minutes and young males, ages 12-16, are becoming the fastest growing population to become victims of sexual assault. In response to this growing national epidemic, the Commanding Officer of the Naval Training Systems Center requested a study to assess the parameters and dynamics involved in rape prevention and awareness training. Through education the number of rapes can be reduced. Rape prevention and awareness training increases the male’s sensitivity to the issues of rape, their understanding of the role they play in society, and what can be done to stop the crime. Date rape, Rape, Assertiveness training, Rape prevention, Anger rape, Sex, Traumatic stress. 

Sadistic rape, Self-defense,
AD0255280
SELECTED ABSTRACTS FROM SOVIET BIOMEDICAL JOURNALS NO. 5
FORDHAM UNIV BRONX NY
Hellitzer, Robert
3/1/1961 43 Not available ABL/MED U A - 01 Approved for public release; distribution is unlimited.
Journal abstracts, no. 5
(1) Results of tularemia vaccination in the Brest oblast. (2) To the clinique of brucella-caused meningo-encephalitis. (3) On tick-borne two-wave meningo-encephalitis in Transcarpathia. (4) Changes of the electrocardiogram in brucellosis patients under the influence of treatment with vaccine and antibiotics. (5) Study of the immunological pattern of the population in regard to tick-borne encephalitis in the Breduk raion of the Krasnoiarsk Krai. (6) Some remarks on the pamphlet 'Tick encephalitis and measures against it.' (7) On the methods of detecting natural tularemia foci. (8) Studies on the natural fecality of diseases and development of these studies in Bulgaria. (9) The classification of brucella species. (10) The state of immunity in guinea-pigs immunized with live brucellosis vaccine under conditions of exposure to radiation. (11) The increase of the sensitivity of the aerological agglutination reaction for brucellosis in vitro. (12) A brucellosis epidemic caused by the transition of Br.melitensis into cattle. (13) Length of discharge of anthrac bacilli following various methods of treating the cutaneous form.

AD0453657
Alterations of the Nasal Mucosa of Cadavers of Epidemic Encephalitis, ARMY MEDICAL RESEARCH INST OF INFECTIOUS DISEASES FREDERICK MD
Watanabe,Yochio
12/13/1976 4 USAMRIID-MUL-0528 Not available U A - 01 Approved for public release; distribution is unlimited.
Not available
In the summer of 1938 and 1939 an examination was made of the nasal mucosa of the respiratory and vestibular region in the course of 7 autopsies (3 adults and 4 infants who had been sick for 3-15 days) of cases of Japanese epidemic encephalitis that had broken out in Tokyo. In the respiratory region the main alteration which was encountered was gelatinization of the epithelia and nasal glands and cellular infiltration.

AD0458282
Interrogation of Detainees: Overview of the McCain Amendment LIBRARY OF CONGRESS WASHINGTON DC CONGRESSIONAL RESEARCH SERVICE
Garcia, Michael J.
10/23/2006 14 CRD-RS3695 CRD/DC U A - 01 Approved for public release; distribution is unlimited.
Congressional Report
This document is not available from DTIC in microfiche.

AD0443207
Avian Influenza/Pandemic Influenza Program HENRY M JACKSON FOUNDATION FOR THE ADVANCEMENT OF MILITARY MEDICINE ROCKVILLE MD
Hayes, Ralph W.
9/1/2006 7 Not available GSAMRAC U A - 01 Approved for public release; distribution is unlimited.
Not available
The Henry M. Jackson Foundation will provide space, personnel, equipment and to support surveillance and efforts in support of the Department of Defense Global Emerging Infections Surveillance and Response System (DoD-GEIS) research related to avian influenza and pandemic influenza preparedness and response. The Department of Defense Global Emerging Infectious Surveillance and Response System (DoD-GEIS) has been charged to manage a $39M congressional supplement for Avian/Pandemic Influenza. Time is of the essence and Congress expects improved DoD surveillance systems to be in place early. The urgency imposed on us by Congress and the even greater urgency of having an enhanced surveillance system in place before, not after, the pandemic start is critical. The Department of Defense Global Emerging Infectious Surveillance and Response System (DoD-GEIS) central hub will initiate a plan to provide funding, personnel resources, the centralized management for coordination and reporting related to the DoD efforts for improving global surveillance and efforts in support of research related to avian influenza/pandemic influenza. The results of these efforts will be coordinated with the Unified Combatant Commands and other military and civilian organizations/agencies.

AD0443661
Asymptotic Behavior of an SI Epidemic Model With Pulse Removal OTTOSON UNIV-WISCONSIN-MILWAUKEE DEPT OF MATHEMATICAL SCIENCES
Kahraman, K. M.,Lauko, I. G.,Pinter, G. A.
1/1/2006 18 Not available AFOSR U A - 01 Approved for public release; distribution is unlimited.
Not available
This paper we discuss an SI epidemic model with pulse removal from the infective class at fixed time intervals with both exponential and logistic type underlying population dynamics. This model has a significance when dealing with animal diseases with no recovery or when we consider isolation in human diseases. We provide a rigorous analysis of the asymptotic behavior of the percentage of infected individuals, the total number of infected individuals, and the total population in our model. We show that periodic removal/isolation is a feasible strategy to control the spread of the disease.
On June 28, 2009, the Honduran military detained President Manuel Zelaya and flew him to Costa Rica, ending 27 years of uninterrupted democratic, constitutional governance. The United States and international community have universally condemned the events in Honduras and called for a restoration of Zelaya and the rule of law. General elections to elect a new president and National Congress are scheduled to be held on November 29, 2009, though questions remain concerning whether Zelaya supporters and the international community will accept the results. The political instability brought about by the removal of President Zelaya has created yet another challenge for Honduras, one of the hemisphere's poorest countries. In addition to significant challenges in the areas of crime, human rights, and improving overall economic and living conditions, the country faces a poverty rate of nearly 70%, high infant mortality, and a significant HIV/AIDS epidemic. While traditional agricultural exports of coffee and bananas are still important for the economy, nontraditional sectors, especially the maquiladora, or export-processing industry, have grown significantly over the past decade. The economy, which grew by 6.3% in 2007 and 4% in 2008, has benefitted from significant debt reduction by international financial institutions that have freed government resources to finance poverty-reduction programs. The global financial crisis and current political crisis, however, are expected to slow economic growth sharply in 2009.
Consider a population which is exposed to m infections, and consist initially of N susceptibles.

Among influenza viruses, type A viruses exhibit the greatest genetic diversity, infect the

12/1/2009 80 Not available NPS U A - 01

FSU-STATISTICS-

Approved for public

7/24/1964 5 TRANS-1132 SMUFD U A - 01

Analysis of the Distribution of

U.S. Drug Control Strategy

Approved for public

1/1/1992 13 Not available NDU/NWC U A - 01

The article includes a temporary evaluation of the meteorological conditions in the summer of 1963 in Poland, the course of the tobacco downy mildew epidemic, the situation on tobacco plantation in vegetation, and a short discussion of the prophylactic measures employed.

On September 5, 1989 President Bush in a nationally televised address presented his first

Approved for public

1/1/1992 13 Not available NDU/NWC U A - 01

The article includes a temporary evaluation of the meteorological conditions in the summer of 1963 in Poland, the course of the tobacco downy mildew epidemic, the situation on tobacco plantation in vegetation, and a short discussion of the prophylactic measures employed.

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The article includes a temporary evaluation of the meteorological conditions in the summer of 1963 in Poland, the course of the tobacco downy mildew epidemic, the situation on tobacco plantation in vegetation, and a short discussion of the prophylactic measures employed.

On September 5, 1989 President Bush in a nationally televised address presented his first
The purpose of this study was to examine present Air Force policy on HIV infection and the predicted course of the AIDS epidemic. Based on the examination of Air Force Information concerning AIDS and HIV infection for both the general population as well as the Department of Defense released, it was determined that the predicted course of the epidemic among individuals in the Air Force is insignificant. Keywords: Personnel management, policies, Air Force readiness issue, HIV infection, AIDS epidemic.

The goals of this work are to design and test novel T cell-targeted adenoviral (Ad)-based influenza vaccines with modified vector tropism ([designed to efficiently transduce dendritic cells (DC)]. Drs. Curiel and Dmitriev (WU) generated multiple replication-deficient GFP expressing Ad vectors incorporating cane Ad transgenes specific for murine antigens presenting cells (CD40, Clec9a, and others). We tested the efficiencies of each using in vitro transduction assays in both T cell lines and others. We identified 2 different Ad vectors with enhanced DC transduction efficiencies. Control Ad and DC-targeted Ad vectors engineered to express conserved influenza CD4 and CD8 T cell epitopes are currently being generated and will be tested in HLA A2/DR1 transgenic mice. Closing of the synthetic multi-epitope influenza vaccine genes was straightforward, however, rescue and propagation of recombinant DC-targeted Ad was problematic. Drs. Curiel and Dmitriev have designed a workaround to suppress expression of the multi-epitope influenza vaccine gene during virus rescue and propagation, and we expect to have all novel vaccines ready for study within the next two months. We will determine whether mucosal delivery of these DC-directed T cell-targeted influenza vaccines provide superior immunogenicity and protection against multiple influenza subtypes in the next reporting period.

The Acquired Immunodeficiency Syndrome (AIDS) epidemic has provided unusual challenges to the Air Force planning. (JES) It is estimated that by 1995, the disease will be affecting 2% of the world’s population. This is an average of 260,000 new cases per year. The rate at which the disease is spreading worldwide is alarming. This is the case in the United States as well. The number of diagnosed cases stands at 170,000 by the end of 1985. It is estimated that by 1995, 400,000 cases will be diagnosed. The Air Force personnel is expected to be affected significantly by this epidemic. The second year of the three-year plan was completed in two years with the harvest of a definite conclusion that ribavirin is effective in the treatment of acute stage HFRS patients. Due to the painstaking efforts of scientists and officers of both sides, the three years plan was almost finished in two years with the harvest of a definite conclusion that ribavirin is effective in the treatment of acute stage HFRS patients. Due to the painstaking efforts of scientists and officers of both sides, the three years plan was almost finished in two years with the harvest of a definite conclusion that ribavirin is effective in the treatment of acute stage HFRS patients. Due to the painstaking efforts of scientists and officers of both sides, the three years plan was almost finished in two years with the harvest of a definite conclusion that ribavirin is effective in the treatment of acute stage HFRS patients. Due to the painstaking efforts of scientists and officers of both sides, the three years plan was almost finished in two years with the harvest of a definite conclusion that ribavirin is effective in the treatment of acute stage HFRS patients. 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The disease is characterized by early symptoms of fever, headache, and muscle pain, followed by more severe symptoms such as bloody urine and respiratory distress. The disease can be fatal if left untreated. The Hubei Medical University, in cooperation with the U.S. Army Medical Research Institute, has conducted a series of studies to investigate the epidemiology, pathogenesis, and treatment of HFRS. In 1985, the beginning year of a three-year contract between Hubei medical University and the USAMRIID on a collaboration program of HFRS treatment with ribavirin, the first report on the establishment of an international cooperation in HFRS was initiated by Dr. Chm-mih Huang, Professor of Virology of Hubei Medical University and immediately supported by Dr. Jia-qi Yang, president of Hubei Medical University and Dr. David L. Hansard, Director of U.S. Army Medical Research Institute of Infectious Diseases in 1985, the beginning year of a three-year contract between Hubei medical University and the USAMRIID on a collaboration program of HFRS treatment with ribavirin. This was with an idea of setting up a goal of “must success” of the Sino-American cooperation study. Due to the painstaking efforts of scientists and officers of both sides, the three years plan was almost finished in two years with the harvest of a definite conclusion that ribavirin is effective in the treatment of acute stage HFRS patients.
<table>
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<th>Date</th>
<th>Title</th>
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<th>Document Type</th>
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<th>Status</th>
<th>Distribution</th>
<th>Conference paper</th>
<th>Technical Report</th>
<th>Research highlights</th>
<th>Summary</th>
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<tbody>
<tr>
<td>9/1/2004</td>
<td>Cohort: An Integrated Information Approach to Decision-Support for Military Subpopulation Health Care</td>
<td>Reichard, G. D., Demiry, Peter, Catalino, Joseph</td>
<td>31</td>
<td>AFMDA/VA</td>
<td>U</td>
<td>A - O1</td>
<td>Approved for public release; distribution is unlimited</td>
<td></td>
<td></td>
<td>Several sub-Saharan militaries have large percentages of troops with human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome. With the arrival of avian influenza in Africa, the potential exists that some of those soldiers might also become infected with H5N1, the virus responsible for the disease. Two possible scenarios have been postulated regarding how such a coinfection of HIV and H5N1 might present. (1) Soldiers already weakened by HIV/acquired immunodeficiency syndrome rapidly succumb to H5N1. The cause of death is a cytokine storm.</td>
</tr>
</tbody>
</table>
The purpose of the study was to determine the occurrence and rate of 'serorelapses' in persons who recovered from epidemic typhus. The study was conducted among immigrants who came to Israel from Eastern Europe after World War II, and it was conducted using sera from these individuals in the years that followed. The study revealed that 262 individuals, out of a total of 294, exhibited frequent variations in CF titers, which are indicative of serorelapse. The study also identified five major groups of individuals based on their serological profiles:

- **Group A**: 42 persons with titers of <10 and no fluctuations in the antibody level.
- **Group B**: 35 persons whose sera throughout all bleedings gave persistent low CF titers, in the range of 1:10 to 1:40.
- **Group C**: 16 individuals whose sera throughout five to six bleedings showed persistent CF titers in the range of 1:40 to 1:80.
- **Group F**: 21 persons whose sera turned out to be anticomplementary. Outstanding is Group D which is composed of 11 cases, out of the 125 tested, who exhibited frequent variations in CF titer four to eight-fold. It is a matter of interpretation if these eleven volunteers constitute evidence for what has been termed 'sero-relapses'.

The study highlights the importance of monitoring CF titers in individuals who have recovered from epidemic typhus, as serorelapses can indicate a potential re-infection or reactivation of the disease.
Three Papers in International Health: Modeling the Links between Economics and Epidemiology

Dutta, Arindam
4/1/2008 188 Not available X5 U A - 01
Approved for public release; distribution is unlimited.

Paper I establishes the benefits of linking epidemiological modeling with international health policies. The 2009 Influenza A(H1N1) pandemic is used as a case study. The model provides insights into how international cooperation can influence the spread of the virus, highlighting the need for global surveillance and response strategies.

ADA500600
On a Characterization of Multivariate Distributions: Applications in Reliability and Epidemiology

Swedman, Kathleen S.; Jones, Nancy L.; Langberg, Naftali A.
5/21/2009 36 CRS-R40560 CRS/DC U A - 01
Approved for public release; distribution is unlimited.

Recent human cases of infection with a novel influenza A(H1N1) virus have been identified both internationally and in the United States. Since there has been human to human transmission and the new virus has the potential to become pandemic, it is timely to examine the legal issues surrounding this emerging public health threat. This report provides a brief overview of selected legal issues including emergency measures, civil rights, liability issues, and employment issues.

ADA600617
On a Characterization of Multivariate Distributions: Applications in Reliability and Epidemiology

Florida State Univ Tallahassee DEPT OF STATISTICS

Langberg, Naftali A.; Swedman, Kathleen S.; Jones, Nancy L.
Approved for public release; distribution is unlimited.

Interim rept.,

Let $T$ be a random variable with a distribution that is not limited. Let $T$ be the collection of all subsets of $(1, \ldots, n)$, and let $e_i$ be a function from the nth Euclidean space to $I$. It is proved that the minimum of $(e_i(T))$ over $i$ from 1 to $n$ and $a$ sub 1, ..., $a$ sub $n$ is independent random variables for every real numbers $a_1, \ldots, a_n$. Multivariate distributions possess the independence property are discussed.
### Investigation of the Biological Characteristics of Amantadine-Resistant Influenza A Virus.

**Authors:** Walters, Carol C.

**Institution:** AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH

**Date:** 6/18/1997

**ISBN:** AFIT-97-061

**Type:** Master's thesis

**Approval:** Approved for public release; distribution is unlimited.

**Summary:**

Since the first report of amantadine-resistant strains of influenza in 1981 there has been much speculation about the epidemiological impact of these strains should the use of amantadine and rimantadine become widespread during an influenza pandemic. To date, there have been only two reports of confirmed resistant strains that were isolated from patients with no drug treatment. All other resistant strains have been collected only after therapy with either rimantadine or amantadine. Because naturally-occurring resistant strains are not isolated more often in the absence of drug therapy, it has been suggested that the drug-resistant phenotype does not confer any type of selective or replicative advantage over the sensitive phenotype. As a corollary, the suggestion was made that those viruses with the susceptible phenotype may have a biological advantage over their resistant counterparts. This study was conducted to determine if one phenotype of influenza A virus has an advantage in replication over the other. To accomplish this, 30-hour growth curves were generated for one amantadine-sensitive and two resistant virus isolates. Evaluation of the experimental results included visual comparison and numerical analysis of the data.


**Authors:** Jackson, David P.

**Institution:** NAVAL POSTGRADUATE SCHOOL MONTEREY CA DEPT OF NATIONAL SECURITY AFFAIRS

**Date:** 12/1/2011

**ISBN:** NPS-NS

**Type:** Master's thesis

**Approval:** Approved for public release; distribution is unlimited.

**Summary:**

The concept of risk management provides the foundation of the homeland security enterprise. The United States faces numerous complex risks ranging from a series of natural hazards, pandemic disease, technological hazards, transnational criminal enterprises and acts of terrorism perpetrated by intelligent adversaries. The management of these risks requires a strategic collaborative effort from the intelligence and risk analysis communities and many stakeholders at all levels of government, including the private sector. Paradoxically, a decentralized collaborative approach to homeland security risk management may produce better results than a hierarchical central approach driven by the U.S. Department of Security, as this thesis suggests. Intelligence-Led Risk Management represents the fusion of intelligence with risk management in a collaborative framework to promote effective risk management throughout the homeland security enterprise. Concepts from strategic thought and planning, such as the Cynefin Framework, Appreciative Inquiry, and Quantum Planning provide vehicles to promote collaboration and thoroughly explore the spectrum of risk management options available to the homeland security enterprise. Decentralization of homeland security risk management to states with the application of Intelligence-Led Risk Management through the network of fusion centers will promote collaboration and yield a stronger risk management culture within the homeland security enterprise.

### History of Rickettsiology.

**Volume:** 1

**Authors:** Weiss, E.

**Institution:** NAVAL MEDICAL RESEARCH INST BETHESDA MD

**Date:** 1/1/1988

**ISBN:** NMC

**Type:** Not available

**Approval:** Not available

**Summary:**

This chapter is devoted to a discussion of three topics: The discovery of the major etiologic agents of rickettsial disease, their vectors, and mechanisms of transmission; The major technological developments that have facilitated the study, control, and treatment of rickettsiae and rickettsial diseases; and the evolution of the concept of rickettsia from a microbial entity which is neither a typical bacterium nor a typical virus to a well-characterized set of bacteria. Contents of Volume I include: Etiology; Rocky Mountain Spotted Fever (RMSF); Epidemic and Endemic Typhus Fevers; Trench Fever; Scrub Typhus; Q Fevers; Rickettsialpox; Staining Rickettsiae; Preantibiotic Chemotherapy; Early Vaccines; and Rickettsiae as Organisms and Rickettsial Physiology. Reprints.

### Syndromic Surveillance: Adapting Innovations to Developing Settings

**Authors:** Chretien., Jean-Paul; Burkom, Howard; S.; Sedyangsh, E.; Larwan, Riz; P.; Lescano, Andres; G.; Mandala, Carmen; B.; Blazes, David; L.; Munyaco, Caesar; V.; Cobert, Jacqueline; S.; Ashar, Raj J.; Lewis, Sheri H.

**Institution:** GLOBAL EMERGING INFECTIONS SURVEILLANCE AND RESPONSE SYSTEM SILVER SPRINGS MD

**Date:** 3/1/2008

**ISBN:** CEOMS/WO

**Type:** Journal article

**Approval:** Approved for public release; distribution is unlimited.

**Summary:**

This chapter is devoted to a discussion of three topics: The discovery of the major etiologic agents of rickettsial disease, their vectors, and mechanisms of transmission; The major technological developments that have facilitated the study, control, and treatment of rickettsiae and rickettsial diseases; and the evolution of the concept of rickettsia from a microbial entity which is neither a typical bacterium nor a typical virus to a well-characterized set of bacteria. Contents of Volume I include: Etiology; Rocky Mountain Spotted Fever (RMSF); Epidemic and Endemic Typhus Fevers; Trench Fever; Scrub Typhus; Q Fevers; Rickettsialpox; Staining Rickettsiae; Preantibiotic Chemotherapy; Early Vaccines; The Yolk Sac Revolution; Rickettsiae as Organisms and Rickettsial Physiology. Reprints.
Identification, Purification and Characterization of Major Antigenic Proteins of Campylobacter jejuni

VETERANS ADMINISTRATION MEDICAL CENTER NASHVILLE TN

Pei, Zhiheng, Ellison, Richard T., II, Blaser, Martin J.

1/1/1991 9 Not available USAMRDC U A - 01 Approved for public release; distribution is unlimited. Not available

Evidence from developing countries and volunteer studies indicates that immunity to Campylobacter jejuni and Campylobacter coli maybe acquired, but the antigenic basis for this protection is poorly defined. We have purified to homogeneity four proteins with molecular weights of 28,000 (PEB1), 29,000 (PEB2), 30,000 (PEB3), and 31,000 (PEB4) from epidemic C. jejuni strain 81-176 using acid extraction and sequential ion-exchange, hydrophobic interaction, and gel filtration chromatography. The relative amino acid compositions of these four proteins are similar to those of the C. jejuni homologs, 81-176 and 81-134.

Cloning and Characterization of the Mouse Hepatitis Virus Receptor

Uniformed Services University Of The Health Sciences Bethesda United States

Dveksler, Gabriela


The attachment of mouse hepatitis virus (MHV), a coronavirus, to the host cell membrane is the first step leading to viral infection. The cellular receptor for MHV has been previously characterized as a 100-120 kDa membrane glycoprotein, found in colon, small intestine and liver. This receptor has been shown to be the only partial of entry for MHV-A59. Identification of the mouse gene for the MHV receptor is essential in understanding the mechanism of host cell-virus interaction. To this end, a new cloning strategy based on the polymerase chain reaction technology was developed using RNA as starting material (RNAPCR). I employed glyceraldehyde-3-phosphate dehydrogenase as a control gene for the establishment of this cloning strategy. Amino acid homology and antibody reactivity had pointed to the murine carcinoembryonic antigen (CEA) family as a candidate for the cellular receptor for MHV. Using the RNAPCR system with information obtained from the partial N-terminal amino acid sequence for the MHV receptor and a partial murine CEA cDNA sequence, a 710 bp product was obtained. Nucleic acid sequencing confirmed that this clone was a portion of the receptor. This fragment was then used as a probe to screen a BALB/c liver lambda gt11 cDNA library, from which a clone was obtained that begins at amino acid 10 and ends with a poly A tail. Using an alternative PCR technique, the sequence of the first 10 amino acids of the mature receptor protein and part of the leader peptide were then identified. The partial MHV receptor cDNA was transcribed and translated in vitro. The in vitro synthesized protein had the predicted size based on the amino acid sequence, and was immunoprecipitated with polyclonal antibody directed against affinity-purified MHV receptor. This polyclonal antibody has been shown to block MHV infection of murine tissue culture cells to a dilution greater than 1/1,200.

Fuzzy Math: Do Current Relative Values Tell An Accurate Story?

MARINE CORPS COMMAND AND STAFF COLL QUANTICO VA

Hovey, Erik

2/8/2005 11 Not available USMC/CSC U A - 01 Approved for public release; distribution is unlimited. Research paper

Highly clustered event sequences are observed in certain types of crime data, such as burglary and gang violence, due to crime-specific patterns of criminal behavior. Similar clustering patterns are observed by seismologists, as earthquakes are well known to increase the risk of subsequent earthquakes, or aftershocks, near the location of an initial event. Space-time clustering is modeled in seismology by self-exciting point processes and the focus of this article is to show that these methods are well suited for criminological applications. We first review self-exciting point processes in the context of seismicity. Next, using residential burglary data provided by the Los Angeles Police Department, we illustrate the implementation of self-exciting point process models in the context of urban crime. For this purpose we use a fully parametric estimation methodology to gain insight into the form of the space-time triggering function and temporal trends in the background rate of burglary.
This study examines why and how Islamists' message of radicalization spread like a social epidemic. To a relatively small number of people can successfully initiate a social epidemic of religious extremism. By following simple rules of marketing, Islamists made their message stickier. To plan for vulnerable populations, some strategies have now been implemented and others are in progress. Recommended strategies will enable local jurisdictions to more effectively target and identify vulnerable populations; relevant agencies are engaged in planning; and opportunities are identified for improvement. This thesis elaborates how, through word-of-mouth and interpersonal communications, a small number of Islamists, with smartly contextualized ideas, given a receptive environment, can spread their influence rapidly. Borrowing from Social Movement Theory and other works, the thesis hypothesizes that a peak in the UK Muslim communities during the 1990s. The thesis elaborates how, through word-of-mouth and interpersonal communications, a small number of Islamists, with smartly contextualized ideas, given a receptive environment, can spread their influence rapidly. Borrowing from Social Movement Theory and other works, this thesis elaborates how, through word-of-mouth and interpersonal communications, a relatively small number of people can successfully initiate a social epidemic of religious extremism. By following simple rules of marketing, Islamists made their message stickier. To counter radicalization, the study suggests a paradigm shift: instead of countering the Islamists on theological grounds, reinvigoration of family is proposed as an all-in-one counter-radicalization tool that would remove social strains. This report contains translations/transcriptions of articles and/or broadcasts from around the world on epidemiology. Some titles include: Chittagong Diarrhea, Dysentery; Infant Mortality Rate Fourth Highest in Latin America (Brazil); Reasons for Continued Incidence of Polio Discussed; Increase in Dengue, Malaria Cases in Sarawak; Enforcement of Food Hygiene Law; Leprosy Cases Estimated at 12,000; Chlorine Typhoid Treatment Proves Fatal; Outbreak of Sheep Pox Near Brindisi Confirmed; Parvovirus Epidemic; Spread of Rinderpest Aggravated by Nomadic Herders; Increase in Cane Smut Disease Causing Concern; and others.

The United Nations Convention Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment (CAT) requires signatory parties to take measures to end torture within their territorial jurisdiction and to criminalize all acts of torture. Unlike many other international agreements and declarations prohibiting torture, CAT provides a general definition of the term. CAT generally defines torture as the infliction of severe physical and/or mental suffering committed under the color of law. CAT allows for no circumstances or emergencies where torture could be permitted. The United States ratified CAT, subject to certain declarations, reservations, and understandings, including that the Convention was not self-executing and therefore required domestic implementing legislation to be enforced by U.S. courts. In order to ensure U.S. compliance with CAT obligations to criminalize all acts of torture, the United States enacted sections 2340 and 2340A of the United States Criminal Code, which prohibit torture occurring outside the United States. The applicability and scope of these statutes were the subject of widely-reported memorandums by the Department of Defense and Department of Justice in 2002. In late 2004, the Department of Justice released a memorandum superseding its earlier memo and modifying some of its conclusions. Congress recently approved additional guidelines concerning the treatment of detainees. The Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act, 2006 (P.L. 109-148), and the National Defense Authorization Act for FY2008 (P.L. 109-163) contain identical provisions that prohibit the 'cruel, inhuman and degrading treatment or punishment of persons under the detention, custody, or control of the United States Government.'
The Pandemic Pendulum: A Critical Analysis of Federal and State Preparedness for a Pandemic Event

NAVAL POSTGRADUATE SCHOOL MONTEREY CA

Foley, John R.

3/1/2009 89 Not available NPS U A - 01 Approved for public release; distribution is unlimited.

This paper explores pandemic planning efforts across federal and state jurisdictions and how the absence of collaboration could have major consequences upon the population of the United States. How adequate are state and federal pandemic plans, and what must be done nationally to address common shortfalls? The methodology used a hybrid approach by combining a secondary analysis of available data with a modified case study approach. Analysing the individual state plans and HHS' Pandemic Influenza Plan revealed common deficiencies, and disclosed distinct functional areas where stringent collaboration across multiple jurisdictions and functional areas would mitigate the deficiencies and provide a blueprint for potential development into an all-hazards national catastrophe plan. This resultant comprehensive plan would provide a solid template for all stakeholders to use in further development of their individual plans, and additionally provide a mechanism to propagate proactive planning efforts among international disaster preparedness partners.

Physiologic and Endocrine Correlates of Overweight and Obesity in African Americans and Caucasians

HENRY M JACKSON FOUNDATION FOR THE ADVANCEMENT OF MILITARY MEDICINE ROCKVILLE MD

Deuster, Patricia A.

3/1/2007 13 Not available USAMRMC U A - 01 Approved for public release; distribution is unlimited.

Obesity has reached epidemic levels and yet the incidence continues to rise. The current study is seeking to examine the hypothesis that obesity may reflect dysfunctioning of the hypothalamic-pituitary-adrenal (HPA) axis in response to stressors. African American persons are at greatest risk, but reasons for this difference are unknown. We will study 120 men and women of Caucasian and African American ethnicity and examine their responses to physiologic stressors: exercise and ingestion of a meal. Methods: The HPA axis will be studied in some detail by using two stressor paradigms and two steroid regimens. We expect to be able to detect subtle differences in HPA axis reactivity in obese individuals that might contribute to morbidity and perhaps even make individuals resistant to therapeutic interventions. Results: We have enrolled 124 participants, with 93 completed. Data collection and analyses are proceeding on schedule. Two abstracts were presented in 2006 and one is submitted and accepted for presentation in Summer 2007. Conclusions: We are on schedule for all study milestones and look forward to being able to answer the important questions regarding the potential role of the HPA axis in obesity.

Virus Genomes Reveal the Factors that Spread and Sustained the West African Ebola Epidemic

ARMY MEDICAL RESEARCH INST OF INFECTIOUS DISEASES FORT DETRICK MD FORT DETRICK United States

Dudas, Gytis,Ledger,Jason,Carroll,Mac,Low,M,Beaver,Trevor,Talman,Andrew,Jean solder,Brian,Allan,Caddy,Sharon,Cotton,Marie,Dambrossi,Jonathan,Steele,Simon,Dr Carlo,Antonino,Didier,Pascal,W.,Duraffour,Sophie,Emerson,Mike,Fauci,Lazar

8/9/2016 37 TR-16-193 Not available U A - 01 Approved for public release; distribution is unlimited.

The 2013-2016 epidemic of Ebola virus disease in West Africa was of unprecedented magnitude, duration and impact. Extensive collaborative sequencing projects have produced a comprehensive collection of Ebola virus genomes, representing over 5 of known cases, unprecedented for a single epidemic. In the first comprehensive analysis of this entire collection, we reconstruct a detailed history of migration, proliferation and decline of the virus throughout the region. We test the association of geographical, climatic, administrative, demographic and cultural factors with viral movement between administrative regions. We identify a classic gravity model as the core dynamic, with more intense migration between larger population centers particularly when geographically close. Notably, we show that despite a strong attenuating effect of border closures on international dispersal, localized cross-border transmission had already set the seeds for an international epidemic, rendering these measures relatively ineffective in curtailing the epidemic. Finally, we use this empirical evidence to address why the epidemic did not spread into neighboring countries, showing that although these regions were susceptible to developing significant outbreaks, they were also at lower risk of viral introductions.
Unplanned pregnancies (UPs) and sexually transmitted diseases (STDs) continue to be
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Venezuelan equine encephalitis virus (VEE) is an emerging pathogen with epizootics and
The international, multipower community of the 21st century is being confronted by an
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10/11/1956 114 Not available ABL/MD U A - 01

Venezuelan equine encephalitis virus (VEE) is an emerging pathogen with epizootics and
carried out to date. VEE pathogenesis is characterized by infection of the central nervous
system (CNS) where the virus targets neurons, resulting in significant neurodegeneration. VEE
encephalitis can result in profound neurological deficits or even death. Because of the
devastating nature of this disease and the lack of interventional therapies, it is important to
understand the intricate details of VEE neuropathogenesis in order to identify targets for
treatment to effect a cure. Inflammation has recently been implicated as a component of
neurodegeneration. Inflammation in the CNS in response to acute infections is a protective
mechanism that attempts to contain and clear neuro-invasive pathogens, however this
upregulation of proinflammatory genes may be deleterious to surrounding neurons. The
combined effects of direct infection and inflammation may be additive or synergistic in the
amount of injury sustained in the CNS. Glial cells are of particular importance in the CNS
immune response. These resident cells of the CNS have intimate associations with neurons
and regulate the CNS milieu. One type of glial cell is the astrocyte. Astrocytes are found in
vast numbers in the CNS and have essential functional roles in maintaining a healthy
environment for neurons. Further, astrocytes play a role in the pro-inflammatory innate
immune response. To identify the role of astrocytes in VEE infection, I characterized astrocyte
susceptibility to VEE infection using an in vitro culture system and have further described
their pro-inflammatory responses following VEE infection.

Unplanned pregnancies (UPs) and sexually transmitted diseases (STDs) continue to be
epidemics in active-duty women, resulting in morbidity and high financial costs with an
adverse impact on combat readiness. However, the exact rates and the predisposing factors
are not clearly defined. This project will document the prevalence and incidence of UPs and
STDs in women assigned to two commands and define the demographic and behavioral
correlates for both of these outcomes. Participants are screened for STDs and pregnancy at
the time of enrollment and followed prospectively. Gynecological screening consists of
pregnancy testing and newer, noninvasive assays for chlamydia and gonorrhea. Serologies for
HIV, syphilis and hepatitis B also are being performed. Behavioral risk factors are being measured
through a survey instrument, human use approval, and identification of lifetime partners, and high rate of prior STDs and UPs.
One of the objectives listed in the 2003 National Strategy for Combating Terrorism is to win the “War of Ideas.” This thesis seeks to place an analytic framework around this war. The goal is to create a methodology for considering alternatives and some concrete metrics with which to compare courses of action. The fundamental assumption is that one-to-one (i.e., one-on-one interaction) is the key to winning this war.

Disease dissemination models provide a useful framework to consider biological countermeasures. This thesis seeks to place an analytic framework around the “War of Ideas.” The goal is to create a methodology for considering alternatives and some concrete metrics with which to compare courses of action. The fundamental assumption is that one-to-one (i.e., one-on-one interaction) is the key to winning this war.

In the United States, the public health sector has a history of distributing vaccines and other medical products using a variety of models. Historically, this sector has been dominated by state and local health departments, which have been responsible for distributing vaccines to the general public. However, in recent years, there have been efforts to shift the focus of vaccine distribution to the military health system. This shift has been driven by several factors, including the changing demographics of the population and the increasing demand for vaccines.

One of Worst in World’. Cholera Almost Under Control in Mpika. Becoming Increasing Health Threat, Drugs Recommended, Drug Resistance, Health Status. Changes in the Cholera Outbreak in Mocha. The outbreak has been linked to a local hospital, which has been closed due to concerns about the spread of the disease. This is one of the largest outbreaks to occur in the country in recent years.

The traditional public health model for mass vaccination, which is based on the assumption that one-to-one interaction is the key to winning the “War of Ideas,” is flawed. Funding initiatives by Congress, while addressing certain inadequacies, have failed to consider workforce capacity that continued to decline resulting from state and local budget cuts. Thus, as the nation prepared for its first pandemic in 40 years and first of the twenty-first century, it found itself unprepared for a mass vaccination campaign. This thesis explores pandemic vaccine distribution, contrasting Department of Health and Human Service guidance with pandemic gap analyses and the recent H1N1 vaccination campaign. An analysis of the literature revealed that unresolved state and federal distribution issues contributed to distribution delays during the H1N1 call for mass vaccination. Policy analysis was used to evaluate public health and private sector vaccine distribution models, and a third hybrid model was proposed to support U.S. national security interest in biosecurity. The hybrid model offers a strategic solution for pandemic vaccine distribution and proposes a new approach for efficient, rapid distribution of biological countermeasures.
This report is the first known comprehensive review of those viruses and rickettsiae which may contaminate food and which may subsequently initiate infection in man. There are 10 viruses and 1 rickettsia which have this capability. Milk is the most frequent vehicle for virus infection in man. The total inactivation dose recommended is $5 \times 10^6$ roentgens for all viruses except infectious hepatitis. For this virus a dose of $2 \times 10^7$ roentgens is recommended.

Meningococcal meningitis occurs as major epidemics in the areas of Africa south of the Sahara designated by Lapeyssonnie as the meningitis belt. These outbreaks are generally sporadic and difficult or impossible to anticipate. Meningococcal disease is also a major public health problem in the Nile Valley from Alexandria, Egypt to the southern regions of the Sudan. Like the disease in the sub-Saharan region, meningococcal meningitis in the Nile Valley is seasonal and most frequently caused by Neisseria meningitidis serogroup A. However, meningitis in Egypt and the Sudan is unique in that it occurs in the large urban areas of Cairo and Khartoum with relatively minor variations in disease incidence between seasons; i.e., while epidemics tend to occur in these cities at approximately 5- to 10-year intervals, the incidence the year after a major outbreak is generally very high, and the number of cases seen at the infectious disease hospitals during any meningitis season is almost always considerable. This predictable availability of patients with meningococcal disease presented an unusual opportunity for investigating clinical, epidemiological, prophylactic, and therapeutic aspects of meningococcal infections. The Naval Medical Research Unit No. 3 in Cairo has conducted a research program on meningococcal meningitis since 1968. These investigations were performed primarily at the Abbassia Fever Hospital in Cairo, but field studies were also carried out in Alexandria and Khartoum. Reprints.
Statistics show that over 66% of American adults, or more than 127 million, are overweight or obese. There is a strong link between obesity and diabetes. As the rates of obesity rise, so will the epidemic of diabetes. Diabetes is the fifth leading cause of death by disease in the United States, and annual costs are $132 billion. Without proper medical care and patient education, individuals with diabetes will experience devastating, costly complications. Research shows that if patients at risk for developing diabetes make lifestyle changes, they can decrease their chance of progressing to diabetes by 59%. For those with diabetes, complications can be prevented and/or delayed with proper treatment and education. Building on previous work done by UPMC and the University of Pittsburgh, the focus of this program was to implement and evaluate comprehensive diabetes prevention and treatment programs disseminated throughout diverse practice settings and communities. In order to test the applicability of prevention and treatment modalities to diverse communities and racial and ethnic groups, we included initiatives targeted to underserved and military populations. To increase reach and access, we incorporated web-based tools and telecommunications technologies into our multi-faceted approach to prevention and treatment. As a result of the program, we were able to provide the AF SGR rationale for the implementation of the diabetes prevention and treatment programs, and assist them with such implementation. The work accomplished through these project years formed the basis of subsequent efforts to further demonstrate cost-effectiveness and sustainability.
### Breast Cancer and Early Onset Childhood Obesity: Cell Specific Gene Expression in Mammary Epithelia and Adipocytes

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<td>Camarillo, Ignacio G., Nichols, Maxine</td>
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<td>1-Jul-2006 - 30 Jun-2007</td>
<td>Obesity has become a major health problem in children and adults and is associated with increased breast cancer incidence and mortality. The epidemic of childhood obesity is recent and little information exists regarding its association with mammary tumorigenesis. Towards better understanding this relationship, we have developed and characterized a new rat model of childhood onset Diet Induced Obesity (DIO) and breast cancer. We have shown that young female rats fed a high fat Western Style diet have a 24-fold higher body fat mass and elevated serum comorbidity factors as compared to Chow fed Lean rats. When these animals are treated with the carcinogen MNU, mammary tumors appear sooner and in greater numbers in Obese rats. We determined via histology that tumors from Obese rats are of a more invasive type compared to tumors from Lean rats. This is in accord with the association between human obesity and breast cancer mortality. This new model parallels the onset of obesity as it occurs in humans and therefore provides an excellent system to study the underlying mechanisms of obesity and mammary tumor formation and progression. Our long-term goals are to exploit this model to better understand adipocyte-epithelial interactions during mammary tumorigenesis, identify and validate novel molecular therapeutic targets, and to establish biomarkers for cancer prevention and prognosis.</td>
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### Worldwide Emerging Environmental Issues Affecting the U.S. Military

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<td>Worldwide Emerging Environmental Issues Affecting the U.S. Military. May 2005 Report</td>
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<td>The new International Health Regulations adopted by the World Health Organization’s annual assembly on May 23, 2005, will increase security against global epidemics of deadly diseases by improving national and international capacity for preventing and responding to disease outbreaks. The new regulations include comprehensive assessment, reporting, and response standards mandatory for each country and to be implemented within a specific timeframe; operational mechanisms; increased collaboration between countries’ health offices and with the WHO; and a better coordinated international reporting and response system. The regulations stipulate the increased roles of countries and WHO in identifying, preventing, and responding to public health emergencies of international concern. WHO should be quickly informed of any outbreak of four diseases—SARS, bird flu, smallpox, and polio—as well as any outbreaks of potential international public health concern from known or unknown causes or sources. These regulations will formally come into force two years after approved by the Assembly. The new WHO regulations should be distributed to relevant military commands so they can determine the implications for their operations and potentials for collaboration with WHO country offices and the Global Outbreak Alert and Response Network (GOARN). Such reviews should also include the new matrix developed by WHO for helping countries identify whether new health incidents are of international concern. Military organizations should be ready to use it on their own initiatives (and for their own protection) in countries that are not well prepared to respond to the new regulations.</td>
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Unlimited/Unlimited Distribution

Page 141 of 231 Pages
On January 27, 2010, Porfirio Lobo Sosa was inaugurated President of Honduras. Lobo assumed power after seven months of domestic political crisis and international isolation that had resulted from the June 28, 2009 ouster of President Manuel Zelaya. The political crisis has left Lobo with a number of challenges, including considerable domestic political polarization, a lack of international recognition, and a faltering economy. Nonetheless, the strength of Lobo’s National Party in the legislature and the weakness of his opposition will likely allow the new president to implement his policy agenda. The Honduran economy has undergone a number of changes in recent years. While traditional agricultural exports of coffee and bananas are still important, nontraditional sectors, especially the maquiladora, or export-processing industry, have grown significantly over the past decade. Substantial economic growth (6.3% in 2007 and 4% in 2008) and considerable debt reduction by international financial institutions have freed government resources to finance poverty-reduction programs. Nonetheless, Honduras continues to face a poverty rate of nearly 70%, in addition to widespread crime, high infant mortality, and a significant HIV/AIDS epidemic. Moreover, Honduras experienced an estimated 4.4% economic contraction in 2009 as a result of the political crisis and global economic downturn. Although relations have been strained recently as a result of the political crisis, the United States has traditionally had a close relationship with Honduras. Overall U.S. policy goals include a strengthened democracy with an effective justice system that protects human rights and promotes the rule of law, and the promotion of sustainable economic growth with a more open economy and improved living conditions. The United States also cooperates with Honduras to deal with transnational issues such as illegal migration, crime, narcotics trafficking, trafficking in persons, and port security.
Morphologic Studies on Experimental Epidemic Encephalitis (Summer Encephalitis) in Monkeys (First Report). Anatomic and Histologic Changes, Especially of the Internal Organs, in Monkeys Infected through the Nose.

The writers conclude that: (1) The morphologic changes observed in experimental monkey encephalitis are almost identical to those seen in human; (2) After intranasal inoculation of large quantities of virus, the virus readily finds its way into the brain along the olfactory nerve. Slight alterations develop in the brain from the time of incubation on. The virus also finds its way into the circulation within the first 48 hours and there gives rise to alterations in a certain sequence; and (3) Not only the central nervous system reacts to the encephalitis virus (summer encephalitis), but also the mesenchymal tissue of all the rest of the body, although the reactions of the latter are not as pronounced.

The report serves to illustrate the very special clinical behavior of the Newcastle virus: it is unilateral, and presents the symptoms of Parinaud's syndrome; there is palpebral swelling and pre-auricular adenopathy, frequent chemosis particularly marked on the inner surface of the semi-lunar fold, frequent subconjunctival hemorrhage, benignity, and normal absence of any corneal symptoms. This kind of conjunctivitis is not very typical of the general run of acute conjunctival infections. Its appearance in rural areas where veterinarians are already alerted to the presence of a deadly epidemic in the poultry-yards should make its etiology immediately suspect.

Epidemiological geography is defined as the study of the nature of the geographical distribution of infectious and parasitic diseases of man. Its subject is not only nosoareal (field of disease distribution), but the area of the species of the causative agent of disease, with which the nosoareal is inseparably linked. Because the existence of causative agents of human diseases depends both on the uninterrupted flow of the epidemic process (anthroponosis), and on the uninterrupted flow of epizootic processes among farm (zoonoses of farm animals) and wild animals (naturally focal zoonoses), epidemiological geography deals with all of these categories and considers them in a geographical aspect.

Epidemic outbursts of diseases among the troops are not the inevitable concomitants of wars, but arise as a result of the unsatisfactory state of the authorized organizational structure of the medical service and the quantitatively inadequate and topically incomplete training of the necessary specialists, especially the administrative personnel in the service. The antiepidemic experience of the past war cannot serve as the necessary basis and peacetime antiepidemic work cannot serve as a sufficient basis for the training of the necessary specialists, unless that experience and that antiepidemic work are systematically supplemented by the conclusions evolving from the achievements of the technical, natural, and especially the biological and medical sciences. The carrying out of planned inoculations among troops in the field is possible when the scheme for immunization with vaccine preparations is one-time, and the method is simple and capable of encompassing large masses of people in short periods of time. But inoculations on the basis of epidemic indications take on greater effectiveness when, in addition to this one-time principle and the simplicity of the method of application of vaccine preparations, the latter possess high immunogenic properties assuring the onset of general and local immunity in short periods of time approaching the length of the incubation period for the corresponding epidemic diseases.
In April 1989 an epidemic of febrile illness occurred in Berbera, northern Somalia, several weeks after heavy rainfall, flooding and increase in mosquito populations. A malaria epidemic was ongoing in nearby Djibouti. Malnutrition and diarrhoea were endemic. Symptoms were influenza-like, lasted approximately 1 month and progressed to shock and death in about 700 persons between April 4- June 20, 1989. A WHO team detected falciparum malaria among 16/25 patients, all negative by Widal tests. In July 1989 a U.S. Navy team administered a questionnaire and obtained blood samples from 100 outpatients at the District Hospital. Peripheral smears were positive from malaria in 16/82 patients (13 falciparum). An additional patient, still symptomatic, had confirmed falciparum malaria which resolved with treatment (fansidar). IgM antibody to dengue virus was detected in only 3%. IgG antibodies were detected for Dengue virus in 59%, West Nile Fever virus in 34%, Yellow Fever virus in 30%, Rift Valley Fever and Congo-Crimean Haemorrhagic Fever viruses in 7% each, Chikungunya virus in 4%, Ebola and Marburg viruses in 1% each, Rickeksia conorii and Coxiella burnetii in 40% each and Rickeksia typhi in 13%. The agent responsible for the epidemic could not be confirmed, but serological evidence of arboviral and rickettsial infection requires that these agents be considered in future epidemics.
Cloning and Characterization of the Mouse Hepatitis Virus Receptor

Technical Report

The attachment of mouse hepatitis virus (MHV), a coronavirus, to the host cell membrane is the key first step leading to viral infection. The cellular receptor for MHV has been previously characterized as a 100-120 kDa membrane glycoprotein, found in colon, small intestine and liver. This receptor has been shown to be the only portal of entry for MHV-A59. Identification of the mouse gene for the MHV receptor is essential in understanding the mechanism of host-cell-virus interaction. To this end, a new cloning strategy based on the polymerase chain reaction technology was developed using RNA as starting material (RNAPCR). I employed glyceraldehyde-3-phosphate dehydrogenase as a control gene for the establishment of this cloning strategy. Amino acid homology and antibody reactivity had pointed to the murine carcinoembryonic antigen (CEA) family as a candidate for the cellular receptor for MHV. Using the RNAPCR system with information obtained from the partial N-terminal amino acid sequence for the MHV receptor and a partial murine CEA cDNA sequence, a 710 bp product was obtained. Nucleic acid sequencing confirmed that this clone was a portion of the receptor. This fragment was then used as a probe to screen a BALB/c liver lambda gt1 cDNA library, from which a clone was obtained that begins at amino acid 10 and ends with a poly A tail. Using an alternative PCR technique, the sequence of the first 10 amino acids of the mature receptor protein and part of the leader peptide were then identified. The partial MHV receptor cDNA was transcribed and translated in vitro. The in vitro synthesized protein had the predicted size based on the amino acid sequence, and was immune precipitated with polyclonal antibody directed against affinity-purified MHV receptor. This polyclonal antibody has been shown to block MHV infection of murine tissue culture cells to a dilution greater than 1/1,200.
Effects of Relative Humidity and Spraying Medium on Ultraviolet (UV) Decontamination of Filters Loaded with Viral Aerosols

AD0458312
FLORIDA UNIV GAINESVILLE DEPT OF ENVIRONMENTAL ENGINEERING SCIENCES

Wu, Myung-Woo; Smith, Tammy; Wu, Chang-Tzu; Grippin, Adam; Amaro, Danni; Wander, Joseph D.

2/1/2012 9
AFRL-RX-TY-TP-2012-0018

TP-2012-0018-AFRL-RX-TY

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Approved for public release; distribution is unlimited.

Journal article

Although respirators and filters are designed to prevent the spread of pathogenic aerosols, a stockpile shortage is anticipated during the next flu pandemic. Contact transfer and aerosolization of collected microbes from used respirators are also a concern. An option to address these potential problems is ultraviolet (UV) irradiation, which inactivates microbes by dimerizing thymine in nucleic acids. The objective of this study was to determine the effects of ultraviolet and environmental conditions on decontamination efficiency by UV. In this study, filters were contaminated by different transmission pathways (droplet and aerosol) using three spraying media (deionized water (DI), beef extract (BE), and artificial saliva (AS)) under different humidity levels (30% (LRH), 60% (MRH), and 90% (HRH)). UV irradiation at constant intensity was applied for two time intervals at each relative humidity condition. The highest inactivation efficiency (IE), around 5.8 logs, was seen for DI aerosols containing MS2 on filters at LRH after applying an UV intensity of 1.0 mW/cm2 for 30 min. IE of aerosols containing MS2 was lower than that of aerosols containing MS2. Absorption of UV by high water content and shielding of viruses near the center of the aggregate were considered responsible for this trend. Across the different media, IE's in AS and in BE were much lower than in DI for both aerosol and droplet transmission, indicating that solids present in AS and BE exhibited a protective effect. For particles sprayed in a protective medium, RH is not a significant parameter.

Decontamination of Filters Loaded with Viral Aerosols

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AIR FORCE INST OF TECHNOLOGY OH PATTERSON AFB OH

Backster, Gary D.

9/11/1992 161
AFIT/CC/ICA/92-360

AFIT

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A - 01

Approved for public release; distribution is unlimited.

Doctoral thesis

Content: Evaluate the Normalized difference Vegetation Index (NDVI) as a Predictor of Bank Vole Population Fluctuations; Assess the Association Between NDVI Values and Weather Parameters; Estimate the Population Prevalence of Psuamla Virus Antibody in Bank Voles; Determine if An Infectious Disease Epidemiologic Model Using NDVI can be Developed to Predict Human Psuamla Virus Outbreaks; The Animal Reservoir; Some Principles of Satellite Remote Sensing; The Application of Satellite Remote Sensing Techniques to Epidemiology; The NOAA-9 Spacecraft and the AVHRR Sensor, Normalized Difference Vegetation Index (NDVI)

Remote Sensing; The Application of Satellite Remote Sensing Techniques to Epidemiology; The NOAA-9 Spacecraft and the AVHRR Sensor, Normalized Difference Vegetation Index (NDVI)

Satellite Remote Sensing; The Application of Satellite Remote Sensing Techniques to Epidemiology; The NOAA-9 Spacecraft and the AVHRR Sensor, Normalized Difference Vegetation Index (NDVI)

Traumatic brain injury (TBI) is a major public health problem in the U.S. and around the world. In the U.S., it plays a major role in approximately 30% of injury related civilian deaths in the U.S. and is often referred to as the silent epidemic because of associated complications that go undiagnosed and unnoticed, but might have a lasting effect. Furthermore, the Defense and Veterans Brain Injury Center (DVBIC) has reported over 34,000 moderate to severe combat-related TBI (CRTBI) since 2000, making it a major source of mortality and morbidity for the U.S. military between 2000 and 2016. The significance of such numbers and statistics becomes apparent with the military's increased focus on Prolonged Field Care (PFC) and prolonged damage control resuscitation (pDCR). PFC is defined by Keenan as the field medical care, applied beyond doctrinal planning timelines by a SOCM (Special Operations Combat Medic) or higher, in order to decrease patient mortality and morbidity, utilize limited resources, and provide sustained care until the patient arrives at an appropriate level of care. Approximately 20% of individuals with combat-related severe TBI suffer acute neurological deterioration in the first 72 hours following injury, the potential time window of PFC. The authors, resource-constrained combat environment and lack of diagnostic capabilities could lead to delayed recognition of the severity of the TBI or in having rational treatment endpoints, resulting in exacerbated (secondary) brain damage and increased TBI-related disabilities. This is especially true when TBI-related injuries are combined with other injuries requiring pDCR.

Regents of the University of Michigan Ann Arbor United States

Tiba, Mohamad; Wade, Brendan; McCracke, Amanda; Wu, Chang-Heui; Wu, Myung-Woo; Smith, Tammy; Strain, Brandon; Sorooshmehr, Reza

1/1/2019 91
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Approved for public release; distribution is unlimited.

Technical Report,01 Jul 2018,31 Dec 2018

Traumatic brain injury (TBI) is a major public health problem in the U.S. and around the world. It plays a major role in approximately 30% of injury-related civilian deaths in the U.S. and is often referred to as the silent epidemic because of associated complications that go undiagnosed and unnoticed, but might have a lasting effect. Furthermore, the Defense and Veterans Brain Injury Center (DVBIC) has reported over 34,000 moderate to severe combat-related TBI (CRTBI) since 2000, making it a major source of mortality and morbidity for the U.S. military between 2000 and 2016. The significance of such numbers and statistics becomes apparent with the military's increased focus on Prolonged Field Care (PFC) and prolonged damage control resuscitation (pDCR). PFC is defined by Keenan as the field medical care, applied beyond doctrinal planning timelines by a SOCM (Special Operations Combat Medic) or higher, in order to decrease patient mortality and morbidity, utilize limited resources, and provide sustained care until the patient arrives at an appropriate level of care. Approximately 20% of individuals with combat-related severe TBI suffer acute neurological deterioration in the first 72 hours following injury, the potential time window of PFC. The authors, resource-constrained combat environment and lack of diagnostic capabilities could lead to delayed recognition of the severity of the TBI or in having rational treatment endpoints, resulting in exacerbated (secondary) brain damage and increased TBI-related disabilities. This is especially true when TBI-related injuries are combined with other injuries requiring pDCR.
Journal article

For more than four decades the cause of most type A influenza virus infections of humans has been attributed to only two viral subtypes, A/H1N1 or A/H3N2. In contrast, avian and other vertebrate species are a reservoir of type A influenza virus genome diversity, hosting strains representing at least 120 of 144 combinations of 16 viral hemagglutinin and 9 viral neuraminidase subtypes. Viral genome segment reassortments and mutations emerging within this reservoir may spawn new influenza virus strains as imminent epidemic or pandemic threats to human health and poultry production. Traditional methods to detect and differentiate influenza virus subtypes are either time-consuming and labor-intensive (culture-based) or remarkably insensitive (antibody-based). Molecular diagnostic assays based upon reverse transcriptase-polymerase chain reaction (RT-PCR) have short assay cycle time, and high analytical sensitivity and specificity. However, none of these diagnostic tests determine viral gene nucleotide sequences to distinguish strains and variants of a detected pathogen from one specimen to the next. Decision-quality, strain- and variant-specific pathogen gene sequence information may be critical for public health, infection control, surveillance, epidemiology, or medical/veterinary treatment planning. The Resequencing Pathogen Microarray (RPM-Flu) is a robust, highly multiplexed and target gene sequencing-based alternative to both traditional culture- or biomarker-based diagnostic tests. RPM-Flu is a single, simultaneous differential diagnostic assay for all subtype combinations of type A influenza viruses and for 30 other viral and bacterial pathogens that may cause influenzalike illness. These other pathogen targets of RPM-Flu may co-infect and compound the morbidity and/or mortality of patients with influenza.
On June 28, 2009, the Honduran military detained President Manuel Zelaya and flew him to exile in Costa Rica, ending 27 years of uninterrupted elected civilian democratic rule. The move was backed by the Honduran Supreme Court and National Congress, which selected Roberto Micheletti, the head of Congress, to fulfill the rest of Zelaya’s term. Zelaya’s removal was brought on by the ousted president’s insistence in pushing ahead with a referendum that was ruled illegal and eventually could have led to changes to the Honduran constitution. The United States and international community have universally condemned the events in Honduras and called for a restoration of Zelaya and the rule of law. Those involved in the plot and some sectors of Honduran society have rejected the international response, and maintained that Zelaya’s removal was an internal matter that was necessary to protect the country’s constitution. The political instability brought about by the removal of President Zelaya has created yet another challenge for Honduras, one of the hemisphere’s poorest countries. In addition to significant challenges in the areas of crime, human rights, and improving overall economic and living conditions, the country faces a poverty rate of nearly 70%, high infant mortality, and a significant HIV/AIDS epidemic. The United States has a close relationship with Honduras, characterized by an important trade partnership, a U.S. military presence in the country, and cooperation on a range of transnational issues. In addition to being a party to the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA), Honduras has cooperated extensively with the United States on counternarcotics and port security.

Malaria, Ecology, and Human Health: Parasitology and Prophylaxis in Kenya.

Malaria is a potentially lethal parasitic infection of the blood which is spread by the bite of the female anopheline mosquito. Unprotected or non-immune persons who are bitten by an infective mosquito develop a febrile disease which can incapacitate and kill in a few days. Unfortunately, humans do not easily develop immunity to malaria infection and repeated illness is the rule. Treatment with drugs can effectively cure most infections, but the spread of drug resistance has made treatment and prevention much more difficult. Understanding the mosquito vector can better define the spread of malaria which, under the proper human and climatic conditions, can be truly epidemic. Kenyan people carry an enormous burden of malaria disease and western Kenya, where much of the work summarized in this report was conducted, is one of the most malarious regions of the world.

Over the past 25 years, the U.S. Army and the Kenya Medical Research Institute (KEMRI) have participated jointly in medical research projects. Although the scope of the work has changed from an initial interest in trypanosomiasis to current efforts which focus almost exclusively on malaria research, the collaboration has remained strong and has resulted in significant advances for the understanding and control of tropical diseases in Kenya and East Africa in general. This report summarizes the collaborative effort for calendar years 1996 and 1997. The individual reports of events during the air attacks from July 25 to August 3, 1943 are quoted. Numerous illustrations show attack damage sustained by the city as well as civil defense activities initiated to counter the effects of the attack. A collection of police bulletins and newspaper articles from the period July to December, 1943, document the restoration of civil defense activities initiated to counter the effects of the attack. A collection of police bulletins and newspaper articles from the period July to December, 1943, document the restoration of civil defense activities initiated to counter the effects of the attack.
As action-oriented organizations, fire departments have traditionally played a reactive role in public safety, responding to emergencies in progress to protect the lives, and property of their citizens. The problem is that the world has changed. Increasing terrorist threats against our homeland and the potential for pandemic or other natural disasters are shifting the mission and placing new unconventional demands on the fire department. Meeting these challenges will require strategies to identify and address the future role of the fire service in homeland security. This thesis used the Delphi method to explore what this future role might be. Information, responses, and recommendations from three groups of SMEs were examined, analyzed, and synthesized to determine key issues the fire service will face. The future role of the fire service in homeland security will demand the need for progressive leadership, effective collaboration, intelligence engagement, and the adoption of a shifting mission that supports preparedness, prevention, response, and recovery of terrorist attacks. Emerging issues and areas of responsibility to meet new asymmetrical threats require a response paradigm. This response paradigm in the fire department should include the ability to adjust service delivery to meet all hazard and homeland security demands.

Our proposal is to determine the diagnostic utility of sphingomyelin (SM) and lysophosphatidylcholine (LPC) as the potential biomarkers to screen for excessive alcohol use (EAU); a rising epidemic reported to be as high as 40% among returning veterans. Drinking becomes excessive when it causes or elevates the risk for alcohol-related problems or complications of management of other health problems. According to the NH/AAAA, excessive drinking is defined as men who drink more than 4 standard drinks in a day (or more than 14 per week) and women who drink more than 3 drinks in a day (or more than 7 per week). Non-civilian military personnel have been deployed in support of the war efforts in Afghanistan (Operation Enduring Freedom, OEF) and Iraq (Operation Iraqi Freedom, OIF) since September 11, 2001. These sustained combat operations have resulted in life threatening complications. The model also represents the effect of tracing and quarantining as control options. The model has been implemented in Java for a Web-based educational tool. Numerical examples (pp. 12-15) illustrate possible behavior of populations exposed to such a disease as smallpox. Various disease controls such as vaccination and case tracing are studied.

In the years since the September 11 attacks of 2001, and following the Gulf Coast hurricanes and the earthquake in Haiti, research has shown that first responders and medical institutions remain insufficiently prepared to address the increased demands for emergency response during and following major disasters. The threat from terrorism and natural disasters is very real; thus, the medical system will face continual challenges. A brutal recent reminder of this was the international outbreak of the H5N1 virus that caused a worldwide pandemic in 2009.
Social network modeling is a relatively new addition to the armament of public health and epidemiology. Epidemiologists and communicable disease control researchers have been turning to network analysis to address and understand gaps in traditional outbreak management techniques such as contact tracing. Network analysis has shown utility in the study of a range of communicable disease outbreaks affecting both health and commerce, including SARS, tuberculosis, syphilis and foot-and-mouth disease, and may have applications in automated disease surveillance systems. Visualization of these communicable disease networks is an integral component of such analysis. However, visualization of more complex relationships will require consideration of a variety of epidemiologic factors which affect these relationships, and the development of techniques to display them. Any analysis of case level health data has the potential for compromising privacy, and network visualization is no exception. Use other analysis tools such as data mining, or Geographic Information Systems (GIS), network visualization will need to incorporate techniques to ensure confidentiality. In this paper we shall discuss the role of network analysis in communicable disease outbreak control, epidemiologic considerations in visualizing networks, and the emerging issue of confidentiality.
Defining the Antigenic Structure of the Henipavirus Attachment (G) Glycoprotein: Implications for the Fusion Mechanism

Uniformed Services University of the Health Sciences Bethesda MD

Belshe, Andrew C.

1/1/2009 204 Not Available GUSMS U A - E1 Approved for public release; distribution is unlimited. Doctoral thesis

Epidemics of communicable disease such as the Medieval Black Death (Yersinia pestes) or the introduction of smallpox to the Americas decimated human populations interrupted trade routes, and transformed social and economic conventions (reviewed in 69, 105, 136). However, communicable diseases remained enigmatic until the advancement of germ theory suggested these illnesses resulted from discrete biological sources. In 1928, Sir Alexander Fleming discovered penicillin and proved communicable disease could be treated and cured [54]. Further, development of the smallpox and rabies vaccines by Edward Jenner and Louis Pasteur, respectively demonstrated illness was preventable. These scientific advances ushered in an era of rapid development in prophylactic and therapeutic modalities resulting in significant global decreases in the health burden of infectious agents. As early as the mid 1940s widespread achievement in the control of infectious disease prompted public health leaders in the United States and elsewhere to declare the global threat of infectious disease had passed [140].

Inventory Management of Oral Cholera Vaccinations in the Event of Complex Natural Disasters

Naval Postgraduate School Monterey CA

Gregory, Joshua A, Taranto, Christine A

12/1/2015 69 Not Available NPS U A - E1 Approved for public release; distribution is unlimited. Research paper

This MBA Project explores the considerations and recommendations for mass vaccination campaigns in response to natural disasters and their secondary effects, specifically cholera epidemics and the vaccine stockpile necessary to effectively treat the disease. Cholera is a significant post disaster risk to an already affected population. As a first responder to these disasters, the Marine Air Ground Task Force (MAGTF) must consider an epidemic cholera outbreak as a threat to mitigate and be considered in the planning process for Humanitarian Aid/Disaster Relief (HA/DR) scenarios. This project considers these factors based on former HA/DR events as well as an inventory management model which determines optimized stockpile of vaccinations necessary in a given year in order to reduce the number of lives lost to cholera.

National Infrastructure Advisory Council: Chemical, Biological, and Radiological Events and the Critical Infrastructure Workforce. Final Report and Recommendations

National Infrastructure Advisory Council Washington DC

Deminger, Rebecca F Marsh, Martha A, Rhodes, Bruce A, Gallegos, Gilbert A, Richmond, James B, Nye, Eric A, Thompson, John W

1/8/2008 89 Not Available NIAC/DC U A - E1 Approved for public release; distribution is unlimited. Final rept.

The National Infrastructure Advisory Council (NIAC) convened a Working Group to study the impact of chemical, biological, and radiological (CBR) events on the critical infrastructure workforce, and to make recommendations. NIAC designed this report to identify attributes of different chemical, biological, or radiological event scenarios, identify key elements necessary to sustain critical infrastructure operations, and to make recommendations that will improve our ability to contain the impact, recover from its consequences, and restore the nation's critical infrastructure to a pre-event state. The NIAC formed an approach to the CBR study that focused on six key questions. These questions are: 1) Do organizations have programs focused on CBR events planning, preparedness, response or training? 2) Is there a market or other financial incentive to invest in CBR planning, preparedness, response or training capabilities? 3) Is there a sufficient communications infrastructure in place to support CBR event response and recovery? 4) What tools and technologies are available, or should be made available in the future, to support CBR event planning, preparedness, response or training programs? 5) Is there sufficient coordination between Federal, state, local, and private sector entities in support of CBR planning, preparedness, response, or training programs? 6) What can the Federal Government do to encourage or enhance planning, preparedness, response, and training capabilities across the public and private sectors? This report addresses the rationale behind these questions. The Executive Summary highlights key themes found throughout the document, and identifies a number of findings and recommendations that are common across CBR events. Included in subsequent sections are appendices that identify specific findings and recommendations unique to chemical, biological, or radiological events.

Agribusiness Industry, 2006

Industrial Coll of the Armed Forces Washington DC

Alder, Marian, Brum, Amy, Fox, Tim, Gay, Fran, Giordano, James, Holmes, Banne, Johnson, James, Kyser, Dianne, Lamarre, Chuck, Lovejoy, Kevin, Morgan, D Arcy

1/1/2006 65 Not Available RDRI/CAP U A - E1 Approved for public release; distribution is unlimited. Final rept.

The U.S. Agribusiness industry feeds some 300 million Americans daily, provides nearly 23% of the Gross Domestic Product and, throughout its value chain, employs approximately 17% of all U.S. workers. Of the three main responsibilities of a sovereign state, governing, defending and feeding its population, the last one towers over the others in terms of meeting the hierarchy of human needs. Agriculture in the U.S. is robust due to its supporting foundation of arable land, water, extensive government support and, most of all, the hard work of those who make up this industry, from the farmers to the retailers. It also has some critical vulnerabilities, be they urban encroachment, sustainable water resources, labor, agroterrorism, the threat of pandemics and the sometimes negative effects of globalization, which must be addressed in order to enable the U.S. to continue feeding its population.
Gonorrhea is one of the oldest recorded diseases of mankind. Over the past 15 years it has reached epidemic proportions, afflicting principally the most sexually active 15-30 years old age group at a rate of 12/1000/yr. The reasons for such high rates are multifactorial.

Increased promiscuity among sexually active adults, the propensity of gonorrhea to remain asymptomatic, the unique epidemiology of the disease and increased antibiotic resistance have all played important roles. Gonorrhea rates have always been particularly high in the United States, where the virus targets neurons, resulting in significant neurodegeneration. VEE encephalitis can result in profound neurological deficits or even death. Because of the devastating nature of this disease and the lack of interventional therapies, it is important to understand the intricate details of VEE neuropathogenesis in order to identify targets for treatment to effect a cure. Inflammation has recently been implicated as a component of neurodegeneration. Inflammation in the CNS in response to acute infections is a protective mechanism that attempts to contain and clear neuro-invasive pathogens, however this upregulation of pro-inflammatory genes may be deleterious to surrounding neurons. The combined effects of direct infection and inflammation may be additive or synergistic in the amount of injury sustained in the CNS.

Event correlation in enterprise network environments with tens of thousands of hosts is not feasible to establish attack causality accurately using anomaly detection and temporal event correlation in enterprise network environments with tens of thousands of hosts.
In the wake of recent terrorist attacks and increasing fears about the spread of highly contagious diseases, such as severe acute respiratory syndrome (SARS), federal, state and local governments have become increasingly aware of the need for an effective public health response to such events. An effective response could include the isolation of persons exposed to infectious biological agents released during an attack or infected with a communicable disease, as well as the quarantine of certain states, cities, or neighborhoods. Currently, state and local governments have the primary authority to control the spread of dangerous diseases within their jurisdiction, with the federal government’s role limited to interstate and foreign quarantine. However, many states have inadequate procedures in place for isolating individuals who are infected or believed to be infected and quarantining areas that are or may be infected. Generally, the laws currently in effect do not address the spread of disease resulting from a biological attack, and for the most part only address specific diseases that were the cause of past epidemics, not newly emerging diseases such as SARS. In light of recent events, many states are reevaluating their public health emergency response plans and are expected to enact more comprehensive regulations relating to isolation and quarantine. Public health experts have developed a Model State Emergency Health Powers Act to guide states as they reevaluate their emergency response plans. This report provides an overview of federal and state quarantine laws as they relate to the isolation or quarantine of individuals, as well as a discussion of the relevant case law. The Model State Emergency Health Powers Act is also discussed.

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<th>Study Title</th>
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<td>Federal and State Isolation and Quarantine Authority</td>
<td>Welborn, Angie A.</td>
<td>1/18/2005</td>
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<td>Differential Equation Models for Sharp Threshold Dynamics</td>
<td>Schramm, Harrison C., Dimitrov, Nedialko B.</td>
<td>8/1/2012</td>
<td>NIFS-OR-12-005</td>
<td>Technical rept. 1 Oct 2011-1 Aug 2012</td>
<td>We develop an extension to differential equation models of dynamical systems to allow us to analyze probabilistic threshold dynamics that fundamentally change system behavior. We apply our novel modeling approach to two cases of interest: a model of cyber infection, where a detection event drastically changes dynamics, and the Lanchester model of armed conflict, where the loss of a key capability drastically changes dynamics. We derive and demonstrate a step-by-step, repeatable method for applying our novel modeling approach to an arbitrary system, and we compare the resulting differential equations to simulations of the system’s random progression. Our work leads to a simple and easily implemented method for analyzing probabilistic threshold dynamics using differential equations.</td>
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Viable Legionella Pneumophila Not Detectable by Culture on Agar Media


Detection and monitoring of genetically engineered microorganisms released to the environment, as well as pathogens, are primary factors in risk assessment. Culture methods have been proposed for both detection and monitoring. However, microorganisms in natural systems may not always be culturable. We surveyed environmental samples collected from sources implicated in an epidemic of Legionnaires' disease and, although no cultures were recovered from environmental samples, numerous cells were observed by fluorescent microscopy when anti-L. pneumophila group 1 antibody was used. Similar observations have often been made by others. To study this loss of culturability, L. pneumophila strains were maintained in a microcosm (vessels containing sterilized environmental water) and assayed at intervals for growth an appropriate media, and lethality for chick embryos. At 4 C, the decline rate of colony forming cells was approximately 29 days; at 37 C it was 13 days. When microcosm water samples were injected into embryonated eggs, far greater chick embryo mortality was observed than could be accounted for by the number of culturable cells in the injections. Thus, previously non-culturable Legionella had multiplied once again and become culturable. These results indicate that samples that do not contain culturable cells, may contain cells that are viable, as demonstrated by their pathogenicity for chick embryos. The fluorescent antibody assay may provide a valuable indication of the presence of such viable but non-culturable cells. Keywords: Bioassay, Reprints, Cultures (Biology).

PREVENTING FUTURE SHOCK:

A Case for Addressing Future Threats to America's National Security

Langberg, Naftali A.

4/1/2001 62 Not available NDDO U A - 01 Approved for public release; distribution is unlimited.

The US has emerged as the sole superpower in the world for the foreseeable future. Despite this, there remain numerous threats to US vital national interests, including developing threats that have the potential to become significant threats in the future. We propose a National Security process that looks separately at future threats, as well as existing ones. In addition, we propose a reconsideration of the National Security Council's evaluation process and its coordination of national security and foreign policy among the various departments and agencies. To illustrate the problem of focusing primarily on more current threats, we present two very different but significant threats to the future of the national interest of the U.S.; the HIV/AIDS pandemic in Sub-Saharan Africa and the approximately forty thousand tactical nuclear weapons of the former Soviet Union (FSU) and the fissile material both within and in stockpiles throughout Russia. Both issues have far reaching international implications; the ten to twenty years that could be reduced to a much lesser level of threat, if not fully eliminated, by a concerted and appropriately funded effort now, The HIV/AIDS pandemic in Sub-Saharan Africa is a U.S. national security threat with far reaching international implications; if, left unconstrained will develop into a depopulation crisis of the African continent as much as a 50-80% over the next twenty years. The net effect would be reflected in the numbers of key professionals and skilled workers critical for the mining and production of minerals that are unavailable from any other part of the world, as well as 20% of all crude oil imported by the U.S. The cost of eliminating and controlling HIV/AIDS in Sub-Saharan Africa over the ten years is currently estimated to be $50 billion, comparable to the Marshall Plan in 1952 that pumped the equivalent of $88 billion into Europe.

The Multivariate Normal Distribution

The U.S. has emerged as the sole superpower in the world for the foreseeable future. Despite this, there remain numerous threats to US vital national interests, including developing threats that have the potential to become significant threats in the future. We propose a National Security process that looks separately at future threats, as well as existing ones. In addition, we propose a reconsideration of the National Security Council's evaluation process and its coordination of national security and foreign policy among the various departments and agencies. To illustrate the problem of focusing primarily on more current threats, we present two very different but significant threats to the future of the national interest of the U.S.; the HIV/AIDS pandemic in Sub-Saharan Africa and the approximately forty thousand tactical nuclear weapons of the former Soviet Union (FSU) and the fissile material both within and in stockpiles throughout Russia. Both issues have far reaching international implications; the ten to twenty years that could be reduced to a much lesser level of threat, if not fully eliminated, by a concerted and appropriately funded effort now, The HIV/AIDS pandemic in Sub-Saharan Africa is a U.S. national security threat with far reaching international implications; if, left unconstrained will develop into a depopulation crisis of the African continent as much as a 50-80% over the next twenty years. The net effect would be reflected in the numbers of key professionals and skilled workers critical for the mining and production of minerals that are unavailable from any other part of the world, as well as 20% of all crude oil imported by the U.S. The cost of eliminating and controlling HIV/AIDS in Sub-Saharan Africa over the ten years is currently estimated to be $50 billion, comparable to the Marshall Plan in 1952 that pumped the equivalent of $88 billion into Europe.
### Studies into Militarily Relevant Infectious Diseases of interest to Both United States and Royal Thai Governments

**ARMED FORCES RESEARCH INST OF MEDICAL SCIENCES/ROYAL THAI ARMY MEDICAL COMPONENT BANGKOK**

Puavilai, Sudsake; Nitayaphan, Gorachai

1/1/2001 44 Not available

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Final rept. 15 Oct 1994-31 Dec 2000

Cooperative agreement # DAMD17-95-2-5001 was implemented October 15, 1994 to provide funding support for Royal Thai Army at Armed Forces Research Institute of Medical Sciences (AFRIMS) engaged in research activities in collaboration with US Army. The principal focus of research under the agreement is directed to activities to prepare for development and testing of vaccine(s) for prevention of HIV infection and/or disease. During the funding period, research activities were directed in 4 primary areas: 1) active surveillance of RTA conscripts to determine the dynamics of HIV epidemic in Thailand; 2) studies of natural history of HIV infection/disease in Thais; 3) cohort development studies attempting to define an appropriate population(s) for phase III vaccine testing; 4) conduct of phase 1/11 vaccine studies to determine safety and immunogenicity of potential HIV vaccines in Thais. Other efforts under the Cooperative Agreement during the funding period included 1) animal care and handling in support of other ongoing research activities at AFRIMS, exclusive of HIV research; and 2) site maintenance activities in support of research activities including glassware and utilities support.

### Risk Factors for Sexually-Transmitted Diseases Among Deployed U.S. Military Personnel

**NAVAL MEDICAL RESEARCH INST THESSALONIKI THESSALONIKI THESSALONIKI**


10/1/1993 6 NARI-93-86 NARIDC

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Journal article, Sexually transmitted diseases (STDs), which are the most frequently reported category of communicable diseases in the United States, have historically been a problem in military populations. STDs are commonly acquired by military personnel outside of the United States, especially during overseas military deployments and during times of armed conflicts. The prevention of STD transmission has become a more important priority of the military because of the human immunodeficiency virus (HIV) epidemic. In order to implement a STD prevention and control program that relies on education, risk factors for acquiring STDs in young, sexually-active populations must be understood. However, the epidemiology of STDs in U.S. military populations has infrequently been characterized in recent years, and under-reporting is common in the military's passive surveillance system. In this study, risk factors for the transmission of STDs are evaluated in a questionnaire survey of U.S. military personnel deployed aboard ship to assist in evaluating and designing STD educational programs.

### Adaptive Dynamics, Control, and Extinction in Networked Populations

**Naval Research Laboratory Washington United States**

Schwartz, Ira B.; Lindley, Brandon; Shaw, Leah B.

7/9/2015 6 Not available

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Conference Paper

Real networks consisting of social contacts do not possess static connections. That is, social connections may be time dependent due to a variety of individual behavioral decisions based on current network links between people. Examples of adaptive networks occur in epidemics, where information about infectious individuals may change the rewiring of healthy people, or in the recruitment of individuals to a cause or fad, where rewiring may optimize recruitment of susceptible individuals. In this talk, we will review some of the dynamical properties of adaptive and random networks, such as bifurcation structure and the size of fluctuations. We will also show how adaptive networks predict novel phenomena as well as yield insight into network controls. Applying a new transition rate approximation that incorporates link dynamics, we extend the theory of large deviations to stochastic network extinction to predict extinction times. In particular, we use the theory to find the most probable paths leading to extinction. We then apply the methodology to network models and discover how mean extinction times scale with network parameters in Erdos-Renyi networks. The results are shown to compare quite well with Monte Carlo simulations of the network in predicting both the most optimal paths to extinction and mean extinction times.
### Evaluation of Evidence in Causal Inference

**Author:** Yahen Chen

**Title:** Inference in complex and uncertain situations

**Abstract:**

In this paper, we introduce a computational model of causal inference. The model is based on the idea that causal inference is a process of forming hypotheses about the world, testing these hypotheses against observed data, and updating our beliefs about the world as new evidence is collected. We describe the model in detail and demonstrate its effectiveness through a series of experiments.

**Keywords:** Causal inference, model-based reasoning, computational modeling.

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### Molecular Mechanisms and Treatment Strategies for Obesity-Associated Coronary Artery Disease

**Authors:** A. W. Smiley, A. J. Sternberg, M. Schustack

**Title:** Treatment Strategies for STAPHYLOCOCCI, SHIGELLA, and DRUG-RESISTANCE OF GENETICAL STUDY ON THE INCIDENCE OF OBESITY-ASSOCIATED VASCULAR DISEASE

**Abstract:**

This paper presents a comprehensive analysis of the molecular mechanisms and treatment strategies for obesity-associated conditions. It highlights the importance of identifying and targeting specific molecular pathways that underlie the development of obesity-related vascular disease. The authors discuss the role of genetic factors, environmental influences, and the interplay between these factors in the progression of disease.

**Keywords:** Obesity, vascular disease, molecular pathways, treatment strategies.

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The mechanisms underlying the pathogenesis of dengue hemorrhagic fever (DHF) remain poorly understood. Intriguing evidence suggests a role for viral strain differences. Consistent genetic differences exist in the envelope glycoproteins of dengue 2 strains associated with DHF epidemics (Asian genotype) and dengue 2 strains only associated with DF (American genotype). It has also been established that dengue virus infection can be mediated by C-type lectins DC-SIGN and L-SIGN. We developed an assay that uses cells expressing these relevant lectin receptors and low-passage viral isolates. Using this assay, we examined whether Asian and American genotype dengue 2 viruses exhibit differences in utilization of these two receptors. Our results showed that American strains infect DC-SIGN bearing cells to a greater extent than L-SIGN bearing cells while Asian strains preferentially infect L-SIGN bearing cells. A single mutation in the envelope glycoprotein of an American strain at E390 from aspartic acid (American) to asparagine converted the C-type lectin binding phenotype from an American strain to an Asian strain by the observation that the E390 amino acid (aa) in the Asian strain is also asparagine. Asian and American strains differed in their sensitivity to antibody neutralisation. The neutralizing capacity of mAbs 3H5 and 4G2 for Asian virus was significantly decreased when infection was measured in L-SIGN bearing cells compared to DC-SIGN bearing cells. Serum from Venezuelan DF patients had much greater neutralizing capacity for Asian virus in L-SIGN cells than serum from patients who progressed to DHF. Magnitude of neutralization of L-SIGN-mediated Asian virus infection was inversely associated with disease severity. Our studies suggest that differences in receptor utilization and neutralization sensitivity may contribute to our understanding of the role that viral strain differences play in dengue pathogenesis.

For a stochastic epidemic of the type considered by Bailey (1) and Kendall (3), Daniels (2) showed that 'when the threshold is large but the population size is much larger, the distribution of the number remaining uninfected in a large epidemic has approximately the Poisson form.' A simple, intuitive proof is given for this result without use of Daniels' assumption that the original number of infectives is 'small'. The proof is based on a construction of the epidemic process which is more explicit than the usual description.

The purpose of this study is to utilize adaptogen libraries coded within pantropic retroviral vectors that confer protection against rickettsiae and to study the molecular pathogenesis of rickettsioses. The following specific aims were proposed: 1) To establish heterogeneous cell populations, with each cell expressing a unique member of a complex combinatorial peptide-based (e.g., adaptogen) library and challenge with R. prowazekii, R. rickettsii, and O. tsutsugamushi; 2) To determine the role of NF-kB, cytokines, ROS and NO in intracellular killing of rickettsia-infected monolayers containing adaptogens and 3) To characterize signal transduction pathways modulating the cytoskeletal events responsible for the increased vascular permeability. Work on specific aim 1 was partially successful. Resistant colonies of 20-25 cells were obtained after rickettsial challenges. However, expansion of such colonies was not possible. Great progress was made on specific aims 2 and 3. The role of rickettsiae, cytokines (IFN-gamma, TNF-alpha, and IL-1beta), ROS and NO in endothelial permeability was very well characterized in vitro. Changes in occludin, p120 and beta-catenin have also been documented by confocal microscopy and are related to increased endothelial permeability. mRNA microarray experiments revealed differences between infected and non-infected endothelial monolayers and between R. monieri and R. rickettsii-infected endothelial monolayers.
BACKGROUND: Respiratory viral infections are a major cause of morbidity and mortality worldwide. However, their characterization is incomplete because prevalence estimates are based on syndromic surveillance data. Here, we address this shortcoming through the analysis of infection rates among individuals tested regularly for respiratory viral infections, irrespective of their symptoms.

METHODS: We carried out longitudinal sampling and analysis among 214 individuals enrolled at multiple New York City locations from fall 2016 to spring 2018. We combined personal information with weekly nasal swab collection to investigate the prevalence of 18 respiratory viruses among different age groups and to assess risk factors associated with infection susceptibility.

RESULTS: 17.5% of samples were positive for respiratory viruses. Some viruses circulated predominantly during winter, whereas others were found year round. Rhinovirus and coronavirus were most frequently detected. Children registered the highest positivity rates, and adults with daily contacts with children experienced significantly more infections than their counterparts without children.

CONCLUSION: Respiratory viral infections are widespread among the general population with the majority of individuals presenting multiple infections per year. The observations identify children as the principal source of respiratory infections. These findings motivate further active surveillance and analysis of differences in pathogenicity among respiratory viruses.
RNA Fingerprinting as a method for Distinguishing Dengue 1 Virus Strains

Replik, Patricia M., Brandt, Walter M., McCroskery, Jack M., Russell, Philip K.

1/1/1983 13 Not available

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Journal article

Virus RNAs of 12 geographically distinct dengue type 1 (DEN-1) virus isolates were clearly unique by RNA fingerprinting. Isolates from the same geographic area were very similar but differed from those of other areas, allowing us to establish three geographical groupings based upon percent shared oligonucleotides. Three Caribbean strains were virtually identical (85-95% homologous oligonucleotides) whereas Pacific/S.E. Asian strains exhibited considerably less homology to one another (44-49%). The Pacific/S.E. Asian strains exhibited little relationship (20-30%) to the Caribbean and African strains. A Sri Lankan isolate displayed a relatively high degree of homology to Nigerian isolates (60-65% homologous oligonucleotides), suggesting that the Sri Lanka DEN-1 infection originated from Africa. A 1978 Nigerian DEN-1 isolate and the 1989 Sri Lankan strain each exhibited greater than 50% homology with a 1977 Jamaican strain. The similarities observed between the African/Sri Lankan and Jamaican strains suggest that the DEN-1 virus which caused the 1977 Jamaican epidemic may have originated from Africa or Sri Lanka. The RNA fingerprint is a unique characteristic of DEN-1 strains from a particular geographic region, suggesting this technique as a useful tool for dengue epidemiological investigations.

AIDS: The Impact on the Criminal Justice System

Spranger, Erich M.

1/1/1991 94 ART/CDC/IA-91-01-06

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Master’s thesis,

Acquired Immune Deficiency Syndrome (AIDS) will be the most challenging and complex health problem of the century. Because of the catastrophic nature of AIDS and the fear the disease engenders, the AIDS epidemic in the United States is posing medical, legal, and ethical questions to policy makers at all levels. The issues raised by AIDS are controversial and the center of public attention. These issues parallel many of the legal, ethical, professional, and social issues that exist in the provision of health care for the entire population. It is paramount that the medical, legal, and ethical questions related to the provision of health care for those with AIDS be addressed, particularly at a time when many health related decisions being made are based on economics concerns. We must not lose sight of individual rights.

Project on National Security Reform: Vision Working Group Report and Scenarios

Reins, Sheila R.

7/1/2010 279 USAMRIID

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Monograph

Today, many of the most pressing challenges to the United States do not take the form of strong and aggressive states. Instead, they include diverse threats, including nonstate actors, environmental change, pandemic disease, recession, and national debt, and so on. Addressing such disparate challenges demands a range of capabilities and expertise. Adapting to this increasingly complex environment thus necessitates not only that we improve the system’s ability to communicate across a horizontal range of competencies, but also that we learn to anticipate the potential future impacts of changes to the system and respond to unanticipated events. On November 26, 2008, the Project on National Security Reform (PNSR) submitted its 2-year study of the national security system, ‘Forging a New Shield,’ to the President, President-elect, and Congress. The study found that the national security system was at risk of failure and needed serious reform. The PNSR has proposed a series of reforms that would equip the U.S. Government to better meet and respond to this increasingly complex environment.

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Interferon Alfacon1 is a drug inhibitor of SARS-CoV-2 and has shown promise in clinical trials. During an islandwide outbreak of human influenza in June and July 1971, throat swabs were taken from dogs and cats in 3 urban communities of Taiwan. Eight influenza isolates were obtained from dogs in July 1971: two were identified as influenza A closely related to the human Hong Kong/68 virus, and one was a strain of influenza type B closely resembling the 2009 H1N1 swine flu pandemic, and the current US flu epidemic all illustrate the necessity of effective antimicrobial and antiviral therapeutics. The prevalence of antibiotic resistant strains and the ease by which antibiotic resistance can be engineered into bacteria further highlights the need for continued development of novel antibiotics against new bacterial targets. This research project directly addresses this need through the development of a broad spectrum inhibitor of the biothreat agents Francisella tularensis and Yersinia pestis. During this period of performance, we have utilized our optimized assays with the Y. pestis MEP synthase and the F. tularensis MEP cytidylyltransferase to screen molecular libraries and identify effective inhibitors of both MEP synthase and MEP-ctydyltransferase. The prevalence of antibiotic resistant strains and the ease by which antibiotic resistance can be engineered into bacteria further highlights the need for continued development of novel antibiotics against new bacterial targets. This research project directly addresses this need through the development of a broad spectrum inhibitor of the biothreat agents Francisella tularensis and Yersinia pestis. During this period of performance, we have utilized our optimized assays with the Y. pestis MEP synthase and the F. tularensis MEP cytidylyltransferase to screen molecular libraries and identify effective inhibitors of both MEP synthase and MEP-ctydyltransferase.

Influenza Virus Isolations from Dogs During a Human Epidemic in Taiwan

Studies of Infectious Diseases from Dogs During a Human Epidemic in Taiwan

Comparison of Ground and Arial Ultra-Low Volume Applications of Malathion against Aedes aegypti in the Dominican Republic

Development of Antibacterials Targeting the MEP Pathway of Select Agents

Studies of Infectious Diseases at NAMRU-2 in Taiwan

Efficacy of ground and aerial ultra-low volume (ULV) applications of 90% malathion at 438 mL/ha against Aedes aegypti in the Dominican Republic was evaluated using indoor collections, oviposition trapping and adult sentinel mortality rates. Ground compared to aerial ULV applications in this study were found to have a greater effect on Ae. aegypti when measured by the described sampling techniques. Rigorous environmental sanitation and source reduction are the proven long-term control methods against Ae. aegypti, but these methods are neither routinely nor uniformly practiced in many nations. Even with a long-term vector control program, natural catastrophes (hurricanes, floods and earthquakes) and man-made disasters (wars) create conditions favorable for large Ae. aegypti populations, which can lead to epidemic outbreaks of dengue and dengue hemorrhagic fever. Reprints.
Monotone Approximation for Nonlinear Size and Class Age Structured Epidemic Model

A04443991

Monotone Approximation for Nonlinear Size and Class Age Structured Epidemic Model

North Carolina State Univ & Raleigh Center for Research in Scientific Computation

Banks, H. T., Bokil, V., Xu, Sha Hu

2/22/2006

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In this paper, we study a nonlinear size and class age structured epidemic model with nonlinear and nonlocal boundary conditions. We establish a comparison principle and construct convergent monotone sequences to prove the existence of solutions. Uniqueness of solutions is also established.

A04077387

Field Evaluation of 'Cercospora rodmanii' as a Biological Control of Waterhyacinth; Inoculum Rate Studies.

Florida Univ Gainesville Dep't of Plant Pathology

Conway, K. E., Colleen, R. E., Freeman, T. L., Cornel, L. A.

10/1/1979

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MSS-MP-A-79-6

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A-01

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Final rept., The fungus 'Cercospora rodmanii' Conway has been shown to have good potential as a biological control agent for waterhyacinth in Florida. Previous work has shown what will happen if known quantities of the fungus are placed on an area of waterhyacinth. This current research addresses the study of optimal levels of inoculum necessary to begin an epidemic, various levels of inoculum on small populations of waterhyacinth, morphological changes of the infected plants, the effect of subsequent inoculations on infected plants, and the effect of off-the-shelf fungicides on 'Cercospora rodmanii'. It was shown that the fungus can severely affect waterhyacinth in conditions that favor a reduced growth of the plant. The 'Cercospora rodmanii' can be controlled with available fungicides if necessary. The greatest effect of the fungus on waterhyacinth was in reduction of the height of the plants. Secondary infestations can occur with the spread of the disease from inoculated plants. (Author)

A04468282

Physiologic and Endocrine Correlates of Overweight and obesity in African Americans and Caucasians

Henry M Jackson Foundation for the Advancement of Military Medicine Rockville MD

Doubler, Patricia A., Roth, Maury, Ibrahim, Tracey, Faraday, Martha

3/1/2005

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Annual rept. 1 Mar 2004- 28 Feb 2005, Obesity has reached epidemic levels and yet the evidence continues to rise. The current study is seeking to examine the hypothesis that obesity may reflect dysfunctioning of the hypothalamic-pituitary-adrenal (HPA) axis in response to stressors. African American persons are at greatest risk, but reasons for this difference are unknown. We will study 120 men and women of Caucasian and African American ethnicity and examine their responses to physiologic stressors: exercise and ingestion of a meal. The HPA axis will be studied in some detail by using two stressor paradigms and two steroid regimens. We expect to be able to detect subtle differences in HPA axis reactivity in obese individuals and that might contribute to morbidity and perhaps even make individuals resistant to therapeutic interventions. We have enrolled 63 participants, with 46 completed. Data collection and analyses are proceeding on schedule. Two abstracts were submitted and accepted for presentation in Summer 2005. We are on schedule for all milestones for this study and look forward to being able to answer the important questions regarding the potential role of the HPA axis in obesity.

A04577997

Adapive Networks: Foundations: Modeling, Dynamics, and Applications

College of William & Mary Williamsburg VA Dep't of Physics

Bowe, Leah B.

2/13/2013

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ARO-54682-MA-01

S4682-MA-11, ARO

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Final rept., We are studying adaptive social networks, focusing on spread of infectious disease as our primary example and including terrorist recruitment as an additional example. In an adaptive network, individuals change their social connections in response to their neighbors' characteristics, and these changes in network topology affect subsequent properties of the individuals. The network adaptation can be disease avoidance or connecting to potential recruits. Major goals of the project included extending previous models to incorporate more realistic network structure, adding spread of information that affects human behavior, studying the extinction of diseases, developing control strategies for epidemics on adaptive networks, and developing tools to analyze and monitor adaptive network properties. We have extended models to include network community structure, information spread, and more realistic social adaptation. We developed the first adaptive network model for terrorist recruitment. Our analytic work includes new techniques for predicting extinction rates of epidemics and the trajectory to extinction, methods to apply this to extinction on a network, and our new moment closure approximation techniques that lead to more accurate predictions. For monitoring and control, we developed a method to quantify network adaptation and studied vaccine control for epidemics in adaptive networks.

A04081196

Generation and Characterization of Protective Antibodies to Marburg Virus

USAMRIID Frederick MD

Froude, Jeffrey II W., Pellet, T., Moore, S. J., Dun, K., Brem, A. J., M., Bakken, R., Paul, M., Thriller, P., Ory, L. M., Cheng, H.

4/1/2012

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TR-17-041

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Approved for public release; distribution is unlimited.

Final rept., Marburg virus (MARV) and Ebola virus (EBOV) have been a source of epidemics and outbreaks for several decades. We present here the generation and characterization of the first protective antibodies specific for wild-type MARV. Non-human primates (NHP), cynomolgus macaques, were immunized with viral-replicon particles expressing the glycoproteins (GP) of MARV (GP167 isolate). An antibody fragment (single chain variable fragment, scFv) phage display library was built after four immunogen injections, and screened against the GP1-649 of MARV. Sequencing of 192 selected clones identified 18 clones with distinct VH and VL sequences. The first protective antibodies specific for wild-type MARV were identified through sequencing of these selected clones.
A novel human coronavirus that is now named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (formerly called HCoV-19) emerged in Wuhan, China, in late 2019 and is now causing a pandemic.1 We analyzed the aerosol and surface stability of SARS-CoV-2 and compared it with SARS-CoV-1, the most closely related human coronavirus.2 We evaluated the stability of SARS-CoV-2 and SARS-CoV-1 in aerosols and on various surfaces and estimated their decay rates using a Bayesian regression model (see the Methods section in the Supplementary Appendix, available with the full text of this letter at NEJM.org). SARS-CoV-2 nCoV-WA1-2020 (MN985325.1) and SARS-CoV-1 Tor2 (AY274119.3) were the strains used.

Aerosols (<5 micron) containing SARS-CoV-2 (105.25 50% tissue-culture infectious dose [TCID50] per milliliter) or SARS-CoV-1 (106.75-7.00 TCID50 per milliliter) were generated with the use of a three-jet Collison nebulizer and fed into a Goldberg drum to create an aerosolized environment. The inoculum resulted in cycle-threshold values between 20 and 22, similar to those observed in samples obtained from the upper and lower respiratory tract in humans.
Chikungunya virus is a mosquito-borne arbovirus in the genus Alphavirus. In humans, infection with chikungunya virus causes a painful but self-limiting febrile illness that is often associated with a maculopapular rash and polyarthralgias. The virus can cause encephalitis, long term (greater than 3 months) arthritides, and rarely, death. There is no commercially available vaccine or antiviral treatment for chikungunya; however, experimental vaccines are under development, and the U.S. military was involved in vaccine development in the 1990s. Chikungunya epidemics are often significant because most infected people become symptomatic (72%-97%) and large portions of the population can be sick at the same time. Prior to 2013, the majority of the population of the New World had never been exposed to chikungunya and had no immunity to the virus. In recent years, U.S. military bases in the Caribbean and worldwide have been on alert for cases. The island nation of Curacao had notified the Pan American Health Organization of more than 1,800 cases of chikungunya by February 2015, with up to 20,000 reported in local media (i.e., up to 13% of the population). The epidemic of chikungunya extended to several active duty personnel located at the U.S. Forward Operating Location, 429th Expeditionary Operations Squadron in Curacao. Based on reported cases, the outbreak was the largest single cluster of chikungunya cases in U.S. active duty personnel to date. This report describes a case series and discusses the significance of this disease in the Americas and diagnostic challenges when other arboviruses such as dengue are present.

The effect of temperature on the ability of Aedes Aegypti to transmit dengue (DEN) 2 virus to rhesus monkeys was assessed as a possible explanation for the seasonal variation in the incidence of dengue hemorrhagic fever in Bangkok, Thailand. In two laboratory experiments, a Bangkok strain of Ae. aegypti was allowed for feed upon viremic monkeys infected with a low dose of DEN-2 virus. Blood-engorged mosquitoes were separated into two groups and retained at constant temperatures. Virus infection and transmission rates were determined for Ae. aegypti at intervals ranging from 4 to 7 days during a 25-day incubation period. Results of the first experiment for mosquitoes infected with a low dose of DEN-2 virus and maintained at 20, 24, 26, and 30°C, indicated that the infection rate ranged from 25% to 75% depending on the agents in the US Marine camp but also in experimental rats and wild mice, C. musculinus in Argentina. A strain of Seoul virus was isolated from a Syrian hamster purchased from a local animal farm. In our limited study, inbred hamsters were broad spectrum animals to support multiplication of hantaviruses and 2 out of 4 inbred hamsters PD4 died about 20 days after inoculation of a strain of Hantaan virus. Keywords: Puumala virus, Maaji virus, Seroepidemiology, Immunopassivity.

The effect of temperature on the ability of Aedes Aegypti for Dengue 2 Virus

In our limited study, inbred hamsters were broad spectrum animals to support multiplication of hantaviruses and 2 out of 4 inbred hamsters PD4 died about 20 days after inoculation of a strain of Hantaan virus. Keywords: Puumala virus, Maaji virus, Seroepidemiology, Immunopassivity.
| AD4A348B | Simultaneous Genomic Detection of Multiple Enteric Bacterial and Viral Pathogens, Including Sars-CoV and RVFV | Texas Univ At Austin | Payne, S., Peters, C., L.Makins, S., Oliver, K., Weiss, C., Kornguth, L., Carruthers, L., Chen, L. | 12/1/2004 | 7 | Not available | CDC | U | A - 01 | Approved for public release; distribution is unlimited. | Conference paper | A multiplexed screening system to detect pathogenicity islands (PI) of bacteria causing enteric disease and pathogenicity factors (PF) associated with the SARS-associated coronavirus (SARS-CoV) and Rift Valley Fever Virus (RVFV) has been developed. This system is based upon the Luminex xMAP System |

| AD4A5146 | A Model for the Ordering and Distribution of the Influenza Vaccine | Naval Postgraduate School Monterey CA | Guy, James R. | 6/1/2005 | 69 | Not available | NPS | U | A - 01 | Approved for public release; distribution is unlimited. | Master's thesis | The system for the production and distribution of the United States supply of influenza vaccine has experienced disruptions during past influenza seasons. The identification of elements of the influenza vaccine is different each year and must be researched and identified each year prior to the influenza season. The manufacturing of the vaccine is a complicated process with many potential problems. This thesis identifies the requirements and constraints of the current manufacturing and distribution system including the annual demand and supply. This information is used to create an illustrative model based on operational research and operational management theory to develop a systematic approach to distribution of the influenza vaccine in a shortage situation. Two different policies are identified for use in a normal influenza season to determine how many companies are required to provide a sufficient amount of influenza vaccine with the understanding that some of the companies might have manufacturing difficulties. These two policies are the percentage distribution policy and the strict priority distribution policy. The model includes a determination of the number of companies that should be available for influenza vaccine production and the amount of vaccine that should be ordered from each company to minimize the total cost. The majority of the influenza seasons could be covered by purchasing fewer than 108 million doses, as in the percentage distribution policy, making sure that the vaccine dose orders are spread out evenly over four companies and distributed evenly by age group percentage, but could be reduced to as little as 24.5 million total vaccine doses if necessary with minimal cost and loss of life using a strict priority distribution policy. |

<p>| AD5G1827 | Physiologic and Endocrine Correlates of Overweightness in African Americans and Caucasians | Uniformed Services Univ of the Health Sciences Bethesda MD Dept of Military and Emergency Medicine | Deuster, Patricia A., Poth, Merrily, Sbrocco, Tracey | 3/27/2009 | 94 | Not available | USAMRMC | U | A - 01 | Approved for public release; distribution is unlimited. | Final rept. 28 Feb 2003-28 Feb 2009 | Obesity has reached epidemic levels and the incidence continues to rise. The current study was seeking to examine the hypothesis that obesity may reflect dysfunctioning of the hypothalamic-pituitary-adrenal (HPA) axis in response to stressors. African American persons are at greatest risk, but reasons for this difference are unknown. We studied 126 healthy men and women of Caucasian (CA) and African American (AA) ethnicity and examined their responses to physiologic stressors: exercise and ingestion of a meal. Methods: The HPA axis was studied by using two stress paradigms and two steroid regimens: hydrocortisone (HCO) and dexamethasone (DEX). We were able to detect subtle differences in HPA axis reactivity in obese individuals that might contribute to morbidity and perhaps even make individuals resistant to therapeutic interventions. Results: AA, particularly those who are obese by percent body fat, are highly sensitive to glucocorticoids. This was noted during exercise under conditions of DEX and in response to a meal, under all conditions but to a greater extent under conditions for DEX. Importantly, AA had significantly lower cardiovascular fitness than CA. Fitness was inversely related to obesity, insulin resistance, and glucocorticoid sensitivity. Lastly, lipid profiles of AA are more favorable that age-matched, healthy CA. Using either triglycerides or HDL cholesterol as indicators of cardiovascular disease would indicate minimal risk. Conclusions: Over the past five years, we achieved all goals for this project. Notably, we enrolled 160 participants and completed testing on 126. |</p>
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<td>Training Initiatives within the AFHSC-Global Emerging Infections Surveillance...</td>
<td>DeFraites, Robert F.</td>
<td>3/12/2011</td>
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<td>Hull, Angus C.</td>
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The Russian Federation is pursuing a national security strategy that primarily utilizes the leveraged against European nations and could ultimately lead to a dramatic restructuring of the level of Russian influence in European affairs. That amalgamation of influences could be transfer of European wealth to Russia in payment for that energy will drastically increase the supply of energy, with the aim of preventing punitive price increases or an embargo. The European countries will increasingly shape the domestic and international political policies of the European market will increasingly shape the domestic and international political policies of the European countries into a relationship that will placate Russian actions. The Europeans will be forced to accept a tolerant position with Russia in their interest of ensuring a stable economic power with the goal of dismantling the European security alliances. The Russians may feel compelled to pursue this strategy over more cooperative partnership building strategies because they could be suffering from an unprecedented, unrecognized epidemic of a disease (7). Recently, hantaviral infections in wild Rattus norvegicus of the United States were documented and shown by virologic and serologic techniques to be caused by a virus antigenically related to Seoul virus, isolated in 1980 from a Norway rat in Korea. We now report serologic evidence of human infections specifically due to a rat-associated Hantavirus in residents of Baltimore. To our knowledge, this is the first report to definitively link to a rat source the occurrence of hantaviral antibodies in humans who are lifelong residents of the United States.

The emergence of severe acute respiratory syndrome (SARS) in 2002 - 2003 had a tremendous global impact. Adequate animal models are required to study the underlying pathogenesis of SARS-associated coronavirus (SARS-CoV) infection and to develop effective vaccines and therapeutics. In order to characterize clinically relevant parameters of SARS-CoV infection in non-human primates, we infected cynomolgus macaques with SARS-CoV in three groups: Group I was infected in the nares and bronchus, group II in the nares and conjunctiva, and Group III intravenously. Animals in Groups I and II developed mild-moderate symptomatic illness. All animals demonstrated evidence of viral replication and developed neutralizing antibodies. Chest radiographs from several animals in Groups I and II revealed unifocal or multifocal pneumonia that peaked between days 8 - 10 postinfection. Clinical laboratory tests were not significantly changed. Overall, inoculation by a mucosal route produced more significant disease than intravenous inoculation. SARS-CoV infection of cynomolgus macaques did not reproduce the severe illness seen in the majority of human cases of SARS; however, our results suggest similarities to the more mild syndrome of SARS infection characteristically seen in young children.
<table>
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<tr>
<th>Document</th>
<th>Title</th>
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<tr>
<td>40444172</td>
<td>Breast Cancer and Early Onset Childhood Obesity: Cell Specific Gene Expression in Mammary Epithelia and Adipocytes</td>
<td>Bryson, A. D., Parry, E. H., Perine, P. L., Warrilow, D. A., Vakoch, D., Leithhead, C. S.</td>
<td>7/23/1969</td>
<td>NAMRU-3</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>This paper examines in some detail the distribution of the total number of cases in an epidemiologic study of 62 cases in Ethiopia. The clinical presentation varied. Fever, headache, skeletal and abdominal pain, and the usual symptoms of acute infection were common. Tachypnoea and upper abdominal tenderness with a palpable liver and spleen were found in two-thirds of the patients. Jaundice in one-third, and purpura in one-sixth. Thrombocytopenia was the rule. Biochemical evidence of hepatocellular damage was found in most patients. Myocardial damage was suspected in one third of them. Pulmonary ventilation and cardiac output were increased and there was evidence of impaired gas exchange. Evidence of renal and cerebral damage was less striking. The literature on the immune response has been reviewed in order to understand the phenomenon of the crisis. Treatment was with intravenous tetracycline, and hypotension and cardiac failure in the flush phase can be fatal. The mortality was 5 per cent. The epidemic and pathological processes which determine the prognosis of this disease are discussed.</td>
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<tr>
<td>40107512</td>
<td>The Distribution of the Total Size of an Epidemic</td>
<td>King, D. H.</td>
<td>7/1/1967</td>
<td>NAMRU-3</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>This paper examines in some detail the distribution of the total number of cases in an epidemic of the general stochastic type for a closed population. The assumed model is that of Bartlett [2] and McKendrick [10] which Bailey [1] used to study the stochastic analogue of the deterministic threshold theorem (Kermack and McKendrick [10], D. G. Kendall [9]). Bailey obtained recurrences from which the required probabilities were computed numerically. His calculations revealed a gradual transition from S-shaped distributions containing only small epidemics to U-shaped distributions containing either large or small epidemics but practically no epidemics of intermediate size when the threshold is exceeded. There is also an interesting transitional form of distribution near the threshold value. In an attempt to understand what motivates an epidemic to behave in this way, Whittle [11] and Kendall [9] constructed different models approximating the one used by Bailey but easier to handle analytically. Both explained Bailey's results in terms of an initial birth and death process where extinction is certain in the first case and not certain in the second. This work is summarized, with additional references, in the book by Bailey [2]. In a paper presented at this Symposium, Gani [7] develops some recent work by Siskind [12] and Bartlett [6] on a method of obtaining time dependent solutions of the epidemic equations. For the limiting case considered here he shows how the probabilistician can be computed by successive multiplication of matrices.</td>
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<tr>
<td>402072490</td>
<td>Louse-Borne Relapsing Fever: A Clinical and Laboratory Study of 52 Cases in Ethiopia and a Reconsideration of the Literature</td>
<td>Gani, R.</td>
<td>7/3/1969</td>
<td>NAMRU-3</td>
<td>Approved for public release; distribution is unlimited.</td>
<td>Daily two patients with louse-borne relapsing fever in Addis Ababa, Ethiopia, from 1966 to 1968 were studied. The clinical presentation varied. Fever, headache, skeletal and abdominal pain, and the usual symptoms of acute infection were common. Tachyphoea and upper abdominal tenderness with a palpable liver and spleen were found in two-thirds of the patients, jaundice in one-third, and purpura in one-sixth. Thrombocytopenia was the rule. Biochemical evidence of hepatocellular damage was found in most patients. Myocardial damage was suspected in one third of them. Pulmonary ventilation and cardiac output were increased and there was evidence of impaired gas exchange. Evidence of renal and cerebral damage was less striking. The literature on the immune response has been reviewed in order to understand the phenomenon of the crisis. Treatment was with intravenous tetracycline, and was followed by a Jarisch-Herxheimer reaction. The clinical and physiological features of this reaction are described. Sphincter death and phagostasis, resulting in the release of endogenous pyrogen, may be responsible for all its features. Hyperpyrexia in the chill phase and hypotension and cardiac failure in the flush phase can be fatal. The mortality was 5 per cent. The epidemic and pathological processes which determine the prognosis of this disease are discussed.</td>
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In a world where unforeseen human or natural disasters (i.e., U.S.S. Cole, September 11, Hurricane Katrina, the 2004 Indian Ocean tsunami, and the possibility of an avian flu pandemic) may occur, interagency information sharing and collaboration is essential to mitigating the effects of these types of catastrophic events. The Maritime Domain Awareness Data Sharing Community of Interest (MDA DS COI) pilot demonstrated a net-centric data-sharing capability as a first step towards addressing the common challenge of global identification and tracking of maritime vessels, cargo, and crew usage of existing information sources to better secure our coasts, ports, and waterways. This Department of Defense (DoD), Department of Homeland Security (DHS), and Department of Transportation (DOT) partnership developed capabilities to expose maritime data as a consumable Web-enabled service to authorized, unanticipated users employing community-based agreements defining a common vocabulary and data-sharing services. This COI pilot also leveraged enterprise services resulting in a repeatable process, an extensible vocabulary, and reusable services available for developing responsive, agile solutions for any number of data-sharing challenges.

Gram-negative Klebsiella bacterial infections are of growing global public health and clinical concern. Epidemics of multidrug-resistant (MDR) gram-negative bacteria, including Klebsiella species, have occurred worldwide in the last two decades, including regions where United States (US) military forces are regularly deployed. In 2014, the incidence of all Klebsiella spp. infections increased to 83.6 cases per 100,000 eligible beneficiaries from 63.0 cases per 100,000 eligible beneficiaries in 2013 among Department of the Navy (DON) and Department of Defense (DOD) beneficiaries seeking care in the Military Health System (MHS). A pronounced gender disparity was observed for Klebsiella spp. infections; overall, DON and DOD female beneficiaries were infected more than four times as often as males. Within the MHS, Klebsiella spp. cases commonly manifested as urinary tract infections (UTIs), which was consistent with previous analysis. MDR-Klebsiella spp. infections accounted for less than 5 of all Klebsiella spp. infections. Females over the age of 45 had the highest rates of MDR infections. Compared to non-MDR Klebsiella spp. infections, a higher percentage of MDR infections were healthcare-associated. Klebsiella spp. infections remained susceptible to many antibiotic classes, such as carbapenems, sulfonamides, fluoroquinolones, and cephalosporins; ciprofloxacin was the most commonly prescribed antibiotic. MDR Klebsiella spp. infections were least resistant to carbapenems.

Maintaining regional stability has risen in importance in U.S. foreign policy and in some instances to the level of a vital national interest. However, the current role of the United States as the world's sole hyperpower has produced unique challenges as the United States confronts asymmetric threats from terrorist (non-state) organizations. Of special interest to the United States military is the prevention or mitigation of regional instabilities. These instabilities hamper economic prosperity and provide breeding grounds for popular discontent. While regional instabilities alone may not constitute a direct physical threat to the United States, their secondary effects, which include impacts on international trade, access to resources, and support bases for terrorist organizations, have major implications for U.S. national security interests. The unprecedented growth of the world’s population, particularly in developing nations, is consuming the basic resources of food and water at an alarming rate, while the spread of epidemic diseases such as HIV/AIDS, tuberculosis, and malaria are destroying entire generations. In developing countries, the populations often look much of their energy fulfilling the basic needs of food and water and when these needs are not met, an internal disruption of the State can result. While these environmental issues may not provide the sole reason for a population to take up arms.
Congressional interest in the development of bioterrorism countermeasures remains strong, even after passage of legislation establishing Project BioShield. Several bills considered, but not enacted during the 109th Congress, including S. 3, the Protecting America in the War on Terror Act of 2005; S. 975, the Project BioShield II Act; and S. 1873, the Biodefense and Pandemic Vaccine and Drug Development Act, would have generated additional incentives for the creation of new products and processes by the private sector to counteract potential biological threats. These bills proposed reforms to current policies and practices associated with intellectual property, particularly patents, and the marketing of pharmaceuticals and related products. Patents appear to be important in the promotion of innovation, particularly in the pharmaceutical sector. This report explores the role of patents in encouraging the development and commercialization of new inventions and discusses the relationships between patent ownership and the generation of biomedical products. However, the grant of a patent on a pharmaceutical does not permit marketing of the product without the approval of the Food and Drug Administration (FDA). Thus, this report also examines policies concerning the use of FDA marketing exclusivity as an additional incentive to industry research and development (R&D) in this arena. Current law and suggested legislative changes are discussed to provide a context for any further exploration of related issues during the 110th Congress.

Since the discovery of the second human immunodeficiency virus in 1985, considerable progress has been made in understanding the virology and epidemiology of HIV-2. The data suggests differences between HIV-2 and HIV-1 in geographic distribution, distinct epidemic trends, differences in perinatal transmission rates and incubation periods to the development of AIDS. The virologic determinants and mechanisms for these apparent biological differences are still unknown. However, an understanding of how HIV-2 differs from HIV-1 is essential for interpretations of comparative virologic studies. We have specifically studied the interactions between HIV-2 and HIV-1 and found that the attenuated phenotype of HIV-2 is apparently capable of providing protection from subsequent infection with HIV-1. In vitro studies suggest multiple mechanisms for such protection and we have characterized some of these virus and host determinants with an aim towards understanding correlates of immune protection. This further suggests that understanding HIV-2 immunity and cross-immunity may be useful for HIV vaccine design and development. A second aim of our studies has been the development of an HIV-2 based vaccine using the novel modified lethal factor toxin of anthrax. Several HIV-2 constructs have been made and demonstrated that this novel means of antigen delivery is capable of eliciting robust HIV-2 responses. We are hopeful that such information will be useful in future vaccine design for HIV/AIDS.

Responding to a possible bioterror attack of Smallpox has become a major concern to governments, local public officials and health authorities. This concern has been reflected in numerous studies that model and evaluate possible response strategies. Many of these studies consider only vaccination policies and assume homogeneous mixing, where all instances of contacts in the population are equally likely. Such a mixing pattern is rather unlikely to represent population interaction in a modern urban setting, which typically is separated into households on the one hand, and into daily meeting sites such as schools and offices, on the other hand. In this paper we develop a two-level social interaction model where an individual moves back and forth between home and a daily meeting site, possibly passing through a general meeting site such as mass transit system or other crowded areas. Based on the model, we evaluate the effect of social mixing controls, situational awareness of the public health system and mass vaccination on the spread of smallpox. It is shown that mixing controls and alertness of the response system may have a significant impact on the spread of the epidemic. Some policy recommendations are discussed.
China's ascent as the world's second-largest economy has brought the country tremendous prosperity, but integration into the global economy has also exposed growing numbers of its citizens and their assets to potential harm. According to Chinese authorities, 30,000 of the country's enterprises are located overseas, and more than 100 million Chinese citizens travel abroad annually. Dangers in distant lands menace the markets, resources, and investments upon which China's economy now depends. In the words of the country's 2015 Military Strategy White Paper, China has become more vulnerable to international and regional turmoil, terrorism, piracy, and serious natural disasters and epidemics. Chinese leaders have accordingly elevated in priority the provision of security for the country's overseas interests.

Several obesity experts have claimed the growth in food supply after 1965 was the primary cause of the global obesity pandemic based on ecologic data. Using public access global data from the World Health Organization, we explored per capita food supply and two metabolic diseases (i.e., obesity and raised fasting glucose). We also compared overweight military service members who were semi-randomly assigned to countries with variable food supply and observed obesity outcomes for 7 years. Among countries with 2008 food supply above the United States in 1965 (2,926 kcal per capita per day), we found a significant correlation between per capita food supply and obesity prevalence of raised fasting glucose (e.g., r = -0.42, p < 0.001). Among countries with 2008 food supply below the United States in 1965 (2,000 kcal per capita per day), we found no significant correlation between per capita food supply and obesity prevalence.
A Retrospective Comparison of Military Health Surveillance Systems: An Example of Respiratory Illness at Marine Corps Recruit Depot (MCRD) San Diego

NAVAL HEALTH RESEARCH CENTER
SAN DIEGO CA

Woodruff, Susan A; Axster, Hillary; Murphy, Brian P; Hawksworth, Anthony W; Bowman, Wend; Bohrner, Bruce E


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Primary goals of health surveillance in the military include monitoring the health status of military personnel, and detecting outbreaks of naturally occurring and bioterrorism related epidemics. Two near real-time automated surveillance systems currently in use by the Department of Defense are the Medical Data Surveillance System (MDSS) and the Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE). Both prototype systems are passive surveillance systems, using already collected diagnostic data reported as primary ICD-9 codes on automated medical encounter records. Although MDSS and ESSENCE use the same data source (i.e., ICD-9 codes entered into the Ambulatory Data System), their assignment of ICD-9 codes into disease/syndrome categories differs, and each system uses a different outbreak detection algorithm. The purpose of this retrospective research was to compare the two systems surveillance trends and potential outbreak detection of respiratory illness at the Marine Corps Recruit Depot (MCRD) San Diego, over the 54 weeks of July 29, 2001, to October 19, 2003. For additional comparison, data from traditional active surveillance of febrile respiratory illness (FRI) conducted on-site at MCRD are also included. Results of the present study describe counts of respiratory illness captured by MDSS and ESSENCE and active FRI surveillance, as well as each system's outbreak detection performance.

Would an Influenza Pandemic Qualify as a Major Disaster Under the Stafford Act?

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Lee, Edward C

12/19/2009 14 CS-RL34724 CS/DC U A - 01

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This report provides a legal analysis of the eligibility of an influenza pandemic (flu pandemic) to be declared by the President as a major disaster under the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Given the current (influenza A/H3N2) pandemic, awareness has been raised regarding the potential effects of a severe flu pandemic occurring in the United States. In such an event, the Stafford Act could provide authority for federal assistance. Although it is widely agreed that emergency assistance under the Stafford Act could be provided by the President in the event of a flu pandemic, questions remain as to whether broader major disaster assistance would be available. An analysis of the text and history of the Stafford Act suggests that this question was not addressed by Congress when it drafted the current definition of a major disaster, and that neither inclusion nor exclusion of flu pandemics from major disaster assistance is explicitly required by the current statutory language.

Clustering: Reminiscences of Some Episodes in My Research Activity.

CALIFORNIA UNIV BERKELEY STATISTICAL LAB

Mayman, Jerry

1/2/1979 23 CD-SC-79-03-OKI Not available U A - 01

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The ideas of a stochastic process of clustering came to the author's attention from Dr. Geoffrey Beall, an entomologist interested in the distribution of larvae over an experimental field. Larvae are born from eggs deposited by moths, not singly, but in egg-masses. After hatching, larvae begin to crawl in search of food. Later, a general census of larvae is performed. The r.v. of interest X = no. of larvae counted in a unit area plot in the field. Conceptual elements: cluster centers (= egg-masses), cluster size (= no. of larvae from a single egg-mass), dispersal of cluster members. Over the four decades since the publication of the theory relating to larvae, essentially the same mechanism of clustering was found to underly many diverse natural phenomena: clustering of galaxies, population dynamics, epidemics and effects of eradication of living cells. [Author]

Optimal Path to Extinction: Outbreak of Cholera in South Africa Military Health Service: An Example of Stochastic Processes in Biological Systems: An Example of Stochastic Processes in Biological Systems

PROTECHNIK (PTY) LTD PRETORIA (SOUTH AFRICA)

Erasmus, Cornelis

9/1/2001 8 Not available KS U A - 01

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The extinction of species is a natural phenomenon that occurs in many diverse natural phenomena: clustering of galaxies, population dynamics, epidemics and effects of eradication of living cells. [Author]

Converging Towards the Optimal Path to Extinction

COLLEGE OF WILLIAM & MARY DEPT OF APPLIED SCIENCE

Forgeson, Eric; Bianco, Michael; Williamsburg VA

1/2/2011 13 ARD-54682-MA-6 CH-682-MA-6 ABD U A - 01

Approved for public release; distribution is unlimited. Journal article

Extinction appears ubiquitously in many fields, including chemical reactions, population biology, evolution and epidemiology. Even though extinction as a random process is a rare event, its occurrence is observed in large finite populations. Extinction occurs when fluctuations owing to random transitions act as an effective force that drives one or more components or species to vanish. Although there are many random paths to an extinct state, there is an optimal path that maximizes the probability to extinction. In this paper, we show that the optimal path is associated with the dynamical systems idea of having maximum sensitive dependence to initial conditions. Using the equivalence between the sensitive dependence and the path to extinction, we show that the dynamical systems picture of extinction evolves naturally towards the optimal path in several stochastic models of epidemics.
Stability Operations and Explosive Ordnance Including Humanitarian Mine Action (HMA)

ARMY WAR COLL CARLISLE BARRACKS PA
Quick, Marue R.
2/18/2010 36 Not available USAWC U A - 01
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Strategy research project

A review of Explosive Ordnance Disposal and Humanitarian Mine Action (HMA) within Department of Defense and stability operations, and discusses proliferation of explosives and explosive material including mines, explosive remnants of war, and explosive ordnance promulgation as the pandemic root of human security threats, and subsequent worldwide instability. Explosive remnants of war directly contribute to worldwide instability. Control of explosives is an inherent national interest and essential to security and requires inclusion within strategy and service, and force utilization guidance and doctrine for explosive ordnance operations including humanitarian mine action (HMA). Explosive material kills and maims Soldiers and people around the world, and costs hundreds of millions of dollars annually. A review of international initiatives and agreements, as well as, U.S. structure, policies, and efforts on behalf of Soldiers during stability operations and indigenous people worldwide is included with highlights of the importance of control of explosive material during combat and stability operations, nation building and reconstruction activities, forces ideally suited to execute operations in support of Geographical Combatant Commanders, combat and Humanitarian Mine Action (HMA) training of indigenous forces.

In early 1976, the novel A/New Jersey/76 (Hsw1N1) influenza virus caused severe respiratory illness in 13 soldiers with 1 death at Fort Dix, New Jersey. Since A/New Jersey was similar to the 1918-1919 pandemic virus, rapid outbreak assessment and enhanced surveillance were initiated. A/New Jersey virus was detected only from January 19 to February 9 and did not spread beyond Fort Dix. A/Victoria/75 (H3N2) spread simultaneously, also caused illness, and persisted until March. Up to 230 soldiers were infected with the A/New Jersey virus. Rapid recognition of A/New Jersey, swift outbreak assessment, and enhanced surveillance resulted from excellent collaboration between Fort Dix, New Jersey Department of Health, Walter Reed Army Institute of Research, and Center for Disease Control personnel. Despite efforts to define the events at Fort Dix, many questions remain unanswered, including the following: Where did A/New Jersey come from? Why did transmission stop?

Our purpose is very clear: we are responsible to the Government of Australia for the protection of Australia, our people and our national interests, whenever and wherever those interests lie. In undertaking this mission the Australian Defence Force (ADF) enabled by the Defence Organisation might act independently, or it might contribute to a broader effort of other Australian or international civilian agencies or military forces. The 21st century promises a future whose shape is uncertain, and whose security and prosperity are challenged by dangers both seen and unseen. We must understand those dangers, and develop concepts and strategies to meet them, if we are to build on our successes today and position ourselves for ongoing success tomorrow. The first few years of the 21st century have demonstrated that dangers can take many forms. Some dangers are traditional, and relate to state-on-state tensions over territory, resources or the balance and distribution of power. Some are old challenges in new guises, such as the emergence of new terrorist groups and pandemic diseases. Some challenges are entirely new, such as climate change and the impacts of global demography. And some are natural dangers, such as cyclones, earthquakes and tsunamis, to name just a few. Whatever form the dangers take, the uncertainty of the future operating environment requires us to constantly challenge the orthodoxy, to innovate to solve old and new challenges, and to expose and debate a new vision for the role of the ADF in the 21st century.
Multidrug-Resistant Gram-negative Bacterial and Carbapenem-Resistant Enterobacteriaceae Infections among Department of the Navy: Annual Report 2013

Navy and Marine Corps Public Health Center: Portsmouth, VA

Middaugh, James C., and Chalouma, Uzo

3/19/2015

NMCPC-EDC-TR-2015

NMCPC-EDC

U A-01

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Annual rept. 1 Jan 2005-30 Apr 2008

Gram-negative bacterial infections are a growing global public health and clinical concern. Additionally, epidemics of multidrug-resistant (MDR) gram-negative bacteria have occurred worldwide in the last couple decades, including regions where United States (US) military forces are regularly deployed. In 2013, the incidence of MDR Escherichia coli, Enterobacter, Klebsiella, and Pseudomonas aeruginosa in Department of Defense (DoD) beneficiaries seeking care in the Military Health System (MHS) increased from 2012. MDR E. coli was the organism most frequently identified with an incidence 37-40 times higher than the next most frequent organism. A pronounced gender disparity was noted for all organisms except MDR P. aeruginosa. Overall, DoD female beneficiaries were impacted much more than their male counterparts. Furthermore, MDR E. coli, MDR Enterobacter, and MDR Klebsiella cases commonly manifested as urinary tract infections (UTIs), which is consistent with historic observations. In 2013, cases of MDR P. aeruginosa more commonly manifested as respiratory infections, which is also consistent with historic observations. MDR-P. aeruginosa did not display any consistent high susceptibilities at the population level.

Possible Incidence of Arbor Virus in the Ecology of Viral Respiratory Diseases in Mediterranean France

Army Biological Labs Federal MD

Panther, R., Hannoun, D.

11/17/1965

TRAN-1553

SAMPO

U A-01

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A study is being carried out in France regarding the virus types transmitted by arthropods. A brief review is given of arbor virus-caused diseases present in the Mediterranean area and which should therefore be sought in the Mediterranean part of France. The study is limited to those arbor viruses which may be encountered in our regions either permanently present or present due to a regular annual re-emergence process.

Characterization of Reaerosolization in an Effort to Improve Sampling of Airborne Viruses

Florida Univ Gainesville Dept of Environmental Engineering Sciences

Harmschneider, Lindsay

4/2/2008

APRL-RX-TR-2002-4565

TR-2008-4565, APRL-RX-TY

U A-01

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Airborne virus outbreaks, including the influenza pandemic of 1918, the recent SARS pandemic and the anticipated H5N1 outbreak, plus the perceived threat of bioterrorism warrant concern about the prevalence and potential effects of airborne viruses. However, current bioaerosol sampling methods do not effectively sample airborne viruses (typically 20-100 nm). To address this problem, a novel Bioaerosol Amplification Unit (BAU) has been designed and constructed to increase the size of the virus particles by condensational growth, thereby enhancing sample recovery. In this study reaerosolization of viral particles from the impinger was investigated to assess its impact on the capability of the BAU. Reaerosolization was characterized as a function of flow rate and concentration of the collection liquid in the impinger. An impinger containing a known concentration of particles (M52 bacteriophage or polyethylene latex) was operated at various flow rates with sterile air, and a scanning mobility particle size was used to determine the reaerosolization rates. Results indicate that reaerosolization increased with increasing flow rate due to the additional energy added to the system. However, reaerosolization increased with concentration up to ~10^4 PFU/mL and then decreased at progressively higher concentrations. This phenomenon likely resulted from aggregation of viral particles or increased surface tension at higher concentration. Adjusting surface tension by adding soap and increasing viscosity by adding a layer of heavy white mineral oil decreased reaerosolization. Thus, reaerosolization from an impinger could compromise the improved collection capability of the BAU.

A Brief Review of the Epidemiology and Recent Advances in the Study of the Virus

Naval Medical Research Unit No 2

Manila (Philippines)

Manila Philippines

Green, Irving L.

2/1/1973

Not available

U A-02

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Technical Report

Epidemics of influenza have occurred; so far as is definitely known, for the past 400 years, and possibly hundreds of years before that. Three distinct types of influenza virus have been isolated and described to date. The first was labeled type A. A second type, designated as influenza virus B, was isolated independently by Francis and by Magill in 1940. A third type of influenza virus, type C, was found in 1947. More recently both influenza types A and B have been divided into subtypes such as A1 and A2, B1, B2 and B3. Influenza type C virus exists as a single and stable antigenic type. It is believed that influenza vaccination is effective for only single and stable antigenic type. It is believed that influenza vaccination is effective for only
Zika virus (ZIKV) is currently causing an unprecedented pandemic linked to severe congenital syndromes. In July 2016, mosquito-borne ZIKV transmission was first reported in the continental United States and since then, hundreds of locally acquired infections have been described. To gain insights into the timing, source, and likely route(s) of introduction into the United States, we tracked the virus from its first detection in Miami, Florida by direct sequencing of ZIKV genomes from infected patients and Aedes aegypti mosquitoes. We detected at least four distinct ZIKV introductions and estimate that 11–52 introductions contributed to the outbreak in Florida. Furthermore, our data suggests that ZIKV transmission likely started in the spring of 2016—several months before initial detection. By analyzing epidemiological, surveillance, and genetic data, we discovered that several spatially distinct ZIKV transmission zones were likely portions of the same outbreak, rather than isolated events. Our analyses show that most introductions are linked to the Caribbean, which is supported by the high incidence rates and travel, especially via cruises, from the region into Miami. By comparing mosquito abundance and travel capacity across the United States, we find that southern Florida is especially vulnerable to ZIKV introductions and at risk of repeat occurrences. By tracking the virus from its initial introduction into the United States, we provide a deeper understanding of how ZIKV initiates and sustains transmission in new regions.
Although Jamaica has a stable parliamentary democracy and is a middle-income developing country, the government of Prime Minister P.J. Patterson faces several significant challenges. These include a violent crime wave fueled by gangs and drug trafficking; high external debt, estimated at 135% of gross domestic product, that could constrain the government’s social expenditures; and an adult HIV/AIDS infection rate of over 1%. U.S. relations with Jamaica are close and characterized by significant economic linkages and cooperation on such bilateral issues as anti-drug trafficking measures, hurricane reconstruction support, and efforts to combat the AIDS epidemic. Overall U.S. foreign aid to Jamaica amounted to about $41 million in FY2005 (with $18 million for hurricane assistance) and an estimated $19 million in overall aid for FY2006. This report will not be updated. For further information, see CRS Report RL32160, Caribbean Region: Issues in U.S. Relations, and CRS Report RL32001, AIDS in the Caribbean and Central America, both by Mark P. Sullivan.

An over-all picture is given of the incidence of six of the zoonotic diseases as reported in Turkey. All information was extracted from ‘The Bulletin of the Reportable Contagious Diseases,’ published in Ankara. This information was collected covering the period 1 January 1962 through 31 December 1962, with particular reference to epidemic areas and consequential spread to the surrounding provinces.

Pandemic influenza is not a new phenomenon. Historically, there have been other influenza pandemics, enough so that we now believe the planet is well overdue. We watch avian influenza move across the world, worry about how more than 60% of those people that contract the disease die from it, and realize that further mutations in currently circulating strains could cause them to easily infect human beings. Work is clearly underway to prepare for such a biological event. However, despite the fact that we are overdue for an influenza pandemic and that we fear the consequences of such a disease spreading unchecked - we are not prepared as a Nation to fully withstand the impact of such a devastating widespread biological event. Recognising the devastating impact an influenza pandemic would have on our Homeland and National Security, and the need to be ready to handle the pandemic when it occurs, Chairman Thompson and Subcommitte Chairman Langevin directed the Majority Staff to: * Conduct oversight regarding the pandemic influenza preparedness activities of DHS and other members of the Executive Branch; * Gather information through hearings, briefings, and meetings to determine the status of National efforts to prepare for pandemic influenza; * Identify weaknesses in our National preparedness for pandemic influenza; and * Determine what specific actions could strengthen such efforts and help the Nation achieve readiness for pandemic influenza.

Mechanical Ventilation is used most in the aeromedical transport of critically ill patients. Patients and mechanical ventilators suffer from variations in the environmental pressure, partial pressure of oxygen, humidity, luminosity, accelerations and vibrations. We describe briefly the history of Mechanical Ventilation and aeromedical transport: Vesalius was the first author to describe one method of ventilation with positive pressure; 400 years later the method was applied for the first time to a patient. Robert Hook in 1667 applied continuous flow ventilation to a dog. Wolff in 1876 made the first mechanical ventilator with negative pressure over the thorax, but the first iron lung was built in 1928 by Dinker and Shaw and later modified by Kroghs and Emerson. In 1953 the poliomyelitis epidemic was the main factor affecting the great success of the mechanical ventilation, with the device of the Emerson Company (Boston, Massachusetts) applying Mechanical Ventilation with positive pressure for the respiratory treatment of the patients affected by poliomyelitis. These innovations could represent the beginning of Mechanical Ventilation and possibly Critical Care treatment also.
Zoonotic microbes have historically been, and continue to emerge as, threats to human health. The intestinal nematode Capillaria philippinensis, causing intestinal capillariasis in humans, is a unique parasite. It is one of the newest parasites shown to infect humans, and its life cycle is unusual in that the female worms are capable of producing live, living larvae as well as eggs, leading to autoinfection and hyperinfections. Furthermore, the life cycle of this parasite is capable of producing large numbers of larvae and eggs, leading to outbreaks and pandemics. In this study, we used molecular methods to detect and subtype influenza virus isolates from a variety of sources, including clinical samples and environmental samples. This study establishes the RPM platform as an effective tool for detecting and subtyping influenza virus, while simultaneously providing sequence information for strain resolution, pathogenicity, and drug resistance without additional analysis. This study establishes that the RPM platform is a broad-spectrum pathogen detection tool for monitoring the circulation of prevalent influenza viruses in the poultry industry and in wild birds or incidental exposures and infections in humans. The epidemic outbreak of highly pathogenic avian influenza virus in bird populations and the appearance of some human infections have increased the concern for a possible new influenza pandemic, which highlights the need for broad-spectrum detection methods for rapidly identifying the spread or outbreak of all variants of avian influenza virus. In this study, we demonstrate that high-density resequencing pathogen microarrays (RPM) can be an effective tool for detecting and subtyping influenza virus, while simultaneously providing sequence information for strain resolution, pathogenicity, and drug resistance without additional analysis. This study establishes that the RPM platform is a broad-spectrum pathogen detection tool for monitoring the circulation of prevalent influenza viruses in the poultry industry and in wild birds or incidental exposures and infections in humans.
Today, and for the foreseeable future, the issue confronting the world community is the widespread illegitimate use of an otherwise legitimate, and as some believe, a necessary weapon that has caused unnecessary suffering of epidemic proportions to non-combatants. There are actually two separate problems. The first deals with the existing problem of land mines, the second deals with the global trade in land mines—the production, use, transfer, and stockpiling of land mines. Other than to describe the impact of land mines already in the ground, the problem of existing land mines will not be addressed in this paper. Locating these mines poses a substantial technological challenge far different from current military breaching techniques through known minefields. Instead, they require technologies to locate and destroy small numbers of mines left after a long-forgotten battle, set out on a perimeter by small patrols making camp, deliberating to drive civilians from an area, or even those washed from the steep hills of heavenly guarded borders.

In the central part of Alaska, gastroenteritis is a perennial problem, with the incidence rate reaching almost epidemic proportions in the early summer and early autumn. The causative agents appear to be both viral and bacterial. In 1964 during the autumn epidemic, Salmonella anatum invaded the University of Alaska campus along with a probable viral infection. Approximately 300 students developed symptoms of gastroenteritis, Vpr of V. parahaemolyticus (VpH) and ORF4a of MERS-CoV, and have conducted a pilot mass-spec experiment. All tools and reagents are now in place, and in the next/final period of this 18-months discovery Award we plan to move forward with mass-spec identification and experimental confirmation of candidate binding partners.

Emerging viruses pose significant problems for military personnel living in close quarters, and/or deployed overseas. Significant gaps remain in our understanding of the underlying molecular mechanisms of viral emergence. To fill this gap in knowledge we seek to develop a robust method for identifying the binding partners of small viral proteins implicated in modifying host cell defenses. We are employing a cutting edge genetic system for incorporating synthetic amino-acids at defined positions in proteins within cellular systems; these non-canonical amino-acids (ncaAAs) are modified with a side chain that can be induced by UV light to covalently cross-link cellular binding partners. This effectively tags the target proteins allowing subsequent identification by massspectrometry. We have generated the necessary mutants of two viral proteins, Vpr of V. parahaemolyticus (VpH) and ORF4a of MERS-CoV, and have conducted a pilot mass-spec experiment. All tools and reagents are now in place, and in the next/final period of this 18-months discovery Award we plan to move forward with mass-spec identification and experimental confirmation of candidate binding partners.
Eelgrass (Zostera marina) seeds are being used in a variety of both small- and large-scale restoration activities and have been successfully used to initiate recovery of eelgrass in the Virginia seaside coastal lagoons, which lost eelgrass in the 1930s wasting disease pandemic (Orth et al. 1986a). However, a major bottleneck with the use of seeds has been the relatively low rate of seedling establishment, generally 10 percent or less of seeds placed in the field (Orth et al. 2003). A recently developed underwater seed planter (Traber et al. 2003) represents an alternative method that could improve seedling success compared to techniques used in previous Chesapeake Bay studies and elsewhere. The objective of this study was to compare the effectiveness of different techniques of seeding for use in large-scale projects: injecting seeds into submerged sediments with a mechanical seed planter and hand-broadcasting seeds on the sediment surface using divers.

Ockelbo virus, first isolated in 1982 in Sweden, causes arthritis, fever and rash in man. We have obtained the complete nucleotide sequence of Ockelbo virus and compared this sequence to that of other strains of Sindbis virus. Partial sequence analysis of five other strains of Sindbis virus was also performed. Three principal conclusions arise from our data: (1) Ockelbo is virtually identical to the causative agents of Känslens Fever of Russian and of Pogosta disease of Finland. (2) These agents are closely related to South African strains of Sindbis virus, and Ockelbo was probably introduced into northern Sweden from Africa in the 1960’s, followed by spread to Russian and Finland. (3) There exist an European-African group of closely related Sindbis viruses and an Asian-Australian group of Sindbis viruses. The alphaviruses are a widespread group of human pathogens that are endemic and epidemic in many parts of the world. They are mosquito-borne and are particularly prevalent in tropical and subtropical areas of the world, but alphaviruses pathogenic for man are also present in temperature and even Arctic areas. Many alphaviruses are capable of causing fever, rash and arthralgia in man in some cases can be disabling for extended periods of time. Many of the New World alphaviruses can cause encephalitis in man. We wish to determine the relationships of alphaviruses and strains of alphaviruses to one another and to search for emerging viruses.

Obesity has reached epidemic levels and yet the incidence continues to rise. The current study is seeking to examine the hypothesis that obesity may reflect dysfunctioning of the hypothalamic-pituitary-adrenal (HPA) axis in response to stressors. American African persons are at greatest risk, but reasons for this difference are unknown. We will study 120 men and women of Caucasian and African American ethnicity and examine their responses to physiologic stressors: exercise and ingestion of a meal. Methods: The HPA axis will be studied in some detail by using two stressor paradigms and two steroid regimens. We expect to be able to detect subtle differences in HPA axis reactivity in obese individuals that might contribute to morbidity and perhaps even make individuals resistant to therapeutic interventions. Results: We have enrolled 96 participants, with 66 completed. Data collection and analyses are proceeding on schedule. Two abstracts were submitted and accepted for presentation in Spring 2006. Conclusions: We are on schedule for all study milestones and look forward to being able to answer the important questions regarding the potential role of the HPA axis in obesity.

In an effort to isolate the etiologic agent of Scandinavian epidemic (endemic) nephropathy (NER) for presumptive use in a vaccine against Korean hemorrhagic fever early drawn blood samples from patients suffering NE have been investigated. Samples were inoculated on to A-549 and VERO cell lines and into rodents. After several passages the materials were tested for the presence of antigen using an indirect immunofluorescence method. In addition, lungs of samples from patients suffering NE have been investigated. Samples were inoculated on to A-549 and VERO cell lines and into rodents. After several passages the materials were tested for the presence of antigen using an indirect immunofluorescence method. In addition, lungs of samples from patients suffering NE have been investigated. Samples were inoculated on to A-549 and VERO cell lines and into rodents. After several passages the materials were tested for the presence of antigen using an indirect immunofluorescence method. In addition, lungs of samples from patients suffering NE have been investigated. Samples were inoculated on to A-549 and VERO cell lines and into rodents. After several passages the materials were tested for the presence of antigen using an indirect immunofluorescence method. In addition, lungs of samples from patients suffering NE have been investigated. Samples were inoculated on to A-549 and VERO cell lines and into rodents. After several passages the materials were tested for the presence of antigen using an indirect immunofluorescence method. In addition, lungs of samples from patients suffering NE have been investigated. Samples were inoculated on to A-549 and VERO cell lines and into rodents. After several passages the materials were tested for the presence of antigen using an indirect immunofluorescence method. In addition, lungs of samples from patients suffering NE have been investigated.

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Influenza Risk Management: Lessons Learned from an A(H1N1) pdm09 Outbreak Investigation in an Operational Military Setting

Farrell, Margaret, Sebeny, Peter, Klena, John D., DeMattos, Cecilia, Pimentel, Guillermo, Turner, Mark, Joseph, Antony, Esquit, Jennifer, Zumwalt, John, Dunger, Erica

7/10/2013 B Not available GE/DS/MID U A-01 Approved for public release; distribution is unlimited.

Background: At the onset of an influenza pandemic, when the severity of a novel strain is still undetermined and there is a threat of introduction into a new environment, e.g., via the deployment of military troops, sensitive screening criteria and conservative isolation practices are generally recommended. Objectives: In response to elevated rates of influenza-like illness among U.S. military base camps in Kuwait, U.S. Naval Medical Research Unit No. 3 partnered with local U.S. Army medical units to conduct an A(H1N1) pdm09 outbreak investigation. Patients/Methods: Initial clinical data and nasal specimens were collected via the existent passive surveillance system and active surveillance was conducted using a modified version of the World Health Organization/U.S. Centers for Disease Control and Prevention influenza-like illness case definition (fever (T > 100.5°F/38.0°C) in addition to cough and/or sore throat in the previous 72 hours) as the screening criteria. Samples were tested via real-time reverse-transcription PCR and sequenced for comparison to global A(H1N1) pdm09 viruses from the same time period. Results: The screening criteria used in Kuwait proved insensitive, capturing only 16% of A(H1N1) pdm09-positive individuals. While still not ideal, using cough as the sole screening criteria would have increased sensitivity to 73%. Conclusions: The results of and lessons learned from this outbreak investigation suggest that pandemic influenza risk management should be a dynamic process (as information becomes available regarding true attack rates and associated mortality, screening and isolation criteria should be re-evaluated and revised as appropriate), and that military operational environments present unique challenges to influenza surveillance.
The purpose of this study is to utilize adaptin libraries coded within pantropic retroviral vectors that confer protection against rickettsial pathogens and to study the molecular pathogenesis of rickettsioses. The following specific aims were proposed: 1) To establish heterogeneous cell populations, with each cell expressing a unique member of a complex combinatorial peptide-based (e.g., adaptin) library and challenge with R. prowazekii, R. rickettsii, and O. tsutsugamushi; 2) To determine the role of NF-κB, cytokines, ROS and NO in intracellular killing of rickettsia-infected monolayers containing adaptins and 3) To characterize signal transduction pathways modulating the cytoskeletal events responsible for the increased vascular permeability. During the fourth year of the project, rickettsial challenges performed with SU-HCEC cells were continued and expansion of the resistant colonies was not possible. We are currently conducting experiments with a murine and a human monocytic cell line that grow in suspension. Both cell lines have been infected with pantropic retroviruses and challenging experiments are underway. Experiments with SU-HCEC cells have elucidated the role of rickettsiae and cytokines in modulating permeability across infected monolayers. Confocal microscopy studies also suggested that these changes might in part be due to changes in p120 distribution in adherens junctions. The role of nitric oxide and its derivative peroxinitrite in increased permeability across infected monolayers has also been elucidated.

The Imposition of Martial Law in the United States

Imagine the following frightening scenario: Members of an American militia group enter a major metropolitan airport and attach small aerosol-like devices in several restrooms throughout the concourse. These devices release deadly amounts of smallpox bacteria into the air, infecting hundreds of Americans travelling through the airport. Within days, citizens around the country begin to display the horrific symptoms of smallpox. Soon public health workers determine the nature of the epidemic and release the information to the press. Widespread panic results. Civilian public health agencies attempt to educate the public on how to control the spread of the disease. But despite police efforts to control the populace by establishing quarantine areas, the civilian infrastructure is quickly overwhelmed. Chaos results. Finally, the President declares martial law in an attempt to restore order in the nation.

Difficult to heal wounds are of significant health concern for military personnel and their family, especially those linked to diabetes, since diabetes has reached epidemic proportions in the Western Society. Despite being linked to high mortality, low quality of life and other health complications, wounds that are difficult to heal are still a mystery, and most pharmacologic regimens are ineffective. One of the key finding of this proposal is that sphingomyelinase, a protein that exhibit regulatory function and determines the extent of inflammation and proliferation at the wound site is defective during obesity and this insufficiency leads to exacerbation of TNF-alpha production by macrophages. More importantly we show that addition of the product of this protein, termed ceramide or its metabolites to the wounds helps wound repair and decreases pain-associated with these wounds in the mouse. Someone unexpectedly we also found that the mechanisms by which ceramide and its key metabolite, Sphingosine-1-phosphate facilitate wound repair are distinct, evident by a distinct temporal pattern of healing of wounds following the treatment with ceramide and with Sphingosine-1-phosphate. Overall, our experiments confirm the main hypothesis and indicate that ceramide, and sphingosine-1-phosphate are likely therapeutic tools to help the wound healing process in diabetic patients.
A botnet in mobile networks is a collection of compromised nodes due to mobile malware. The Special Congressional Committee report on Hurricane Katrina stated, [Katrina] was the most destructive natural disaster in American history, [laying] waste to 90,000 square miles of land, an area the size of the United Kingdom 1 More than 72,000 uniformed military members deployed in support of the Katrina response to save lives, mitigate human suffering, and prevent property damage.2 A Katrina lessons learned report highlighted DOD as one of the only Federal organizations able to rapidly put effective forces on the ground.3 However, despite having the most capability, DOD response during Katrina was significantly delayed and at times ineffective due to the limitations of both Federal Law and DOD policy. A hurricane Katrina might appear an isolated event, but natural disasters such as annual hurricanes, wild fires, earthquakes, and pandemic disease will likely occur in the future requiring massive responses. This paper will illustrate how Defense Support of Civil Authorities (DSCA) is a DOD mission and while DOD routinely executes DSCA, it does not organize, train, or equip for this mission as it does for war fighting missions.

The Defense Support of Civil Authorities (DSCA) is a DOD mission and while DOD routinely executes DSCA, it does not organize, train, or equip for this mission as it does for war fighting missions.
To address concerns and issues related to transportation and public health management of contagious individuals in the context of an influenza pandemic, the Armed Forces Health Surveillance Center (AFHSC) and the Center for Disaster and Humanitarian Assistance Medicine (CDHAM) sponsored a one-day, Tri-Service workshop and tabletop exercise entitled "U.S. Military’s Management of Pandemic Influenza A (H1N1) and Beyond." A central focus of the workshop presentations and discussions related to current USTRANSCOM policy on movement of highly contagious patients. This policy dictates that patients with known or suspected infection with a highly contagious disease will not be transported within the patient movement system.

This project extended over a three-year period and focused on the use of the MMIC system to assess the immunogenicity/efficacy of commercial influenza vaccine and a plant-produced recombinant hemagglutinin (H1N1) influenza vaccine, from the H1A strain of the pandemic A/California H1N1 strain, produced by the Fraunhofer Center for Molecular Biology. Initially the task was to evaluate Fraunhofer’s vaccine for efficacy in vitro either formulated with adjuvant (alum) or with no adjuvant and to evaluate the cross-reactivity and A/California H1N1 strain.

The second section of the project focused on the coupling of the MMIC to a clinical trial involving the Fraunhofer antigen and a commercial vaccine and the characterization and comparison of the in vivo and in vitro responses.

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**AD04516027**
Department of Defense
Position on Patient Movement During Influenza A (H1N1) Pandemic: Implications for Actions Now

**ARMED FORCES HEALTH SURVEILLANCE CENTER SILVER SPRINGS MD**

- Otto, Jean L., Barnett, Daniel J., Fisher, Carol, Lipinski, Robert, Defrates, Robert F.
- 3/1/2010
- 4
- Not available
- Not available
- U A - 01
- Approved for public release; distribution is unlimited.
- Journal article

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**AD0460197**
Immune Analysis of Brisbane and California H1N1 Influenza Viruses: Clinical Application and a Clinical Trial in a Test Tube

**CARNegie-MELLoN UNiV PITTSBURGH PA DEPT OF COMPUTER SCiENCE**

- Khalid, I., Yatchil, A. K.
- 7/1/1965
- 12
- ABL-TRANS-1463, TT66-62575
- ABL/MD
- U A - 01
- Approved for public release; distribution is unlimited.
- Journal article

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**AD0456094**
Tools for Large Graph Mining

**CMU-CALD-05-100**

- Shakarabti, Deepayan
- 6/1/2005
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- U A - 01
- Approved for public release; distribution is unlimited.
- Doctoral thesis

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**AD0461741**
PROBLEMS OF EPIDEMIOLOGICAL GEOGRAPHY. REPORT 4.

**ARMY BIOMEDICAL LABS FREDERICK MD**

- Fehrin, T., Yatchil, A. K.
- 7/1/1965
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**AD0188274**

**Africa Center for Strategic Studies Washington United States**

- Boucher, Ake J.
- 1/2/2018
- 60
- Not available
- Not available
- U A - 01
- Approved for public release; distribution is unlimited.
- Technical Report

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Private Security Contractors: A Way of Combating Piracy in the Horn of Africa

ARMY COMMAND AND GENERAL STAFF COLLEGE FORT LEAVENWORTH KS SCHOOL OF ADVANCED MILITARY STUDIES

Deese, Michael J.

5/22/2014

53

Not available

OSAGSSC

U A - 01

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Monograph

Private security contractors (PSC) are an integral part of the global effort in combating counterpiracy operations in the Horn of Africa. Their previous use in Iraq, Afghanistan, Kosovo, and Somalia in support of military operations has been relevant to mission success. From 2008-2011, piracy in the Horn of Africa grew to astronomical numbers. A global effort ensued in 2009 with the creation of three maritime task forces, counter-piracy working groups, and an increase in the hiring of private security contractors. Private security contractors have bridged the gap between the shipping industry, maritime insurance agencies, and the nation’s naval assets. Their involvement made immediate impacts to the piracy epidemic, successfully reducing piracy by more than 50 percent. This study centered on the role of private security contractors operating in the Horn of Africa through the framework of the theory of supply and demand. In a time when it appears piracy will continue to thrive, the importance of private security contractors cannot be overstated.

Immunological Characteristics of Anti-Influenza Precipitating Antibody as Demonstrated by Counterimmunoelectrophoresis

NAVAL HEALTH RESEARCH CENTER SAN DIEGO CA

Edwards, Earl A.; Neal, Pat M.; Sullivan, Elizabeth L.; Rosenbaum, Max J.

7/12/1978

15

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NAVSHRESCCH-78-25

U A - 01

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Final rept.,

Antibody to influenza infection was determined by counterimmunoelectrophoresis (CIE). The antibody resulting from influenza disease reacted with both related and distant strains of influenza A antigen but not to influenza B antigen. CIE antibody was not demonstrable following immunizations with inactivated influenza vaccine. While influenza antibody, as demonstrated by CIE, was always associated with elevated complement fixation antibody, the reverse was not the case. Since the precipitating antibody was only detected in those individuals with influenza disease, the test could serve as an early alert signal during surveillance of an impending influenza epidemic. (Author)

A Stochastic Model of a Non-Homogeneous Carrier-borne Epidemic.

DENVER RESEARCH INST COLO DEPT OF MATHEMATICAL SCIENCES

Warren, Peter; Fister, James; Beislein, Norman

2/1/1973

22

Not available

MS-R-7310

U A - 01

Approved for public release; distribution is unlimited.

Technical rept.,

The paper investigates the stochastic behavior of a non-homogeneous, multitype carrier-borne epidemic. In such an epidemiological setting, all individuals are exposed to a certain number of infectious individuals. (Author)

Trust-Threshold Based Routing in Mobile Ad Hoc Networks

VERGINIA POLYTECHNIC INST AND STATE UNIV BLACKSBURG DEPT OF COMPUTER SCIENCE

Chang, Moonseong; Chen, Jing; Ray, Bas; Feng, Chen; Jin, Hwe

2/15/2011

17

Not available

ONR

U A - 01

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Quarterly rept. 15 Nov 2010-14 Feb 2011

We propose a trust-threshold based routing protocol for delay tolerant networks, leveraging two trust thresholds for accepting recommendations and for selecting the next message carrier for message forwarding. We show that there exist optimal trust threshold values under which trust-threshold based routing performs the best in terms of message delivery ratio, message delay and message overhead. By means of a probability model, we perform a comparative analysis of trust-threshold based routing against epidemic, social-trust-based and QoS-trust-based routing. Our results demonstrate that trust-threshold based routing operating under proper trust thresholds can effectively trade off message delay and message overhead for a significant gain in message delivery ratio. Moreover, our analysis helps identify the optimal weight setting to best balance the effect of social vs. QoS trust metrics to maximize the message delivery ratio without compromising message delay and/or message overhead requirements.

Lessons from the 1918 Influenza Pandemic: Using Historical Examples to Inform the Department of Defense’s Response to the Next Pandemic

MARINE CORPS COMMAND AND STAFF COLL QUANTICO VA

Sirodot, Kevin S.

4/2/2013

45

Not available

OSAG/CSC

U A - 01

Approved for public release; distribution is unlimited.

Master’s thesis

Pandemic influenza has had an impact on militaries and societies in the past, and will again, because the virus remains endemic worldwide and mutates rapidly, negating human immunity. Based on the lessons from the 1918 pandemic and the US National Strategy for Pandemic Influenza the Department of Defense should expand its implementation plan in order to enforce containment of a future pandemic and respond to humanitarian assistance needs of partner nations. The influenza pandemic of 1918 was the most rapidly lethal pandemic in history and provided lessons that should inform current policy. The National Strategy for Pandemic Influenza presents clear guidance on the priorities of protecting the United States through isolation and supporting allied and partner nations in the event of the next pandemic. In order to maintain a credible readiness, DOD should seek to align the Department of Defense Implementation Plan for Pandemic Influenza with the broader goals of the National Strategy.
As I read through the final draft of the 2008 Annual Report of the Department of Defense...

Network science has grown significantly in the last several years as a field at the intersection...

As I read through the final draft of the 2008 Annual Report of the Department of Defense...

As I read through the final draft of the 2008 Annual Report of the Department of Defense...

As I read through the final draft of the 2008 Annual Report of the Department of Defense...

As I read through the final draft of the 2008 Annual Report of the Department of Defense...
The symposium, a collection of eleven articles, was originally presented as a series of lectures in the autumn of 1973. The authors have refined them for a reading audience, updated some of the information, and added a summary article. The symposium addresses itself to the different types of lung cancer, the varied clinical and roentgenographic presentations, the surgical, radiation and chemotherapeutic techniques and finally a philosophical look at the overall problem. With a latent period of 30 to 40 years between onset of smoking exposure and onset of lung cancer, we are in the midst of an epidemic spawned among American men and women during World Wars I and II. With the Korean and Vietnamese Wars following closely, we as clinicians face an onset of lung cancers without foreseeable end. (Modified author abstract)

The history of warfare and the history of disease are unquestionably interwoven. Throughout the history of warfare, disease and non-battle injury have accounted for more deaths and loss of combat capability than from actual battle in war itself. The most striking example is the great influenza pandemic during World War I that killed 20 million people or more worldwide in 1918. Although this was a naturally occurring event, what if a country could create a biological agent that could yield the same catastrophic loss of life on the enemy? That, in essence, is the potential effect of applying genetic engineering for biological warfare (BW) or bioterrorism (BT). Today, we see not only natural diseases (including emerging infectious diseases), but also threats of BW or BT, possibly with genetically engineered agents, that may resist known therapies. In simple terms, genetic engineering is the process of human intervention to transfer functional genes (DNA) between two biological organisms. In the BW/BT context, it is the manipulation of genes to create new pathogenic characteristics (increased survivability, infectivity, virulence, drug resistance, etc). Organisms with altered characteristics are the new generation "biological weapons."

This report presents the results on (1) isolation of Korean hemorrhagic fever (KHF) virus from patients (2) antibody responses in animals (3) the ratio of clinical and subclinical infection (4) cultivation of the virus in a tissue culture cells and (5) vertical transmission of KHF virus in Apodemus agrarius. Out of 943 tested US military personnel stationed in Korea during years 1977 and 1978, five were sero-positive to KHF virus. It was confirmed that KHF virus grows well in human lung cancer cells (A549 cells) by the IFA method. Antibodies of sera from patients with KHF, with epidemic hemorrhagic fever in Japan, and with nephropathia epidemica, as well as with sera from infected animals were titrated simultaneously against KHF virus antigen, which was prepared in both apodemus lung tissues and in A549 cells. This showed that infected Apodemus lung tissues were more sensitive antigen system than infected A549 cells. Results of a limited study indicates that there is no vertical transmission of KHF virus in Apodemus agrarius.
The Task Force established by the Defense Science Board (DSB) to assess Department of Defense (DoD) quarantining guidance for dealing with a Severe Acute Respiratory Syndrome (SARS) epidemic met on three occasions during 2003-2004 to review the status of current and planned DoD policies and procedures related to SARS outbreak response. The Task Force received a number of briefings describing SARS and other disease outbreak response and quarantine operations, Centers for Disease Control and Prevention SARS guidelines, lessons learned, DoD global surveillance systems, and military/civilian public health interfaces. The Task Force's initial findings and recommendations in six areas are included. Appendix A of this report contains the Terms of Reference given to the Task Force by the Under Secretary of Defense. To integrate public health needs, on behalf of national security, the Task Force was asked to review and assess the following: (a) Existing doctrine and process by which quarantine policy is generated as applied to all personnel in OCONUS as well as CONUS theaters, (b) Required cooperation with non-DoD agencies and non-U.S. government entities including other countries; (c) Capacity of local commanders to rapidly surveil disease status and establish need, ways, and means for quarantine in relation to their assigned missions; (d) Methods, technologies, and legal doctrine to allow safe transport of personnel through quarantined areas, and restriction of movement where needed; (e) Sample scenarios; (f) Coordination and allocation of DoD and non-DoD resources to combat SARS; and (g) Identification and tracing of individuals potentially exposed to SARS. Appendix B contains references to documents reviewed by the Task Force. Appendix C contains recommendations to enhance two documents: DoD Directive Emergency Health Powers on Military Installations.
No available

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Biotechnology Industry, 2006

INDUSTRIAL COLL OF THE ARMY FORCES WASHINGTON DC

1/1/2006 31 Not available ICAF U A - 01 Approved for public release; distribution is unlimited. Not available

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Chemoprophylaxis Against Group A Streptococcus During Military Training

NAVAL HEALTH RESEARCH CENTER SAN DIEGO CA SAN DIEGO United States

Weidler,Bryant L.,Koehler,John W.,White,Brian H.,Hawksworth,Anthony W.,Graf,Paul C.,Farr,Heather C.


Chemoprophylaxis with intramuscular benzathine penicillin G has been used widely by the U.S. military to prevent epidemics of group A streptococcus infections during basic training. The recent global shortage of benzathine penicillin prompted a detailed analysis of this issue in 2017 by military preventive medicine and infectious disease authorities in San Antonio, Texas, and San Diego, California, USA. This paper explores the history of group A streptococcus and chemoprophylaxis in the U.S. military training environment, current policy and practice, and challenges associated with widespread chemoprophylaxis. In light of the history presented, preventive medicine authorities at basic training centers should be extremely cautious about discontinuing benzathine penicillin chemoprophylaxis.

No available

From the New Middle Ages to a New Dark Age: The Decline of the State and U.S. Strategy

ARMY WAR COLL STRATEGIC STUDIES INST CARLISLE BARRACKS PA

Williams,Phil C.

6/1/2008 70 Not available AVLC/55 AVLC/55 U A - 01 Approved for public release; distribution is unlimited. Monograph

This analysis offers key insights into what is a shifting security environment and considers the problems which are proving particularly intractable in Iraq exemplify -- albeit on a small scale -- the kind of challenges associated with a New Dark Age. Against this background, Dr. Williams outlines the strengths and weaknesses of three major choices: preventive interventionism, displacement and mitigation, and triage or selective interventionism. He suggests that for both a continuation of the current approach and for selective intervention, U.S. policy makers have to design a far more holistic approach to the exercise of power. In the future, for any substantial U.S. military intervention to have any chance of success will require U.S. policy makers to design a far more holistic approach to the exercise of power. In the future, for any substantial U.S. military intervention to have any chance of success will require U.S. policy makers to design a far more holistic approach to the exercise of power.

No available

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The United States leads the world in biotechnology, centered on genetic engineering at the cellular or molecular level, a process which applies across a range of products in diverse industries, just as computer engineering does. The biotech industry is becoming a major player in many sectors, including medicine, agriculture, energy, defense, the environment, and nanotechnology. Genetically modified (GM) foods are feeding millions. GM bacteria and plants are cleaning up pollution quietly and cheaply. The nation depends on biotechnology for defense against terrorist attacks and pandemic influenza. Stem cells promise the miracle of tissue regeneration. As an industry, though, biotechnology is still emerging, driven by the promise of research which for many companies has yet to yield products or profits. The industry relies on government to a surprising degree for support of basic science and for regulations that can either free up or stifle growth: property rights (patents), clinical trials, litigation relief, and ethical guidelines. Only an informed public will allow biotechnology to flourish, because it learns so strongly on legislation, because it is pushing into ethical dilemmas no one has faced before, and because it can either develop or defend against biological weapons and environmental risks. However, the shortage of U.S. scientists and engineers with advanced degrees in biotechnology renews the industry depends on foreign researchers, which could easily threaten future preeminence. Establishing a National Biotechnology Council would facilitate federal collaboration. Biotechnology has already had an impact on our lives on an unprecedented scale, and there is every indication the future holds much more.
The National Strategy for Pandemic Influenza notes that pandemic flu could overwhelm the 1918 Flu Pandemic:

Preventing School Shootings: A Public Health Approach to Gun Violence

Viruses remain a significant threat to modern networked computer systems. Despite the best efforts of those who develop anti-virus systems, new viruses and new types of virus that are not dealt with by existing protection schemes appear regularly. In addition, the rate at which a virus can spread has risen dramatically with the increase in connectivity. Defenses against infections by known viruses rely at present on immunization yet, for a variety of reasons, immunization is often only effective on a subset of the nodes in a network and many nodes remain unprotected. Little is known about either the way in which a viral infection proceeds in general or the way that immunization affects the infection process. In this paper we present the results of a simulation study of the way in which virus infections propagate through certain types of network and of the effect that partial immunization has on the infection. The key result is that relatively low levels of immunization can slow an infection significantly.

Climate Change to Meet the Challenges of Security Planning and Policies

Gun violence in America must be addressed at the highest levels of society. Newtown, Aurora, and Virginia Tech were attacks on the very fabric of America. School shootings represent attacks on our nation’s future. A public health approach to gun violence focuses on prevention. Public safety professionals, educators, and community leaders are squandering opportunities to prevent these horrific acts of extreme violence. Preparedness is derived by planning, which is critical to mobilizing resources when needed. Rational public policy can work. Sensible gun legislation, which is accessible through a public health approach to gun violence, neither marginalizes nor stigmatizes any one group. University administrators must fully engage the entire arsenal of resources available to them to confront this pernicious threat. The academic community can create powerful networks for research, collaboration, and information sharing. These collective learning environments are investments in the knowledge economy: for the police to remain relevant, they must actively engage the community they serve by developing the operational art necessary to cultivate knowledge, relationships, and expertise. Police departments must emphasize strategies that improve performance. Police officers must understand the mission and meaning of To Protect and Serve.

Immunization and the Effect of Defense in the New Millennium

The National Strategy for Pandemic Influenza notes that pandemic flu could overwhelm the health and medical capabilities of the United States, cause hundreds of thousands of deaths, millions of hospitalizations, and cost hundreds of billions of dollars. The consensus within scientific circles is that the nation will likely face one or more pandemics in this century, although there is disagreement as to the probable timing of such an event. Studying the 1918 pandemic will assist modern day planners in mitigating the effects of pandemic flu and the contingency planning will have widespread applicability to other events, both natural and manmade, that may significantly impact the nation’s health and security. This paper reviews the 1918 pandemic, explores concerns about the avian influenza virus H5N1, and considers current planning for pandemic flu. Weaknesses in the current schema are examined and recommendations are offered to facilitate both enhanced pandemic planning efforts and homeland security.

Gun violence impacts and the impact of gun violence on communities in the United States. While the current focus on gun violence is on prevention, it is becoming increasingly clear that society must also address the problem of gun violence as a public health concern. This paper presents a public health approach to gun violence that focuses on prevention. Public safety professionals, educators, and community leaders are squandering opportunities to prevent these horrific acts of extreme violence. Preparedness is derived by planning, which is critical to mobilizing resources when needed. Rational public policy can work. Sensible gun legislation, which is accessible through a public health approach to gun violence, neither marginalizes nor stigmatizes any one group. University administrators must fully engage the entire arsenal of resources available to them to confront this pernicious threat. The academic community can create powerful networks for research, collaboration, and information sharing. These collective learning environments are investments in the knowledge economy: for the police to remain relevant, they must actively engage the community they serve by developing the operational art necessary to cultivate knowledge, relationships, and expertise. Police departments must emphasize strategies that improve performance. Police officers must understand the mission and meaning of To Protect and Serve.

Immunization to Meet the Challenges of Climate Change

Climate change poses challenges to societies and governments that go far beyond the alteration of our environment. The physical impacts of climate change, including gradual but steady increases in temperature, changing precipitation patterns, the reduction of glaciers and Arctic ice, rising sea levels and changes in coastlines, and more intense and frequent extreme weather events, will affect human lives in numerous ways. While climate change does not by itself create new security threats, it does act as a threat multiplier. It exacerbates existing political weaknesses and social tensions in countries around the world, and creates demands for state services and assistance—securing the environment—which at times may exceed the capacity of governments to respond. In this sense, the growing likelihood of events such as mass migrations, crop failures, economic shocks, public riots and violence, floods and other natural disasters, widespread epidemics, and competition for resources pose serious challenges for governments and security forces worldwide.
The most basic representation of a supply chain has three elements: supply, demand, and the environment. These fundamental characteristics of pervasive computing environments limit the use of assumptions made by mobile computing paradigm, such as the possibility of reconnection with a given device, support from wired infrastructure, or the presence of a global schema. Consequently, we model all devices as peers. These environments also relax other assumptions made by mobile computing paradigm, such as the possibility of reconnection with a given device, support from wired infrastructure, or the presence of a global schema. These fundamental characteristics of pervasive computing environments limit the use of techniques developed for transactions in a mobile computing environment. We define an alternative optimistic transaction model whose main emphasis is to provide a high rate of successful transaction terminations and to maintain a neighborhood-based consistency. The model accomplishes this via the help of active witnesses and by employing an epidemic voting protocol. The advantage of our model is that it enables two or more peers to engage in a reliable and consistent transaction while in a pervasive environment without assuming that they can talk to each other via infrastructure such as base stations. The advantage of using active witnesses and an epidemic voting protocol is that transaction termination does not depend on any single point of a failure. Additionally, the use of an epidemic voting protocol does not require all involved entities to be simultaneously connected at any time and, therefore, further overcomes the dynamic nature of the environments. We present the implementation of the model and results from simulations.

The rates of febrile upper respiratory infection in students at Lowry Air Force Base were the lowest observed to date. Illness due to Type 4 adenovirus was eliminated by the use of oral live vaccine. Type 7 adenovirus, though repeatedly introduced the Base by incoming troops, failed to cause a significant amount of illness in the student squadrons which had received Type 4 vaccine. Influenza A2 and B, through present over a long period in the Denver area, failed to cause significant illness in the student population which had received standard military vaccine. Coronavirus infections were demonstrated with considerable frequency during the early part of the 1970-71 respiratory disease season. Mycoplasma infections were very infrequent. Originator supplied keywords include: Adenovirus; Influenza; Vaccine; Hemagglutinin; Neuraminidase; Coronavirus; Mycoplasma; Respiratory Disease.

During a dengue epidemic in Venezuela, a virus diagnosis was obtained with the help of hemagglutination inhibition tests, using dengue '2' as the viral antigen. Sera taken during the acute period were compared with convalescent sera in order to get an idea of the increase in hemagglutinin. Neuraminidase; Coronavirus; Mycoplasma; Respiratory Disease.
Comparative Analysis of Disruption Tolerant Network Routing Simulations in the ONE and NS-3

NAVAL POSTGRADUATE SCHOOL MONTEREY CA MONTEREY United States

Maunlin, Andrew N.

12/1/2017 349 Not available Not available U A - 01 Approved for public release; distribution is unlimited. Technical Report

This thesis studies the performance of Disruption Tolerant Networking (DTN) routing protocols, and the effect of simulator selection. Research into the Geo-location Assisted Predictive Routing (GAPR), and GAPR2 protocols at NPS used the ONE Simulator. The ONE abstracts everything below the routing layer to simplify the development of DTN protocols. In contrast, Network Simulator 3 (ns-3) simulates the entire network stack. ns-3 includes packet headers and existing link-layer protocols that the ONE abstracts away. The inclusion of link-layer overhead and packet headers reduces message delivery by 31% and increases average latency by 119%. Packets used to share routing information consume up to 33% of all transmitted data. Effective throughput between connected nodes decreases by 40%-70% of the equivalent ONE bandwidth. These penalties vary significantly depending on routing protocol design choices. This thesis implements Epidemic, Vector, Centroid, GAPR, and GAPR2 protocols in ns-3. It also combines Centroid with GAPR to create a new protocol called GAPR2a. The protocols are extensively simulated in three mobility scenarios in ns-3 and the ONE: one urban scenario and two military scenarios. GAPR2a provides the best overall performance in the urban scenario, and Vector provides the best overall performance in the military scenarios. Future DTN protocol development should continue in ns-3 because the ONEs abstractions may not reflect real-world performance.

Experimental Chemotheraphy: A Rapid and Simple Screening Method for Drug Binding to DNA

WALTER REED ARMY INSTITUTE OF RESEARCH WASHINGTON DC

Hahn, Fred E.

6/1/1980 9 Not available WRAR U A - 01 Approved for public release; distribution is unlimited.

One and NS-3

Chloramphenicol or tetracyclines.

DATA ON EPIDEMIC PROCESSES. 5. COMMUNICATION

ARMY BIOLOGICAL DEFENSES FREDERICK MD

Dyakichev, N. R.

1/1/1957 1 TRANS-106 ARL/MD U A - 01 Approved for public release; distribution is unlimited.

Chloroquine-resistant malaria, equaled the number evacuated because of wounds. The invasion of Taiwan from mainland China, planned in 1949, had to be abandoned because of a catastrophic outbreak of schistosomiasis which the assembled troops acquired while practicing landing maneuvers on inland lakes in Fukien province. Earlier, the campaign of Napoleon in Egypt faltered because of schistosomiasis and trachoma in the expeditionary force. Drugs for the treatment of those communicable diseases against which there exists no effective immunoprophylaxis are a military necessity when the troops must be deployed in unsanitary parts of the world. The Russian Civil War (1917-1924) was accompanied by 25,000,000 cases of epidemic typhus. Today, such patients would be treated successfully with chloramphenicol or tetracyclines.

Chromoprophylaxis Against Group A Streptococcus During Military Training

OATSPAM/WR Wright Patterson AFB United States

Widder, Bryant L.,Krafler, John M.,White,Brian K.,Hawksworth,Anthon y W.,Graf,Paul J.,Yun,Weather C.


Chromoprophylaxis with intramuscular benzathine penicillin G has been used widely by the U.S. military to prevent epidemics of group A streptococcus infections during basic training. Effective throughput between connected nodes decreases by 40%-70% of the equivalent ONE bandwidth. These penalties vary significantly depending on routing protocol design choices. This thesis implements Epidemic, Vector, Centroid, GAPR, and GAPR2 protocols in ns-3. It also combines Centroid with GAPR to create a new protocol called GAPR2a. The protocols are extensively simulated in three mobility scenarios in ns-3 and the ONE: one urban scenario and two military scenarios. GAPR2a provides the best overall performance in the urban scenario, and Vector provides the best overall performance in the military scenarios. Future DTN protocol development should continue in ns-3 because the ONEs abstractions may not reflect real-world performance.
The cause of preventive medicine was served by the concept and formation of the Armed Forces Epidemiological Board: Its routing and the source and binary versions of Spray and Wait. General Simmons conceived the idea of a board of civilian experts to control infectious diseases. General Simmons conceived the idea of a board of civilian experts to control infectious diseases. His deputy, Colonel Stanhope Bayne-Jones, MC, U.S. Army, was well aware of the medical handicaps that previous military officers had faced, in particular, their inability to control infectious diseases. General Simmons conceived the idea of a board of civilian medical advisors to the military. Colonel Bayne-Jones agreed; there was an urgent need to prevent infectious diseases in the army. Their careful planning choice of civilian leaders were crucial to the success of the fledgling Board.

The second wave of the epidemic in Djibouti was not as severe as the first one, but it was still a concern. The seropositivity rate was estimated to be around 1.5% in the population of Djibouti. This was a significant decline from the peak of the epidemic in the late 1980s. However, the epidemic was not over yet. The virus continued to circulate in the population, and new cases were being reported. The Board was still active, and its efforts were still crucial. However, the Board was also faced with new challenges. The epidemic was spreading to other parts of the world, and new strains of the virus were emerging. The Board had to adapt to these new challenges and continue its work to prevent the epidemic from spreading further.

The Board also continued to work on developing new treatments and vaccines. They worked closely with other organizations, such as the World Health Organization (WHO) and the National Institutes of Health (NIH), to develop new medications and vaccines that could be used to treat HIV/AIDS. These efforts were crucial in helping to control the epidemic and prevent its spread. The Board's work was an important part of the global effort to combat HIV/AIDS, and it continued to be a leader in the fight against the epidemic.
New Approaches to Biotechnology

Biotechnology is a diverse and promising industry, but it is not without challenges. The 9/11 attacks on the United States due to its capacity for epidemic spread, and the fact that acute hepatitis A associated with primary infection with HAV is a contracted illness with a prolonged convalescence. No vaccine is currently available for prevention of infection with this medically important virus. Three general approaches to HAV vaccines have been considered, including development of an inactivated, cell-culture-derived vaccine, an attenuated vaccine derived by extensive passage of virus in vitro, and more novel vaccines based on synthetic peptide or recombinant DNA technology. A detailed discussion of these approaches, all of which are beset with difficulties may be found in Report 1 of this contract, or in the review by Lemon. This contract has focused on understanding the molecular basis of attenuation of HAV, as such an understanding might open new approaches to development of an economic and effective HAV vaccine. The molecular mechanisms underlying either adaptation of HAV to growth in cell culture results in profound changes in the biologic characteristic of the virus and with continued passage of virus has been associated with a reduction in virulence in several different species of primates. A primary effort under support of this contract has therefore been the cloning and sequencing of the genome of a cell culture-adapted variant of HM175 strain HAV, and the identification of mutations in this virus that were associated with adaptation of this virus to growth in vitro.

Hemorrhagic Fever with Renal Syndrome (HFRS) was an important military problem since large epidemics of HFRS occurred among soldiers in the many past wars and although predominantly associated with field mice in rural areas, it is now being recognized that urban rats and laboratory rates are also reservoirs of HFRS in many parts of the world. Therefore, seroepidemiological survey of distribution of hantaviruses and surveillance of occurrence of HFRS in the world are important for prevention of this highly fatal disease. It is also important to investigate antigenic differences of strains of Hantavirus isolated from rats caught in non-endemic areas of the world because HFRS patient had never been documented in many areas despite our finding of positive rats there. A near global distribution of Hantavirus was demonstrated. HFRS patients infected with Seoul virus occurred in endemic and non-endemic area of HFRS and the most characteristic clinical features are fever, headache, strong abdominal symptoms, hepatic dysfunction and mild renal dysfunction. Five strains of Seoul virus were isolated from urban rats caught in Hong Kong and Singapore and the strains are a little different antigenically from prototype Seoul virus 80/39 by monoclonal antibody assay. Keywords: ELISA, Bioassay; Laboratory tests; Diagnosis(Medicine).

Biotechnology provides a diverse and promising industry, but it is not without challenges. The impact on our lives is already being felt, and all indications point to a future of unprecedented changes. Genetically modified (GM) organisms are being used to increase crop production, bacteria to remediate contaminated areas, and even fetal calf skin to grow human soft tissues. Concurrently our nation is seeking biotechnology answers for a variety of national security issues, including the defense of biological or chemical attack and pandemic influenza. Biotechnology is rapidly impacting multiple industries including medicine, defense, energy, and agriculture. This paper addresses four general biotechnology areas: medical, emerging technology, biodefense, and agriculture. These discussions range from personalized medicine, pandemics and vaccines to biofuels and Project BioShield. The potential economic impact of the industry is tremendous and leads directly to many of the challenges our nation will face in the future. These challenges include globalization, government regulation, ethical concerns and societal acceptance. As the biotechnology industry continues to mature, we expect to see a bright future where the benefits of biotechnology will outweigh the risks involved in its application.
Region-spanning national borders are conducive to the migration of infectious diseases. Since 2004, the Naval Health Research Center, in concert with health officials of San Diego and Imperial counties, has collaborated with the Secretary of Health, Mexico and the US Centers for Disease Control and Prevention to conduct respiratory disease surveillance in the US-Mexico border region. Demographic and symptom information and respiratory swabs were collected from enrollees who met the case definition for influenza-like illness (ILI). Between 2004 and 2009, 1855 individuals were sampled at clinics near the US-Mexico border in California and Baja California. The most frequent pathogen identified was influenza (25% of ILI cases), with those aged 6-15 years the most frequently affected. In April 2009, a young female participant from Imperial County, California, became among the first documented cases of pandemic influenza A/H1N1. A number of other viral and bacterial respiratory pathogens were identified from submitted samples, including adenovirus, parainfluenza viruses, respiratory syncytial virus, Streptoccocus pneumoniae, S. pyogenes, Haemophilus influenzae and beta-hemolytic streptococci. These findings illustrate the importance of disease surveillance in areas near national borders.
### Mexico and the Cocaine Epidemic: The New Colombia or a New Problem

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<th>Author(s)</th>
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<tr>
<td>Michel, Kenneth</td>
<td>Childhood Diarrhea in Rural Egypt</td>
<td>2010</td>
<td>Naval Graduate School Monterey CA</td>
<td>Not available</td>
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The ubiquity of online and mobile technologies across the World and their rapid adoption by people has been a key driver of the E2C operational environment. This new digital social arena has been brought to C2 operations, accessing crisis-related information on open community-based repositories, and influencing specific cliques and groups in society, especially in the organization and coordination of mob protests. This new digital social arena has been brought to C2 operational environments and organizations are under pressure to understand and cope with this new reality. In this paper, we analyze documented case studies of emergency and crisis events characterized by underdeveloped and degraded operational environments that involved strong military or security-related intervention and generated significant social media dynamics. Ranging from natural disasters to terrorist threats to social upheavals, these cases highlight social media as a fundamental information source in the support of actionable intelligence and effective connecting and collaboration.

### Pheno-Typic Profiles of Intestinal enterotoxigenic Escherichia coli Associated With Early Childhood Diarrhea in Rural Egypt

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<td>Shashuw, Hindi, Shalh</td>
<td>Phenotypic Profiles of Intestinal enterotoxigenic Escherichia coli Associated With Early Childhood Diarrhea in Rural Egypt</td>
<td>2010</td>
<td>Naval Medical Research Unit No 3</td>
<td>Not available</td>
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For each strain, we ascertained enterotoxin antigens. The most commonly recognized composite ETEC phenotypes were colonization factor antigen I (CFA/I) (10%), coli surface antigen 6 (CS6) (9%), heat-labile enterotoxin (LT) alone, and 12% expressed both toxins. The most common CF phenotypes were colonization factor antigen I (CFA/I) (10%), coli surface antigen 6 (CS6) (9%), CS3 (6%), and CS plus CS2 (4%). Fifty-nine percent of the strains did not express any of the 12 CFs included in our test panel. Resistance of ETEC strains to ampicillin (63%), trimethoprim-sulfamethoxazole (52%), and tetracycline (43%) was common, while resistance to quinolone antibiotics was rarely detected. As for the distribution of observed serotypes, there was an unusually wide diversity of O antigens and H types represented among the 915 ETEC strains.
Policies for Biodefense

Naval Postgraduate School Monterey CA DEPT OF OPERATIONS RESEARCH

Kress, Moshe

9/1/2003 35 NPS-OR-03-068 NPS-OR U A - 01 Approved for public release; distribution is unlimited.

Technical rept.

Handling bioterror events that involve contagious agents is a major concern in the war against terror, and is a cause for debate among policymakers about the best response policy. At the core of this debate stands the question which of the two post-event policies to adopt: mass vaccination—where maximum vaccination capacity is utilized to uniformly inoculate the entire population, or trace (also called ring or targeted) vaccination—where mass vaccination capabilities are traded off with tracing capabilities to selectively inoculate only contacts (or suspected contacts) of infective individuals. We present a dynamic epidemic-intervention model that expands previous models by capturing some additional key features of the situation and by generalizing some assumptions regarding the probability distributions of inter-temporal parameters. The model comprises a set of difference equations. The model is implemented to analyze alternative response policies. It is shown that a mixture of mass and trace vaccination policies—the prioritized vaccination policy—is more effective than either of the two aforementioned policies.

Dengue Virus in Sub-tropical Northern and Central Vietnam: Population Immunity and Climate Shape Patterns of Viral Invasion and Maintenance

Army Inst of Surgical Research Fort Sam Houston

Kamins, Marc A.

The etiology, epidemiology and control of Dengue virus infection in Vietnam are explored. This is a tropical epidemic disease occurring in both epidemic and endemic cycles across tropical and sub-tropical regions of the world. Incidence is particularly high in much of Southeast Asia, where hyperendemic transmission plagues both urban and rural populations. However, endemcity has not been established in some areas with climates that may not support yearround viral transmission. An understanding of how dengue viruses (DENV) enter these environments and whether the viruses persist in inapparent local transmission cycles is central to understanding how dengue emerges in areas at the margins of endemic transmission. Dengue is highly endemic in tropical southern Vietnam, while increasingly large seasonal epidemics have occurred in northern Vietnam over the last decade. We have investigated the spread of DENV-1 throughout Vietnam to determine the routes by which the virus enters northern and central regions of the country. Phylogenetic analysis of 1,765 envelope (E) gene sequences from Southeast Asia revealed frequent movement of DENV between neighboring human populations and strong local clustering of viral lineages. Long-distance migration of DENV between human population centers also occurred regularly and on short time-scales, indicating human-mediated viral invasion into northern Vietnam. Human populations in southern Vietnam were found to be the primary source of DENV circulating throughout the country, while central and northern Vietnam acted as sink populations, likely due to reduced connectedness to other populations in the case of the central regions and to the influence of temperature variability on DENV replication and vector survival and competence in the north. Finally, phylogenetic analyses suggested that viral movement follows a gravity model and indicates that population immunity and physical and economic connections between populations may play important roles in shaping patterns of DENV transmission.

Intervention to Decrease Risk for Sexually Transmitted Diseases (STDs) and the Associated Negative Reproductive Health Outcomes in Women Aboard Ships: A Biopsychosocial Approach

California Univ San Francisco

Staller, Mary A.

9/1/1998 212 Not available USAMRMC U A - 01 Approved for public release; distribution is unlimited.

Annual rept.

Uncintended pregnancies (UIPs) and STDs with their sequelae of ectopic pregnancy continue to be epidemic among active duty enlisted women. Such reproductive health problems result in major morbidity among affected women as well as posing a potential threat to combat readiness. LHRH and STDs result from complex interactions between biological and behavioral factors in military women. The ultimate control in preventing such morbidities must rely on both behavioral and biologic strategies. The primary aim of the project is to develop, implement and evaluate an intervention which emphasizes correct information, motivation and behavioral skills building (IMB Model) coupled with non-invasive screening using urine-based amplified DNA techniques to detect C. trachomatis and N. gonorrhoeae and urine-based pregnancy testing. A pre-test, post-test experimental design was employed to evaluate the impact of the behavioral intervention on the experimental group using both self-report questionnaires (LHRH, STD psychosocial and behavioral risk factors) and results from the STD and pregnancy screening tests as measures. The control intervention will consist of a prevention program focusing on nutrition breast cancer, fitness and injury prevention. Questionnaires and urine testing will be done at pre-test, mid-study and post-test 6-12 months later. Subjects will include junior enlisted Marine women with N=100 in the experimental group and N=100 in the control group.
The association of historical plague pandemics with Yersinia pestis remains controversial, partly because the evolutionary history of this largely monomorphic bacterium was unknown. The microevolution of Y. pestis was therefore investigated by three different multilocus methods, and we propose an evolutionary tree for these populations, rooted on the most extensive genetic data set available. These populations do not correspond directly to classical biovars that are based on phenotypic properties. Thus, we recommend that henceforth groupings should be based on molecular signatures. The age of Y. pestis inferred here is compatible with the dates of historical pandemic plague. However, it is premature to infer an association between any molecular grouping and a particular pandemic wave that occurred before the 20th century.

Microevolution and History of the Plague Bacillus, Yersinia pestis

The microevolution of Y. pestis was therefore investigated by three different multilocus methods, and we propose an evolutionary tree for these populations, rooted on the most extensive genetic data set available. These populations do not correspond directly to classical biovars that are based on phenotypic properties. Thus, we recommend that henceforth groupings should be based on molecular signatures. The age of Y. pestis inferred here is compatible with the dates of historical pandemic plague. However, it is premature to infer an association between any molecular grouping and a particular pandemic wave that occurred before the 20th century.

Investigation of a Dengue Fever Epidemic in Colombia

Over 400,000 persons in a population of 2.1 million were estimated to have suffered dengue during a 12-month period. The virus, recovered from both man and mosquitoes, was identified as dengue serotype 2. The epidemic was clearly related to a re-infestation of the coastal area with A. aegypti mosquitoes. Surveillance for both the disease and the mosquito, supported in part by the grant, was used to guide control activities. (Modified author abstract)

High-Fidelity Modeling of Computer Network Worms

Abstract modeling, such as using epidemic models, has been the general method of choice for understanding and analyzing the high-level effects of worms. However, high-fidelity models, such as packet-level models, are indispensable for moving beyond aggregate effects, to capture finer nuances and complexities associated with known and future worms in realistic network environments. Here, we first identify the spectrum of available alternatives for worm modeling, and classify them according to their scalability and fidelity. Among them, we focus on three high-fidelity methods for modeling of worms, and study their effectiveness with respect to scalability. Employing these methods, we are then able to, respectively, achieve some of the largest packet-level simulations of worm models to date; implant and attack actual worm monitoring/defense installations inside large simulated networks; and identify a workaround for real-time requirement that fundamentally constrains worm modeling at the highest fidelity levels.

Some Problems in Density Estimation, Modeling and Time Series Analysis

Two doctoral dissertations were written on the subject of nonparametric density estimation. The first, by S. Peixuan, considered new algorithms for density estimation in several dimensions. The estimation of the parameters characterizing a time series was pursued using oncology. Two doctoral dissertations were written on the subject of nonparametric density estimation. The first, by S. Peixuan, considered new algorithms for density estimation in several dimensions. The estimation of the parameters characterizing a time series was pursued using oncology.

Effectiveness of Military Organizations

The monograph then analyzes HIV/AIDS as a security threat for AFRICOM. The purpose of this study is to analyze the effectiveness of the militaries of southern Africa given the nature of the HIV/AIDS epidemic and the complexities through which U.S. Africa Command must navigate. The study will draw on research of the HIV/AIDS epidemic and its effect on the effectiveness of the militaries of southern Africa, leaning heavily on the research of Stefan Elbe and a small cadre of associated scholars that focused their academic attention on this specific issue. Prior to the discussion of the effect the epidemic has had on these militaries, the study discusses military effectiveness, utilizing the model of effectiveness prescribed by Allan Millett, Williamson Murray, and Kenneth Watman in their article ‘The Effectiveness of Military Organizations.’ The monograph then analyzes HIV/AIDS as a security threat for AFRICOM.
The disease of parrots, psittacosis is present in animals as generalized infections with a predominance of digestive symptoms. Transmissible to man it takes on the characters of an infection of a typhoid type, during which in general pulmonary complications set in. One always finds at the beginning of human epidemics a contact with sick birds. It was essentially this epidemiological character which allowed the clinical identification of the disease. The experimental research taken up as a consequence of the great pandemic of 1929-1930 resulted in a complete revision of our knowledge of etiology of psittacosis. It was demonstrated that the agent of this disease was an ultravirus.

Human adenovirus 14 (HAdV-14) is a recognized causative agent of epidemic febrile respiratory illness (FRI). Last reported in Eurasia in 1963, this virus has since been responsbile for sporadic outbreaks in various parts of the world. During 2006-2007 epidemics in North America.

Results; and Extrapolation; Summary of Progress Report -- Field Studies on Rickettsial Infections, and Clinical Studies on Epidemic Typhus.!
Double-Edged Innovations: Preventing the Misuse of Emerging Biological/Chemical Technologies  
MONTEREY INST OF INTERNATIONAL STUDIES CA JAMES MARTIN CENTER FOR NONPROLIFERATION STUDIES  
Tucker, Jonathan B.; Faragan, Meg  
7/1/2010  
345 ASCD-2010 018  
DTRA/ASCO  
U A-01  
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Not available  
Several areas of rapid technical innovation, such as biotechnology, nanotechnology, and neuroscience, offer great promise for human health and welfare but could also be exploited for the development and production of biological or chemical weapons. Such technologies pose a dual-use dilemma because it is difficult to prevent misuse without foregiving beneficial applications. Indeed

Old Glory and the Jolly Roger: The Cultural Constraints and Strategic Imperatives of Modern Piracy  
AIR UNIV MARKET AIR AL SCHOOL OF ADVANCED AIR AND SPACE STUDIES  
Burch, Paul R.  
6/1/2009  
112 Not available  
AU-SAASS  
U A-02  
Approved for public release; distribution is unlimited.  
Master’s thesis  
This thesis discusses piracy on the open seas. It describes acts of piracy, puts the practice into historical perspective, and shows how a recent surge in maritime piracy incidents differs from other maritime piracy affecting the world’s oceans at the turn of the twentieth century. This is half of the reason for writing. The second purpose for is to examine the US military response to the dramatic increase in piracy near Somalia that occurred in 2008. The thesis examines the US response through the theoretical lenses of strategic culture and structural realism. These theories seldom appear alongside each other in security studies literature; their juxtaposition explains the US behavior toward the contemporary African piracy epidemic and provides a framework for examining other national security issues. This thesis concludes that although certain national security elites push US strategic culture toward interventionist or isolationist extremes, some world events elicit foregone responses best described by the ideas of structural realism. Tacit realization by national security actors that these events exist in spite of what elite groups profess or desire in turn defines strategic culture in a fundamentally different way. Given its place in the existing world order, the United States had little choice but to respond to piracy, even though its strategic preference was to ignore the problem. The valuable lesson from piracy represents in microcosm many problems of national strategy. If US cultural preference is again at odds with a strategic imperative to use force, and elites indulge the former, the nation may forfeit its structural role as the world’s existing hegemon. This is historically significant, as ceasing the role of hegemon at this time would be a voluntary act, not forced by a stronger nation on an altered balance of power. The United States would become the first such state in over foreign

The Effect of the Assessment of Recruit Motivation and Strength (ARMS) Program on Army Accessions and Attrition  
RAND ARROYO CENTER SANTA MONICA CA  
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Technical rept.  
In February 2005, the U.S. Army allowed six Military Entrance Processing Station (MEPS) approved for public release; distribution is unlimited.  
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In February 2005, the U.S. Army allowed the use of the ARMS test to eight additional MEPS in February 2006 and to the remaining 51 locations Atlanta, Buffalo, Chicago, Sacramento, San Antonio, and San Diego to enlist Army applicants who did not meet applicable weight-for-height and body fat percentage standards but who passed a test known as the Assessment of Recruit Motivation and Strength (ARMS) test. 1 ARMS has two components: a step test and a pushup test (initially, it also had a lift component). Successfully completing these tests is meant to indicate that a recruit has the physical and motivational endurance needed to serve in the Army. The Army expanded the use of the ARMS test to eight additional MEPS in February 2006 and to the remaining 51 MEPS in April 2006. The decision to allow ARMS waivers nationwide was made in a difficult recruiting environment and at a time when the Army was seeking to grow active-duty end strength. The decision was also made with the knowledge that America’s obesity epidemic was adversely affecting the supply of eligible recruits and with the belief that ARMS complements existing physical fitness tests used to identify individuals who will and will not fare well in the military. According to data available from the Military Entrance Processing Command, between 1988 and 2007, the mean body mass index (BMI) of Army male applicants increased from 23.8 to 24.9, and the mean BMI of female applicants increased from 22.3 to 23.9 (Figures S.1 and S.2). Even larger increases in BMI are apparent among the heaviest applicants. For example, BMI at the 75th percentile of the applicant BMI distribution increased from 22.3 to 23.9 (Figures S.1 and S.2). Even larger increases in BMI are apparent among the heaviest applicants. For example, BMI at the 75th percentile of the applicant BMI distribution increased from 26.1 to 27.7 for males and from 23.8 to 25.9 for females. BMI in the overall U.S. youth population increased by even more during this period (Asch et al., 2009). The Army granted waivers to overweight and over body fat applicants who passed the ARMS test, hoping that this would increase enlistments without adversely affecting attrition and other measures of recruit readiness.

Modern Piracy  
Strategic Imperatives of the United States  
The Cultural Constraints and  
Preventing the Misuse of the ARMS Program on Army Accessions and Attrition

The Cultural Constraints and Strategic Imperatives of Modern Piracy
This paper begins with a historical review of the 1918 influenza pandemic as it affected military populations. The general public, the mass media, and many government officials believe that the use of vaccines is the only way to prevent pandemics. However, studies of disasters and wars show that disorganized flight in the presence of a real or perceived WMD weapons of mass destruction (WMD) will inevitably lead to mass panic and/or mass hysteria. Therefore, it is important to study the effects of an outbreak on an isolated population, such as the military recruit training environment, to understand the impact on disease transmission dynamics and on interventions. The high controllable military recruit training environment is an ideal setting for further exploration and understanding of these phenomena. The evolution of epidemic influenza (H1N1) rates consistently hover at epidemic levels. The living space population size introduction of potent individuals and pathogen environmental burden in a military recruit training environment were measured relative to FRI rates affected by closing distant populations to potentially infectious contemporaries. A positive association was found between FRI rates. Also, the units and the local medical clinic were heavily environmentally contaminated with adenovirus implying that the endemic source of the pathogen is primarily environmental rather than person to person but population size rates by maintaining both the environmental reservoir and opportunities for person-to-person transmission. Continued diligence environmental sources in civilian populations is warranted and it is suggested that the rationale and strategies for social distance sources into account.

The strains of Staphylococcus aureus were collected from the in-patients in the 17 hospitals dispersed geographically in Japan. According to the determination of their drug resistance and phage typing patterns, it was found that the multiple resistance and restricted phage type were predominant in the epidemic strains of St. aureus. There are two types in the degree of drug-resistance, i.e., high- and low-resistance and the degree of resistance is extremely high in the multiple resistant strains carrying TC resistance. Three types of the resistance to macrolide antibiotics were presented. By the artificial elimination and transductional analysis, it was concluded that the determinants of penicillinase production and of the resistance to macrolide antibiotics are located together on a single genetic element. (Author)

Shigellae and Drug-Resistance of Staphylococci. The strains of Shigellae and Staphylococci were collected from the in-patients in the 17 hospitals dispersed geographically in Japan. According to the determination of their drug resistance and phage typing patterns, it was found that the multiple resistance and restricted phage type were predominant in the epidemic strains of St. aureus. There are two types in the degree of drug-resistance, i.e., high- and low-resistance and the degree of resistance is extremely high in the multiple resistant strains carrying TC resistance. Three types of the resistance to macrolide antibiotics were presented. By the artificial elimination and transductional analysis, it was concluded that the determinants of penicillinase production and of the resistance to macrolide antibiotics are located together on a single genetic element. (Author)

Panic and Outbreaks of Mass Psychogenic Illness. Panic and Outbreaks of Mass Psychogenic Illness (MPI) may be prevalent. The symptoms (fatigue, nausea, vomiting, headache, dizziness/lightheadedness, and anorexia) sociogenic illness, mass hysteria, or epidemic hysteria) may be prevalent. Many of the MPI scenario, outbreaks of multiple unexplained symptoms (i.e., mass psychogenic illness, mass psychiatric illness, mass hysteria, or epidemic hysteria) may be prevalent. Many of the symptoms (fatigue, nausea, vomiting, headache, dizziness/lightheadedness, and anorexia) are common in combat and after toxic chemical exposure, chemical weapon exposure, industrial infectious illness, and acute radiation sickness.

Explanations of the Shape of Spread of Epidemics on a Grid. Explanations of the Shape of Spread of Epidemics on a Grid. The explosiveness and severity of quantitative thrusts are to (a) derive time-varying rates of influenza transmission in unrestricted and restricted human movements and (b) assess potential natural or unnatural influenza effects on modern military populations. The explosiveness and severity of influenza pandemics in military populations obstructed the implementation of even rudimentary medical countermeasures (patient isolation, supportive care and quarantine). Neither a vaccine nor drugs were available then to prevent influenza, alter its natural course and deal with sequelae.
The congress stipulated for the next few years the following basic directions for scientific research activity. The improvement of systems of obtaining, transmitting and analyzing data concerning infectious illnesses and measures used in combating them, on the basis of utilizing modern means of communication and computer equipment; deep and systematic study of epidemiological conjunctures of the USSR with purposes of scientific establishment of complex plans for preventive and anti-epidemic measures and epidemiological progress; further growth of virology both in the region of working on the problem of interrelation of the virus and the cell, and also in the region of immunization prophylactics and chemical prophylactics; the study of the morphology and physiology of pathogenic and conditionally pathogenic microorganisms and questions of their taxonomy; improvement of clinical and laboratory methods of diagnostics of infectious diseases.

A staphylococcus epidemic which concerned seven patients is described, which occurred at a ward with a furunculosis. The epidemic had been started, almost certainly, by a patient who came to the ward. The epidemic was controlled, and the following measures were implemented: isolation of patients, disinfection of sheets with antiseptics, and the use of appropriate antibiotics. The epidemic was successfully treated, and no new cases were reported.

Obesity and Obstructive Sleep Apnea (OSA) consist of repetitive choking spells due to sleep-induced reduction of upper airway muscle tone. Millions of adults and children live unaware of this condition, which can have a profound affect on their health and quality of life. Obesity, gender, genetic, and hormonal factors mediate risk for OSA and interact in a multifaceted manner in the pathogenesis of this disease. Obesity is the most established and primary risk factor given that body mass index, visceral fat, and neck circumference are major predictors in the clinical expression of OSA. Many studies have and their sequelae with shown weight loss or gain significantly impacts OSA severity. More recently, accumulating evidence indicates OSA promotes weight gain, obesity, and type II diabetes in a variety of ways, such as increase in sympathetic nervous system tone, and elevated levels of hormones such as leptin and insulin. The role of OSA in the pathobiology of type II diabetes is evolving and presents new opportunities to understand the pathogenesis and to develop screening and treatment strategies. The increasing prevalence of obesity, OSA, and diabetes in the United States has driven the development of novel pharmaceutical therapies and efforts to develop non-pharmacological therapies. This epidemic of metabolic diseases and the high cost associated with its management present significant challenges for public health and healthcare systems. Strategies to prevent obesity and OSA can be effective in reducing health care costs and improving the quality of life for individuals affected by these conditions.
Interrogation of Detainees: A nonhuman primate model of clinical Rickettsia prowazekii infection was developed in MILITARY EPIDEMIOLOGY, the study of the peculiarities of the epidemic process and the active influence on its course. 7/28/1964 136 FTD-MT-64-245 Not available U A - 01
Epidemic Typhus Infection in Ecology Studies in Western U.S. treatment of enemy combatants and terrorist suspects captured in Afghanistan, Iraq, and
5 Not available USAMRIID U A - 01
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8/26/2009 CRS-RL33655 CRS/DC U A - 01
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Molecular Determinants of Estrogen Receptor Alpha expressivity
DUKE UNIV DURHAM NC Dobell, Carolyn 7/1/2008 11 Not available OSAMRMC U A - 01
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Annual summary rept. 1 Jul 2007-30 Jun 2008
We have identified a novel endogenous ligand for the estrogen receptor, that being 27-hydroxysterol (27HC). 27HC mimics the effects of estrogen when assayed on multiple endpoints, including target gene regulation, inducing receptor turnover in an ARS-dependent manner, and increasing breast cancer cell proliferation. Current studies are now focused on two main areas. First, we aim to determine whether macrophages produce 27HC in sufficient quantities to affect breast cancer cell behavior. Infiltrating macrophages are associated with reduced survival from breast cancer, and we hypothesize that one explanation for this is local production of 27HC, which acts as a mitogen. Second, we are interested in identifying proteins that bind specifically to 27HC-bound ER, and then to ascertain the biological significance of these proteins as they impact ER signaling. Previous studies had determined that levels of 27HC are positively correlated to that of cholesterol. Given the current epidemic of obesity/hypercholesterolemia, our studies on the impact of 27HC on ER are crucial for our understanding of how the physiological impact of this epidemic.
AD0400070
Epidemic Typhus Infection in Cynomolgus Monkeys (Macaca fascicularis)
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Journal article
A nonhuman primate model of clinical rickettsia prowazekii infection was developed in cynomolgus monkeys (Macaca fascicularis). Monkeys infected intravenously with 10 log units of plague-forming unit developed clinical signs of illness and pathological changes characteristic of epidemic typhus infection in humans. Increases in total leukocyte counts, serum alkaline phosphatase, blood urea nitrogen, and serum glutamic pyruvate transaminase values were observed. Microscopic examination revealed typical typhus nodules in the brains of two monkeys that died. These data indicated that the cynomolgus monkey is a suitable model for study of the pathogenesis of epidemic typhus infection and may prove valuable in the evaluation of candidate R. prowazekii vaccines.
AD0748842
Zoology Studies in Western Utah, Annual rept. 1 Jan-31 Dec 2001
dec 2001
ECODYNAMICS INC SALT LAKE CITY UT Gibson, Peter F. 5/31/1972 113 DT-72-3 DTC U A - 01
Approved for public release; distribution is unlimited.
Annual rept. 1 Jan-31 Dec
An extensive survey of zoonotic diseases was conducted in the desert region of western Utah. Native mammals, birds and bloodsucking vectors were tested for evidence of: tularemia, plague, C fever and Rocky Mountain spotted fever. Positive findings were correlated with ecological parameters. Two epidemics of human tularemia were investigated. Ecological investigations of the native fauna were also conducted with primary emphasis on lagomorphs and rodents. Various aspects of their ecology were studied including basic breeding biology, habitat relationships, population fluctuations, population density, age structure and general population dynamics.
AD0865238
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The study of the peculiarities of the epidemic process and the active influence on its course not only in troops, but also among the population surrounding the troops is discussed. This need is described as urgent in contemporary conditions, when in the case of unleashing war, the enemy can use bacterial means of attack. Military epidemiology is viewed as a division of epidemiology and a branch of military medicine which studies the peculiarities of the course of the epidemic process in warfare, and in military groups in peace time. An essential division of military epidemiology is the division, dedicated to the study of the peculiarities of the origin, spread and liquidation of epidemic diseases in warfare with the creation of an artificial epidemic process by the enemy. On the basis of the learned regularities, military epidemiology has developed prophylactic and antiepidemic measures in troops, and in wartime, frequently among the surrounding population, and has determined the form and methods of activity of the military medical service for the protection of troops from epidemic diseases.
A flu pandemic is a worldwide epidemic of an influenza virus. As such, the United States policy that medical and personnel information systems be designed, integrated, and utilized with military medical surveillance to protect the physical and mental health of Service members throughout their military service. Within the last several years, new applications of information technology have vastly expanded the military’s capabilities for surveillance, and these technologies are now starting to move out of hospitals and other fixed facilities into forward-deployed settings. Surveillance technology must evolve toward an integrated system that can comprehensively address future needs to identify acute and chronic exposures of military personnel to health threats over the course of their entire military career. Many of the necessary component technologies are now available or will soon be available. Some of these applications have already been integrated.
ADA153224  IPS Report, Epidemiology.
CONT PUBLICATIONS SEARCH SERVICE ARLINGTON VA  Not available  1/15/1993  34  Not available  KD  U  A - 01  Approved for public release; distribution is unlimited.  Not available  Partial Contents: Ghana - Program Successful in Reducing Guinea Worm and Sigatoka Disease

ADA155101  The Effect of Post Traumatic Stress Disorder on Military Leadership: An Historical Perspective
MAY COMMAND AND GENERAL STAFF COLLEGE FORT LEAVENWORTH KS  Baker, Karen A.  5/19/2011  54  Not available  DAUGSL/SCAMS  U  A - 01  Approved for public release; distribution is unlimited.  Monograph rept. Jun 2010-Mar 2011  This monograph examines the effects of Post Traumatic Stress Disorder (PTSD) on military leadership. For over twenty years, the United States Army has used the Be, Know, Do leadership model to describe what Army leadership is and does. The BEK leadership model addresses the personal values, competence, and actions of a leader that influence others to achieve successful mission accomplishment. Ongoing operations demonstrated shortcomings in current doctrine, which are clarified using recent leadership theories and historical experience. World War I, World War II, and Vietnam provide historical experiences that illustrate how American military leadership encountered PTSD, or one of its predecessors, on a large scale. The American experience in World War I began with a baseline understanding of war neuroses by observing and working with the British military. As the United States entered World War II, military leaders were determined to reduce psychiatric losses of the scale suffered in the previous World War. The military relied on personnel screening as a discriminator for service and believed that soldier selection would serve as the solution to mental health problems. The Vietnam experience showcased the effects of combat stress on a military organization. A new epidemic of delayed stress response surfaced in the military, and leaders were once again left with an emerging problem during operations. Transformational, leader-member, and situational leadership theories can best augment the leadership model's shortfalls and address multi-leader collaboration towards PTSD, the relationship between the leader and follower with PTSD, and practice of leading social change within an organization comprised of PTSD diagnosed members.

ADA155682  Worldwide Emerging Environmental Issues Affecting the U.S. Military: June 2010 Report
FEDERATION OF UN ASSOCIATIONS IN WASHINGTON DC, MILLENNIUM PROJECT  Not available  6/1/2010  16  Not available  AFG/VA  U  A - 01  Approved for public release; distribution is unlimited.  Not available  This report is comprised of summaries and analysis of environmental issues affecting the U.S. military. Topics include: environmental security, energy, biodiversity, natural resources, emissions, energy security, malaria epidemics, climate change, food and water security, computer modeling, and nanotechnology safety issues.

ADA157998  A Cultural Resource Survey of Placentia Canal, Chatham County, Georgia.
SOUTHEASTERN ARCHEOLOGICAL SERVICES INC ATHENS GA  DePratter,C. B., Doyon,R. R.  2/8/1984  44  Not available  Not available  U  A - 01  Approved for public release; distribution is unlimited.  Final rept., Research on the Placentia Canal project, Chatham County, Georgia, consisted of an historic documents search and an archaeological survey. The project is on the eastern fringes of the City of Savannah and on the western margin of Thunderbolt, Georgia. A two-hundred-foot-wide corridor along the existing 2.5-mile-long canal right-of-way was surveyed. No significant archaeological sites were identified within the field through either field survey or a check of the State of Georgia Archaeological Site Files. Historic documentation indicates that Placentia Canal was constructed through or near the Placentia Plantation between 1877 and 1887. Construction of this and other related canal systems was stimulated by the Savannah yellow fever epidemic of 1876. Future excavation or construction within the Placentia Canal corridor will not impact significant archeological or historical cultural resources. (Author)

ADA263131  Drug Abuse: The Crack Cocaine Epidemic Health Consequences and Treatment.
GENERAL ACCOUNTING OFFICE WASHINGTON DC, HUMAN RESOURCES DIV  Not available  1/1/1991  45  GAO/HRD-91-55FS  GAO/HRD  U  A - 01  Approved for public release; distribution is unlimited.  Not available  The use of crack cocaine reached epidemic proportions in this country at the end of the 1980s. Due to the unique characteristics associated with crack addiction and the populations that used it, the epidemic created a host of new problems for the public health and drug treatment communities. In view of the devastating social and health effects created by the crack epidemic, you requested that we obtain information on the (1) health consequences of the epidemic and (2) types of treatment available for crack addicts.
Avian Flu Pandemic: Potential Role of CCL3L1-CCR5 Polymorphisms in CCR5, the major coreceptor for HIV, and CCL3L1, a potent CCR5 ligand and HIV-suppressive chemokine, are determinants of HIV/AIDS susceptibility. Here, we mathematically modeled the potential impact of these genetic factors on the epidemic spread of HIV, as well as on its prevention. Methods and Results: Ro, the basic reproductive number, is a fundamental concept in explaining the emergence and persistence of epidemics. By modeling sexual transmission among HIV+/HIV2 partner pairs, we find that Ro estimates, and consequently, the temporal and spatial patterns of HIV outbreak are highly dependent on the infecting partner’s CCL3L1-CCR5 genotype. Ro was lowest and highest when the infected partner possessed protective and detrimental CCL3L1-CCR5 genotypes, respectively. The modeling data indicate that in populations such as Pygmies with a high CCL3L1 gene dose and high protective CCR5 genotypes, the spread of HIV might be minimal. Additionally, for the critical vaccination proportion, an estimate of the fraction of the population that must be vaccinated to eradicate an epidemic was ,1 only when the infected partner had a protective CCL3L1-CCR5 genotype. Since in practice Pc cannot be .1, to prevent epidemic spread, population groups defined by specific CCL3L1-CCR5 genotypes might require repeated vaccination. Furthermore, to account for CCL3L1-CCR5-based genetic risk might confound estimates of vaccine efficacy. For example, in a model trial of 500 subjects, misallocation of CCL3L1-CCR5 genotype of only 25 (5%) subjects between placebo and vaccine arms results in a relative error of ,12% from the true vaccine efficacy. Conclusions: CCL3L1-CCR5 genotypes may impact on the dynamics of HIV, as well as on its prevention. Methods and Results: Ro, the basic reproductive number, is a fundamental concept in explaining the emergence and persistence of epidemics. By modeling sexual transmission among HIV+/HIV2 partner pairs, we find that Ro estimates, and consequently, the temporal and spatial patterns of HIV outgrowth are highly dependent on the infecting partner’s CCL3L1-CCR5 genotype. Ro was least and highest when the infected partner possessed protective and detrimental CCL3L1-CCR5 genotypes, respectively. The modeling data indicate that in populations such as Pygmies with a high CCL3L1 gene dose and high protective CCR5 genotypes, the spread of HIV might be minimal. Additionally, for the critical vaccination proportion, an estimate of the fraction of the population that must be vaccinated to eradicate an epidemic was ,1 only when the infected partner had a protective CCL3L1-CCR5 genotype. Since in practice Pc cannot be .1, to prevent epidemic spread, population groups defined by specific CCL3L1-CCR5 genotypes might require repeated vaccination. Furthermore, to account for CCL3L1-CCR5-based genetic risk might confound estimates of vaccine efficacy. For example, in a model trial of 500 subjects, misallocation of CCL3L1-CCR5 genotype of only 25 (5%) subjects between placebo and vaccine arms results in a relative error of ,12% from the true vaccine efficacy. Conclusions: CCL3L1-CCR5 genotypes may impact on the dynamics of HIV, as well as on its prevention.
Journal article

Homeland security has spiraled into Stage Five of the Issue Attention Cycle. Stage Five -- the post-problem stage -- means homeland security again operates principally behind the public apron. Stakeholders sedulously sift through the grist of homeland security's congressional, industrial, academic, and bureaucratic complex. The professionals who populate that complex spend their days calibrating the strategies, programs, and institutions disjointively formed in the earlier stages of the Cycle. Except for an occasional 15 minutes of public attention to dead terrorists, disrupted plots, and grant cuts, homeland security is not an issue high on the public's agenda. It could leap back on top in an instant. But for now most conversations about homeland security take place within a comparatively small community. The issues are largely the same ones talked about for the last 5 years: funding, threats, hazards, borders, interoperability, intelligence, response, transportation, equipment, and recently, pandemics. Unarguable progress has been made in all these domains. We clearly are better prepared for some things than we were in the autumn of 2001. Equally as certain, there are miles to go before most of the nation's jurisdictions get a Sufficient rating in future national preparedness assessments. Stage Five in the Issue Attention Cycle means there is little political will to substantially alter the hodgepodge federalism that characterizes U.S. homeland security. The system we have is the one we have to work with.

Conference Paper

The real purpose of epidemic theory is not to develop interesting and elegant mathematics, though this may be a delightful incidental byproduct, but is to facilitate the practical prevention or control of actual outbreaks of serious contagious disease. This purpose is still a long way from being achieved to any appreciable extent. The developed countries are today free from disasters of the magnitude of the Black Death in the 14th century when perhaps as much as 25 per cent of the population in Europe perished. Nevertheless, widespread epidemics on a massive scale are still common in Africa and the Far East. As the volume and speed of modern travel continue to increase there is an ever growing risk of the transmission of virulent infections to regions where natural immunity may be low but though public health control is, for ordinary purposes, more or less adequate. Even within a developed country there are possible dangers from such factors as the appearance of new strains of infectious organisms resistant to standard drugs and antibiotics, or increases in the contact rate between individuals due to greater population densities or changes in social behavior. The current increase in venereal infections in many countries could be a case in point. It follows therefore that it is eminently worth considering in what directions research should proceed in order to have an improved chance of attaining its object.

Journal article

Oral infection of rodents with Pasteurella pestis has been demonstrated with both fully virulent and avirulent strains. Sustained rodent plague epizootics have been initiated and maintained in the absence of the classical flea vector. Transmission was due to cannibalism of the dying rodents by their healthy cage mates. Oral infection is considered to provide a plausible mechanism for the persistence of plague in an area where conditions are temporarily unsuitable for flea transmission.
### Strategies for Enhancing Military Physical Readiness in the 21st Century

**Author:** Nindi, Bradley C.

**Date:** 3/22/2012

**Institution:** ARMY WAR COLL, CARLISLE BARRACKS PA

**Approval:** Approved for public release; distribution is unlimited.

**Research Paper:**

Military readiness is negatively affected by the near-epidemic incidence rate of musculoskeletal injuries (MSIs) in service members. MSIs represent a major threat to the health and fitness of our Soldiers and a risk to our Nation’s ability to project military power. MSIs affect both the military’s finances (i.e., economic burden from medical, healthcare, and disability costs) and personnel readiness (i.e., Soldiers medically unable to optimally perform their duties and to deploy). For example, MSIs represent 45% of the medically not-ready, non-deployable population; the major cause of medical evacuation from a combat theater – the majority resulting from physical training; and an annual cost of half a billion dollars for diagnosing and treating more than 1 million Soldiers with MSIs and 6 billion dollars in salary. Annual Department of Veterans Affairs compensation paid for musculoskeletal disabilities is $5.5 billion (26% of total paid compensation). It is imperative for military leaders to understand that physical-training related MSIs are largely preventable. There is a need for a paradigm shift in the military’s approach to physical readiness policies. Minimizing injuries among military personnel and continued reductions in injury rates depend on institutionalizing existing best practices and establishing stronger linkages across commands, operators, researchers, medical providers, public health, and safety officials.

### Digital Radio-Telemetry Monitoring of San Nicolas Island Foxes

**Author:** Hudgens, Brian R., Ferrara, Francesca J., Garcelon, David K.

**Date:** 12/1/2008

**Institution:** LEGACY RESOURCE MANAGEMENT PROGRAM, ARLINGTON VA

**Approval:** Approved for public release; distribution is unlimited.

**Final Report:**

The island fox has been designated a conservation focus by the U.S. Navy. Because of the species unique evolutionary history, it is highly susceptible to threats from novel predators and disease. High fox densities on San Nicolas Island make this population particularly vulnerable to disease epidemics. Since an epidemic or novel predator can effect populations over a short time period, annual surveys and monitoring may not be enough alert managers about onset of potentially catastrophic declines. Daily, weekly, or monthly survival monitoring of wildlife populations is typically conducted using radio telemetry. Though telemetry is quite effective, it is also quite expensive, particularly in terms of labor costs. Even the most intensive monitoring, however, is only effective if results are tied to management actions. Appropriate responses to monitoring results must balance the need to respond to real threats against the cost of false alarms. This balance is best achieved through the use of a tiered response system based on observed increases in mortalities during a short time period.

### Operation Nigerian Angel: Fighting AIDS To Fight Terrorism

**Author:** Kendall, Julie A.

**Date:** 5/29/2003

**Institution:** NAVAL WAR COLL, NEWPORT RI, JOINT MILITARY OPERATIONS DEPT

**Approval:** Approved for public release; distribution is unlimited. Availability: This document is not available from DTIC in microfiche.

**Final Report:**

Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) continues to ravage the African continent, threatening already fragile states by creating chaos and disorder. Some states risk losing more than a third of their populations while having to provide for millions of orphans left behind. The resulting instability creates opportunities for terrorist recruitment and refugee. The US has significant national interest in Nigeria for its vast natural resources and its position as a regional anchor in West Africa. In the coming years, as the pandemic overwhelms countries’ abilities to function effectively, the US may likely be called upon to respond to the crisis. OPERATION NIGERIAN ANGEL provides a model for a multinational force to address key issues and provides the COMCOM a means to restore regional stability and order.
The project was devoted to the analysis of a new class of stochastic games, nonlinear Markov processes which can be characterized by the property that the future depends on the past via present position and its distribution. This class of games can model a variety of situations for economics and epidemiics, statistical physics and pursuit-evasion processes. Another key motivation arises from the steady increase in complexity of the modern technological development requires an appropriate (or better optimal) management of complex stochastic systems consisting of large number of interacting components (agents, mechanisms, vehicles, subsidiaries, species, police units, etc) which may have competitive or common interests. Under rather general assumptions, the limiting problem as the number of components tends to infinity can be described by a nonlinear evolution on measures, and its controlled version is given precisely by a nonlinear Markov process (or in case of competitive interests) a nonlinear Markov game that we are investigating.

We study the emergence of global behavior in large scale networks. The underlying motivating application is epidemiics like computer virus spreading, for example, in wide campus local networks. We consider multiple classes of viruses, each type bearing their own statistical characterization -- exogenous contamination, contagious propagation, and healing. The network state (distribution of nodes infected by each class in the network) is a jump Markov process, not necessarily reversible, making it a challenge to obtain its invariant distribution. By suitable renormalization, in the limit of a large network (number of nodes), we describe the macroscopic or emergent behavior of the network by the solution of a set of deterministic nonlinear differential equations. These nonlinear differential equations are obtained by mean field analysis of the microscopic random dynamics. We study the qualitative behavior of the nonlinear differential equations describing the mean field dynamics.
Intervention to Decrease Risk for Sexually Transmitted Diseases (STDs) and the Associated Negative Reproductive Health Outcomes in Women Aboard Ships: A Biophysical Approach

Unintended pregnancies (UIPs) and STDs with their sequelae of ectopic pregnancy continue to be epidemic among active duty enlisted women. Such reproductive health problems result in major morbidity among affected women as well as posing a potential threat to combat readiness. UIPs and STDs result from complex interactions between biological and behavioral factors. The ultimate control in preventing such morbidities must rely on both behavioral and biologic strategies. The primary aim of the project is to develop, implement, and evaluate an intervention which emphasizes correct information, motivation and behavioral skills building (IMB Model) coupled with non-invasive screening using urine-based amplified DNA techniques to detect C. trachomatis and N. gonorrhoeae and urine-based pregnancy testing. A randomized controlled trial design was employed to evaluate the impact of the intervention on the experimental group using both self-report questionnaires (psychosocial and behavioral risk factors) and results from the STD and pregnancy screening tests as measures. The control intervention consisted of a prevention program focusing on nutrition, breast cancer, fitness and injury prevention. Questionnaires and biologic testing were completed at baseline, 24 weeks, 9-12 months post intervention. Participants (N=2157) were women enrolled in recruit training for the U.S. Marine Corps.

Honduran-U.S. Relations

The Central American nation of Honduras, one of the hemisphere’s poorest countries, faces significant challenges in the areas of crime, human rights, and improving overall economic and living conditions. While traditional agricultural exports of coffee and bananas are still important for the economy, nontraditional sectors, especially the maquiladora, or export-processing industry, have grown significantly over the past decade. Among the country’s development challenges are a poverty rate over 70%, high infant mortality, and a significant HIV/AIDS epidemic. Despite these challenges, increased public spending on health and education have reaped significant improvements in development indicators over the past decade. Current President Manuel Zelaya of the Liberal Party won a four-year term in the November 2005 elections. The country has enjoyed 25 years of uninterrupted elected civilian democratic rule. Public support for the Zelaya government remains firm, buoyed by a strong economy that grew an estimated 6% in 2006. The economy has benefitted from significant debt reduction by the international financial institutions that is freeing government resources to finance poverty-reduction programs. A key challenge for the government is curbing violent crime and the growth of youth gangs. The Zelaya government initially vowed to focus on reintegrating gang members into society, but it subsequently has resorted to more traditional law enforcement actions to crack down on the gangs. The United States has a close relationship with Honduras, characterized by an important trade partnership, a U.S. military presence in the country, and cooperation on a range of transnational issues.
PCR reactions also did not produce any amplicons. Likewise, we tested the H7N9 detection reagents to see whether they would amplify the corresponding gene segments from the nontarget influenza A virus H1N1. These tests yielded no amplicons. For MERS-CoV, the detection targets were an orf1a segment and a segment upstream of gene E (termed upE). For H7N9, the target amplicons were in the H7 and N9 genes. The instrument performance was evaluated for template copy numbers that varied from 50 to 500,000 per reaction. Our results show that Biomeme two3 instruments were purchased for this work. The reagents specifically designed and set in the appropriate format for Biomeme two3 and the target templates were also purchased from the manufacturer of the instrument. For MERS-CoV, the detection targets were an orf1a segment and a segment upstream of gene E (termed upE). For H7N9, the target amplicons were in the H7 and N9 genes. The instrument performance was evaluated for template copy numbers that varied from 50 to 500,000 per reaction. Our results show that Biomeme two3 can detect the tested targets at various copy numbers, down to 50 copies per reaction. We also tested the MERS-CoV detection reagents for their capacity to amplify the corresponding genomic segments from two nontarget coronaviruses, OC43 and 229E. These tests yielded no amplications. Likewise, we tested the H7N9 detection reagents to see whether they would amplify the corresponding gene segments from the nontarget influenza A virus H1N1. These PCR reactions also did not produce any amplications.
The viral hemorrhagic fever viruses represent a unique group of viruses that can produce large outbreaks of both animal and human disease and produce severe, highly fatal, human illnesses. The viral hemorrhagic fever viruses display a great deal of diversity in their genetic organization, vectors for transmission, and geographic distribution. They share common features in being able to induce a great deal of cellular damage and to elicit an immune response among humans that can result in severe hemorrhage, coagulopathy, shock, and death. The characteristics of the viral hemorrhagic fever viruses as arthropod or rodent-borne viruses that can result in human illnesses with high morbidity and mortality rates make these viruses a unique threat, historically, currently, and in the future, to deployed soldiers around the world. In response to this threat, U.S. military scientists have been world leaders in the development of knowledge on the viral hemorrhagic fever viruses, from extensive fieldwork in areas in which these viruses are endemic, outbreak investigations of epidemics, and careful clinical studies elucidating the pathogenesis of severe disease. Defining the disease threat and creating practical countermeasures through the development of drugs and vaccines has been the major mission of military scientists and has resulted in numerous candidate vaccines currently in animal and human clinical trials.

This diagnostic study on subacute infiltrates of rickettsia Burneti proves that, in this field, a final decision can only be reached through steady and prolonged clinical examination, not only based on radiological, seriological and microbiological data, but also on a complete examination of the patient. In this connection, one must not forget the most important fact, that only radiological or just one serological report is never sufficient; that one should always exclude the less infrequent possibilities; that it is always useful to note the therapeutic effect of aureomycin, without being limited to just one administration and mainly giving great weight to the eventual joint report of the regression of the infiltrate and of the negativation of the complement fixation.

Extreme examples like the Spanish Flu pandemic of 1918 make clear the devastating impact that communicable diseases can have on military readiness. It is highly desirable to have models and tools that can be used to evaluate the course of a disease over time. These tools can help assess the effectiveness of strategies employed to contain the outbreak such as constraining movement, wearing protective gloves or masks, closing high traffic areas, etc. Armed with these tools, a medical practitioner can better assess the right course of action in a time critical situation. The primary difficulty with creating models and simulations for this purpose is that disease spread depends upon the details of human behavior and environmental variables which are not accounted for in current mathematical models. The likelihood that a particular individual will catch a given disease depends upon such specifics as where he works, whom he interacts with, where he sleeps, what he eats, his habits of personal hygiene, etc. It is hypothesized that a software disease simulation can combine agents that mimic human behavior, a ship specific environment, and disease specific attributes to more accurately model the spread of disease aboard ship than a mathematical model.
Health care matters to everyone. At the most basic level, every American has an obvious personal stake in developing and maintaining a robust health and medical system. Beyond personal health, however, the nation has a stake in a healthy, productive population. Sick people can’t work. Unfit soldiers cannot defend us. With more than 15 percent of the nation’s Gross Domestic Product (GDP) now devoted to health care, the health care system affects the strategic health of our nation and world. For the Department of Defense (DoD), the issue is not only keeping a healthy fighting force, but finding a way to pay for and control the growth of the rapidly rising health care bill. In the wake of 9/11 and the Global War on Terrorism (GWOT), health care has taken on an increased relevance as a national security issue. Attention is on our health care network’s ability to surge for consequence management, and our recognition of the political and economic consequences of global pandemics. At its core, the debate over health care comes down to three competing interests: improving quality, assuring access, and controlling costs. Unfortunately, current trends are discouraging. As we spend more we improve our ability to treat people, but the overall health of our population does not improve significantly and access to care appears to be decreasing. The system is out of balance. A holistic approach to addressing imbalances in the industry is crucial, but the very breadth of the industry and competing interests makes any move toward a systemic solution daunting. The solution likely will have to be a uniquely American blend of free enterprise and government intervention borne out of compromise and tradeoffs.

Intervention to Decrease Risk for STDs and Unintended Pregnancies Among Navy Women Aboard Ships: A Biopsychosocial Approach

CALIFORNIA UNIV SAN FRANCISCO

Beyer, Cherrie B.

10/1/2003

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Unintended pregnancies (UAPs) and STDs with their sequelae of ectopic pregnancy continue to be epidemic among active duty enlisted women. Such reproductive health problems result in major morbidity among affected women as well as posing a potential threat to combat readiness. UAPs and STDs result from complex interactions between biological and behavioral factors. The ultimate control in preventing such morbidities must rely on both behavioral and biologic strategies. The primary aim of the project is to develop, implement and evaluate an intervention which emphasizes correct information, motivation and behavioral skills building (IMB Model) coupled with non-invasive screening using urine-based amplified DNA techniques to detect C. trachomatis and N. gonorrhoeae and urine-based pregnancy testing. A randomized controlled trial design was employed to evaluate the impact of the intervention on the experimental group using both self-report questionnaires (psychosocial and behavioral risk factors) and results from the STD and pregnancy screening tests as measures. The control intervention consisted of a prevention program focusing on nutrition, breast cancer, fitness and injury prevention. Questionnaires and biologic testing were completed as baseline, 2-4 weeks, 9-12 months post intervention. Participants (N=2157) were women enrolled in recruit training for the U.S. Marine Corps. Results show that the intervention has had a significant impact on decreasing STDs over the study period.
Transnational and geopolitical challenges are shaping the security environment in Southeast Asia. Rapid economic change, actual and potential disease epidemics, and a growing sense of shared interest and grievance among the region’s Islamic populations are among the region’s main transnational concerns. In its most extreme form, Islamist sentiment has manifested itself in jihadist movements, including some with connections to al Qaeda. Geopolitically, China’s rise poses a multifaceted strategic challenge to the region. For China, Southeast Asia is an arena of opportunity: geographically proximate, economically attractive, and historically subordinate with influential resident Chinese populations. Southeast Asia sits astride sea lanes that are rapidly becoming China’s energy lifeline. Moreover, Chinese security analysts see Southeast Asia as the weak link in any U.S. effort to contain China. Following 20 years of rapid economic development, Southeast Asia in the early 1990s was an increasingly vibrant, cohesive, and self-confident region. Regional institutions, notably the Association of Southeast Asian Nations (ASEAN), reflected the growing sense of regional identity and shared purpose. The Asian financial crisis of the late 1990s produced a sudden adverse shift in the region’s economic and political climate; undercut ASEAN; triggered political upheaval in Indonesia, the region’s largest and most important country; and created openings for militant Muslim groups as the fabric of political and social authority weakened. These same forces generated something akin to a power vacuum and provided a strategic opening for China that Beijing has moved skillfully to exploit. After a long period of post-Vietnam inattention, America’s security planners rediscovered Southeast Asia as a second front in the war on terror and built productive counterterrorism cooperation with most governments.
Influenza, in both its seasonal and pandemic forms, is an ongoing public health concern. Seasonal influenza may begin as early as August and generally diminishes by April in the northern hemisphere. It has been associated with 1,000 to nearly 50,000 deaths each year in the United States in recent decades, according to the Department of Health and Human Services’s (HHS) Centers for Disease Control and Prevention (CDC). Pandemic influenza, which periodically causes a global outbreak of serious illness with the potential for many more deaths than seasonal influenza, has occurred four times in the past 100 years. In the late 1990s and early 2000s, detection of the H5N1 avian influenza (also known as bird flu”) virus in animals raised concerns among experts that it or another influenza virus might mutate into a strain that could lead to a human influenza pandemic. The recent 2009 H1N1 influenza pandemic reinforced the need to be prepared for future influenza pandemics.

The 2009 Influenza A(H1N1) "swine flu" Outbreak: An Overview”

The purpose of the project is to elucidate the biochemical basis of vulnerability to epidemic typhus. The basic method is a comparison of the E strain and Breninl strain (avirulent and virulent, respectively) of Rickettsia prowazekii in their interaction with the host defense system. Experiments were conducted to compare the merits of different antihistamines as an in vivo assay to test antihistamine potency against R. prowazekii.

Gossip-based communication protocols are attractive in cases where absolute delivery guarantees are not required due to their scalability, low overhead, and probabilistically high reliability. In earlier work, a gossip-based protocol known as gravitational gossip was created that allows the selection of quality ratings within subgroups based on workload and information update frequency. This paper presents an improved protocol that adds an adaptive component that matches the actual subgroup communication rates with desired rates coping with network variations by modifying underlying gossip weights. The protocol is designed for use in environments where many information streams are being generated and interest levels vary between nodes in the system. The gossip-based protocol is able to allow subscribers to reduce their expected workload in return for a reduced information rate. The protocol is a good fit for applications such as military information systems, sensor networks, and rescue operations. Experiments were conducted to compare the merits of different adaptation mechanisms. Experimental results show promise for this approach.
STUDIES ON THE PATHOGENICITY OF STREPTOCOCCUS PYOGENES IV. THE RELATION BETWEEN THE CAPACITY TO INDUCE FATAL RESPIRATORY INFECTIONS IN MICE AND EPIDEMIC RESPIRATORY DISEASES IN MAN

NORTHWESTERN UNIV CHICAGO IL MEDICAL SCHOOL

COBURN, A.F., FRANK, P.F., NOLAN, JEAN

1/4/1957 1 Not available Not available U A - 01 Approved for public release; distribution is unlimited. Not available Not available

Worldwide Emerging Environmental Issues Affecting the U.S. Military. October 2006 Report

FEDERATION OF UN ASSOCIATIONS WASHINGTON DC MILLENIUM PROJECT

Not available 10/3/2006 16 Not available AEP/VA U A - 01 Approved for public release; distribution is unlimited. Not available

The New Zealand High Court has ruled that climate change factors can be considered during Greenpeace's upcoming appeal against the proposed Marsden B coal-burning power station. Greenpeace appealed the permission granted to the Marsden B power station to start burning coal, on grounds of environmental and mainly climate change consequences. Although this ruling is limited to New Zealand and to a specific industry, it creates a precedent with effects likely to be felt in other jurisdictions and sectors. In November, the U.S. Supreme Court will hear the case of Massachusetts v. Environmental Protection Agency (case 05-1120) filed by twelve states and several cities on EPA's role to regulate CO2 as a greenhouse gas pollutant under the Clean Air Act. Over 16 other litigations are pending in U.S. federal and state courts against companies whose emissions are linked to global warming; more are expected to come. Swiss Re, the world's largest reinsurance company, estimates that the annual liability costs of global warming will be $150 billion dollars per year within ten years.

Hemorrhagic fever with Renal Syndrome (Korean Hemorrhagic Fever)

KOREA UNIV SEOUL COLL OF MEDICINE

Lee, Hy-Wang


Hantavirus is ubiquitous in the world and the total number of reported HFRS patient in Euro-Asia is about 200,000 with 5-7% mortality annually. Hemorrhagic fever with renal syndrome (HFRS) is an important military problem since large epidemics of HFRS occurred among soldiers in many past wars and although predominantly associated with field mice in rural areas, it is now being recognized that urban rats and laboratory rats are also reservoirs of HFRS in many parts of the world. Therefore, global surveys of the distribution of hantaviruses and surveillance of HFRS are important for prevention of this highly fatal disease. It is also important to investigate antigenic differences of strains of Hantaan virus isolated from rodents in non-endemic areas of the world because HFRS patients have never been documented in many areas despite the finding of positive rodents there. Keywords: Hantavirus; Hantaan virus; Seoul virus; Puumala virus; Scrub typhus; Murine typhus; Spotted fever; Seroepidemiology; IFA; Elisa; PRNT; RA I.

Fast and Accurate Detection of Spread Source in Large Complex Networks

Center of Excellence for Complex Systems Research, Faculty of Physics, Warsaw University Warsaw Russia

Putuch, Robert,Lu,Xiaoyan,Suczek, Krzysztof,Szyman, Boleslaw, Holyst, Janusz A.

2/6/2018 10 Not available Not available U A - 01 Approved for public release; distribution is unlimited. Journal Article - Open Access

Spread over complex networks is a ubiquitous process with increasingly wide applications. Locating spread sources is often important, e.g. finding the patient one in epidemics, or source of rumor spreading in social network. Pinto, Thiran and Vetterli introduced an algorithm (PTVA) to solve the important case of this problem in which a limited set of nodes act as observers and report times at which the spread reached them. PTVA uses all observers to find a solution. Here we propose a new approach in which observers with low quality information (i.e. with large spread encounter times) are ignored and potential sources are selected based on the likelihood gradient from high quality observers. The original complexity of PTVA is O(N^3), where (3,4) depends on the network topology and number of observers (N denotes the number of nodes in the network). Our Gradient Maximum Likelihood Algorithm (GMLA) reduces this complexity to O(N log(N)). Extensive numerical tests performed on synthetic networks and real Gnutella network with limitation that ids of spreaders are unknown to observers demonstrate that for scale-free networks with such limitation GMLA yields higher quality localization results than PTVA does.
The mammal fauna within Baltimore was surveyed for evidence of hantaviral infections, and the infecting viruses were characterized. Evidence of exposure was found in most species but Norway rats and meadow voles appeared to be the primary reservoirs. They were infected with Baltimore rat virus (BRV) and Prospect Hill virus (PHV), respectively. There was no evidence of cross-infection even in the same study sites. Seroprevalence in humans occurred at rates of 1.3-8.7%, depending on the population examined and the serological test that was used. Comparative serological testing indicated that an IgG ELISA coupled with a confirmatory Western blot provided excellent evidence of exposure to hantaviruses. By these criteria, exposure to hantaviruses in the human samples was 13/1000. Among this group a disproportionate number of individuals demonstrated chronic renal insufficiency or failure.

Keywords: Hemorrhagic fever; Epidemic; Hantavirus; Disease reservoirs; Rattus Norvegicus; Immunoglobin G.
Influenza viruses have threatened the health of animal and human populations for centuries. Their diversity and propensity for mutation have thwarted our efforts to develop both a universal vaccine and highly effective antiviral drugs. A pandemic occurs when a novel strain of influenza virus emerges that has the ability to infect and be passed between humans. Because humans have little immunity to the new virus, a worldwide epidemic, or pandemic, can ensue. Three human influenza pandemics occurred in the 20th century, each resulting in illness in approximately 30 percent of the world population and death in 0.2 percent to 2 percent of those infected. Using this historical information and current models of disease transmission, it is projected that a modern pandemic could lead to the deaths of 200,000 to 2 million people in the United States alone. The animal population serves as a reservoir for new influenza viruses. Scientists believe that avian, or bird, viruses played a role in the last three pandemics. The current concern for a pandemic arises from an unprecedented outbreak of H5N1 influenza in birds that began in 1997 and has spread across bird populations in Asia, Europe, and Africa. The virus has shown the ability to infect multiple species, including long-range migratory birds, pigs, cats, and humans. It is impossible to predict whether the H5N1 virus will lead to a pandemic, but history suggests that if it does not, another novel influenza virus will emerge at some point in the future and threaten an unprotected human population. The economic and societal disruption of an influenza pandemic could be significant. Absenteeism across multiple sectors related to personal illness, illness in family members, fear of contagion, or public health measures to limit contact with others could threaten the functioning of critical infrastructure, the movement of goods and services, and operation of institutions such as schools and universities.

As the world becomes smaller, the presence of U.S. military forces in foreign countries is likely to continue. The ongoing military engagements in both Iraq and Afghanistan have taught us that U.S. troops stationed abroad are attractive targets for hostile governments, organizations, and individuals. A safe food supply is a core capability required for sustaining a military presence in a foreign country. While there are limited examples of attempts to poison the military food supply, one cannot ignore the fact that contaminated food could rapidly and effectively reduce the combat readiness of American forces. Most Americans assume that the United States food supply is both safe and secure. However, in January 2009, 31 million pounds of peanut butter and peanut paste produced by the Peanut Corporation of America (PCA) were recalled due to over 600 confirmed cases of Salmonella. Not surprisingly, PCA filed for bankruptcy shortly thereafter. This incident, in addition to other recent outbreaks of pathogenic Escherichia coli and Salmonella has raised doubts about food safety. Moreover, these epidemics have highlighted the fact that food produced domestically (as was the case with PCA) and with E. coli tainted spinach from California in the fall of 2006 and imported from abroad (Salmonella contaminated Serrano peppers from Mexico in the summer of 2008) can be an effective vector for illness.
Is Military Deployment a Risk Factor for Maternal Depression?

Nguyen, Marie; LeardMann, Cynthia A.; Smith, Bena; Conlin, Ava Marie; Slymen, Donald; Hooper, Tomoko; Ryan, Margaret A.; Smith, Tyler C.

1/1/2013

Depression is a growing epidemic that affects an estimated 17 million people each year in the United States. Postpartum depression is a specific type of depression, with symptoms starting within the first 4 weeks of delivery and affecting approximately 10%-22% of new mothers. Research has focused on postpartum depression in the general population; however, little research has been conducted on maternal depression among military mothers where unique occupational conditions often exist. Understanding depression after childbirth in this important subpopulation of US women is crucial for operational needs of the US military. The study included 1660 female Millennium Cohort participants who gave birth during active-duty service and completed baseline and follow-up questionnaires between 2001 and 2008. Maternal depression was assessed at follow-up using Primary Care Evaluation of Mental Disorders Patient Health Questionnaire criteria. Deployment prior to childbirth and deployment without combat experience after childbirth did not increase the risk of maternal depression. Women who deployed and reported combat experience after childbirth were at increased risk for maternal depression compared with nondeployed women who gave birth. However, among female combat deployers, women who gave birth did not have a significantly increased risk for depression compared with those who did not give birth. Among deployment-experienced women, those who had combat-like exposures and childbirth were at increased odds for depression compared with women who experienced combat but did not give birth. This suggests the increased rate of depression is primarily attributed to experiencing combat while deployed.
Addressing Emerging Infectious Disease Threats A Strategic Plan for the Department of Defense

WALTER REED ARMY INST OF RESEARCH WASHINGTON DC DIV OF PREVENTIVE MEDICINE

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1/1/1998

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Historians in the next millennium may find that the 20th century's greatest fallacy was the belief that infectious diseases were nearing elimination. The resultant complacency has actually increased the threat. Both naturally occurring and bioterrorist infectious disease agents hold an increasing potential to destabilize international security. Failure to recognize and accept this concept will lead to disaster. Globally, infectious diseases remain the leading cause of death. The ability of microbes to adapt and breach our traditional defenses coupled with changes in society, technology, and the environment sustain the likelihood that regional and global epidemics reminiscent of the worst in history will recur in addition, terrorists with some expertise in molecular biology and modest financing can now wage biological warfare on cities, regions, and even the entire planet. A responsible assessment indicates that national and global security requires a robust early warning system for emerging infections. 1

Control of VEE Epidemic by Vaccine Developed at USAMRIID

ARMY MEDICAL RESEARCH INST OF INFECTIOUS DISEASES FORT DETRICK MD

Saperstein, Richard D., Crozier, Dan R. and Spertzel, Richard E.

1/1/1972

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USAMRIID

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Venezuelan equine encephalomyelitis (VEE) is a zoonotic arbovirus disease affecting both wild and domestic species. Infection in equine animals may be subclinical, but more often it assumes one of the following clinical forms: (a) mild illness consisting primarily of anorexia, fever, and depression; (b) severe illness characterized by anorexia, high fever, stupor, staggering, and blindness, followed by recovery with or without permanent sequelae; or (c) fatal disease with a similar sequence of signs, but terminating in death. Overall mortality rate in equines probably exceeds 75% of those infected. In man, VEE commonly occurs as an influenza-like illness characterized by generalized muscular pains, severe frontal headache and high fever; overt signs of encephalitis are rare, occurring primarily in children. Overall mortality in humans probably is no more than 1%. As part of the effort to control this epidemics a live attenuated virus vaccine (TC-83) developed at the U. S. Army Medical Research Institute of Infectious Diseases (USAMRIID) was administered to horses, burros, and mules. The TC-83 vaccine was originally developed for protection of laboratory personnel working in high-risk areas and subsequently has been administered to more than 6,000 human beings. During developmental studies, evidence suggested that the vaccine might be suitable for use in Equidae.

Coronavirus Attachment and Replication

UNIFORMED SERVICES UNIV OF THE HEALTH SCIENCES BETHESDA MD

Compton, Susan R.

3/28/1988

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Doctoral thesis

Coronaviruses are enveloped RNA viruses which cause marked tissue and systemic tropisms. Mouse hepatitis virus (MHV) is one example of the coronaviruses. In this dissertation I will discuss two aspects of coronaviruses: 1) the RNA polymerase of the A59 strain of MHV; and 2) the role of coronavirus receptors in coronavirus species specificity. An in vitro replication system was developed to study the RNA dependent RNA polymerase of MHV-A59. Extracts of MHV-infected cells produced MHV-specific RNAs of genomic and subgenomic sizes. In vitro synthesized viral RNA became associated with the viral nucleocapsid protein to form ribonucleoprotein complexes. When cell lines of non-murine origin were inoculated with MHV, they produced no MHV RNAs or proteins. Therefore, species-specific host restriction for MHV may occur at the level of viral attachment or penetration. MHV receptors in mouse strains susceptible, semi-resistant or resistant to MHV infection were compared on hepatoctyes and intestinal brush border membranes. All strains tested except the fully resistant SJL/J strain expressed a 100-120 kilodalton MHV receptor, but C57BL/6 mice expressed a larger receptor on the intestine. MHV3 bound to the same receptor as MHVA59 resistant SJL/J strain expressed a 100-120 kilodalton MHV receptor, but C57BL/6 mice expressed a larger receptor on the intestine. MHV3 bound to the same receptor as MHVA59 indicating that different MHV strains share a common receptor. The species specificity of the MHV receptor was also investigated. Intestinal brush border membranes from nine other species did not express any MHV binding activity. Therefore, the marked species specificity of MHV appears to be determined by absence of the MHV-specific receptor in other species. Solid phase assays to detect virus receptors on intestinal brush border membranes from normal host species were developed for canine (CCV), feline (FIPV), porcine (TGEV), human (HCV-229E), and bovine (BCV) coronaviruses. The antigenically related coronaviruses, CCV, FIPV, TGEV, and HCV-229E bound to intestinal brush border membranes of dog, cat, pig, and human.
AIM-0804582
Smallpox Epidemic in Vannes, France From December, 1954 To March, 1955

APATHY ARMY, M. Anopheles, M. Billard, J.Bourliere, G., G. 

1/1/1956

28

TRANSL 35

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The report states that during the epidemic at Vannes there was a rarity of indirect manifestations appearing on the occasion of abortive smallpox, even aneruptive. Finally, revaccination did not appear to confer the immunity expected, by reason of the too-short interval between this and the contact with smallpox. It seemed most often to play a non negligible role in attenuation of the infection.

AIM-0805348
Rapid Genome Analyses of Emergent Human Adenovirus 14a Causing 2006-7 Febrile Respiratory Illness (FRl) Outbreaks in the US via High-Throughput Next-Generation Pyrosequencing Techniques

WALTER REED ARMY INST OF RESEARCH AND FORT DETRICK MD


12/21/2008

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WRAIR/MOD

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Conference paper

During 2006-7, Ad14a was identified during a series of FRI outbreaks across the US, involving at least ten documented pulmonary fatalities. Leveraging sequence data from the prototype strain Ad14p (GenBank # AF032594), the full genome sequence of Ad14a was determined using the conventional, and very labor-intensive, Sanger sequencing method. The same genome was analyzed using Pyrosequencing, an emerging alternative genome sequencing technology offering much higher efficiency. This direct shotgun approach relies on random sequencing of small DNA fragments using adaptor sequences, rather than independent amplification of separate fragments using pre-determined pathogen-specific sequences. This new sequencing strategy is therefore ideally suited for the rapid sequencing of hitherto uncharacterized human pathogens. The Roche 454 FLX system was used to sequence and assemble multiple Ad14a viruses from recent US outbreaks, as well as closely related Ad11a isolates causing non-US ARD infections since the 1970s. The US Ad14a strain significantly diverges from the prototypical Eurasian strain, Ad14p, and shares greater than 98% genomic homology with Ad11a. Two genome types of Ad11, Ad11p and Ad11a display different tissue tropisms, causing renal and upper respiratory infections respectively. Ad14a and Ad11a share almost identical Fiber genes, which are known to be responsible for the adenoviruses’ organ tropism, and both cause ARD infections. Both also share highly homologous Hoxn genes, except for a 400 base pair (bp) region that allows these two viruses to be distinctly differentiated from each other based on serological cross-reactivity.

AIM-0810997
Targeting the Adipocyte-Tumor Cell Interaction in Prostate Cancer Treatment

SAM ORO-BURNHAM MEDICAL RESEARCH INST LA JOLLA CA


10/1/2014

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OSAM/IMC

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Annual rept. 30 Sep 2013- 29 Sep 2014

Prostate cancer (PCA) is one of the leading causes of death among men in the United States. Obesity is another growing epidemic health problem in Western societies and in developing nations, and represents one of the greatest threats to global human health. Several epidemiological studies during the last decade have pointed to an association between obesity and increased risk factor for PCA progression and aggressiveness. However, despite the relatively high amount of epidemiological data available, little is known about the molecular basis underlying the association between PCA progression, obesity and inflammation, and the role of the adipocyte-cancer cell interaction in this process. The goal of this project is to test the hypothesis that p62 is a molecular link in the cross-talk between obesity, inflammation and prostate cancer progression. Here, we have generated a new mouse model to address this question. Unveiling the molecular mechanisms governing obesity-induced prostate cancer progression will have a great impact in our understanding of this process, and its relevance for potential more targeted and efficacious therapies in PCAs.

AIM-0812657
Adenovirus - Pastor to the Present

ARMY MEDICAL RESEARCH INST OF INFECTIOUS DISEASES BACTERIOLOGY DIV


1/1/1987

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OSAM/RRD

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Free microbial pathogens have had as great an impact on the early development of medical bacteriology and immunology as Bacillus anthracis. From studies on this etiologic agent of anthrax during the mid-1800s have stemmed many of the fundamental concepts of infection and immunity now generally accepted. Although anthrax has long been recognized as a disease primarily associated with herbivorous animals, it can occur in humans, usually as a result of incidental contact with infected animals or contaminated animal products. It was in response to the major epidemics of the mid-1800s, that the French Minister of Agriculture commissioned Pasteur to develop methods to control anthrax.

AIM-0856277
SLN1 Preparedness and Recent Lessons Learned

TRICARE MANAGEMENT ACTIVITY FALLS CHURCH VA

Harley, W., J., Weaver, D., Gentilman, M.R.

1/25/2011

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Briefing charts Not available
Detecting Dental Epidemics. 

NAVAL DENTAL RESEARCH INST GREAT LAKES IL
4/1/1989 12 NDRI-PR-B9-02 Not available U A - 01 Approved for public release; distribution is unlimited. Progress rept., dental diseases are typically regarded as if they were noncommunicable. For this reason, training in methods appropriate to the analysis of classical epidemics is not common during dental education. Recent emphasis on the control of cross contamination potentials would seem to enhance the importance of epidemiological monitoring of disease outbreaks. Monitoring allows for the identification of unusual clustering and perhaps eventually to the determination of causative agents. The purpose of this paper is to describe efficient methods for the statistical analysis of continuous time distributions of dental events. A single data example is chosen but the methods could apply in a variety of situations. The following data could conceivably represent post-surgical complications following removal of third molars, periapical infections following a first phase of endodontic treatment, and so forth. (KT)


ARMY MEDICAL RESEARCH INST OF INFECTIOUS DISEASES FREDERICK MD
Wannemacher, Robert W., Jr
12/10/1979 35 Not available Not available U A - 01 Approved for public release; distribution is unlimited. Interim rept., despite the complexity and interacting components of the immune system, a definite pattern is emerging as the effects of dietary amino acids and proteins on the immune response, which include: (a) T-lymphocyte function can be altered by dietary proteins and amino acids; (b) only minor alterations of B-cell function have been observed in the protein-calorie malnutrition in humans; (c) concentration and hemolytic activity of serum complement, as well as opsonic activity decrease during POM; and (d) the metabolic response to infectious disease can increase the protein deficiency of the host and indirectly affect the immune response. These effects on the immune system are only observed during very severe POM and would not account for the high incidence of infection that has been observed in the marginally malnourished child, which may be more related to the epidemic environment in which he lived. The consequence of altered immune response is not clearly defined and is largely circumstantial. During protein deprivation in experimental animals, most investigators have observed a decreased resistance to bacterial infections. An increase in susceptibility to infectious disease with accompanied elevated rates of morbidity and mortality have been observed in children and adults with POM.

U.S.-China Maritime Populations Using Classic and Novel Diagnostic Techniques 

NAVAL WAR COLLEGE NEWPORT RI CHINA MARITIME STUDIES INST
Russell, Kevin L., Ecker, David J.
7/1/2010 39 Not available IVAC/CMSI U A - 01 Approved for public release; distribution is unlimited. As two great powers that will influence much of the immediate future of our small and vulnerable planet, China and the United States are in a marriage of sorts—united for the purpose of living together.

Surveillance for Respiratory Infections in U.S. Military Populations Using Classic and Novel Diagnostic Techniques 

NAVAL HEALTH RESEARCH CENTER SAN DIEGO CA
Russell, Kevin L., Ecker, David J.
6/2/2014 11 Not available NHRC U A - 01 Approved for public release; distribution is unlimited. Conference paper military populations are historically susceptible to outbreaks of acute respiratory disease. These epidemics, disrupt training schedules, place a heavy burden on the military medical system, cause significant economic losses, and ultimately impact troop readiness and mission accomplishment. The U.S. Naval Health Research Center (NHRC) has provided population-based viral respiratory surveillance in select U.S. military populations since 1996. Although classical methods of diagnosis (culture) are the gold standard, these techniques are laborious and time-consuming. Novel diagnostic techniques were recently explored, and they show promise for providing rapid results for large numbers of specimens. This paper discusses the Naval Health Research Center's (NHRC) Respiratory Disease Laboratory; the NHRC respiratory infection surveillance network; the extension of surveillance to remote settings, such as combatant naval vessels and the Cobra Gold exercise in Thailand in 2003; the laborious and time-consuming nature of classic laboratory processing; the requirements of the ideal diagnostic test; and new diagnostic techniques, such as molecular polymerase chain reaction (PCR) and Triangulation Identification for the Genetic Evaluation of Risks (TIGER).

Worldwide Emerging Environmental Issues Affecting the U.S. Military. February 2006 Report 

FEDERATION OF UN NATIONS WASHINGTON DC MILLENNIUM PROJECT
Not available 2/2/2006 31 Not available AEFI/VA U A - 01 Approved for public release; distribution is unlimited. Not available the UN Secretary-General has appointed a 15-member international high-level panel to explore how to improve the work and efficiency of the UN system in the areas of development, humanitarian assistance, and environment. The study's outcomes will be used for the comprehensive UN management reform, complementing such other major reform initiatives as the new Peacebuilding Commission and the new Human Rights Council. The study is expected to be completed by the summer and its recommendations formally presented to the UN General Assembly in September 2006, with possible implementation in 2007.
ON THE ROLE OF CAMELS IN THE EPIDEMIOLOGY OF ANTHRAX,

ARMY BIOLOGICAL DEFENSE FREDERICK MD

Parsell, F. L., & Zhang, D. V.

7/1/1968

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In Central Asia camels are apt to become infected with anthrax. This fact must be borne in mind by veterinarians as well as medical workers. An infected camel may become a source of an epidemic of anthrax among humans. With the cutaneous form of anthrax, in certain instances, multiple cutaneous lesions may occur due to various ways of infection. (Author)

On the Normal Convergence of a Family of Simple Epidemics.

FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS

Lanphier, Niall A.

6/1/1978

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M-STATISTICS-78-TR-78-AOFOS-TR-78-1112

TR-78-1112

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Interim rept.,

Consider a family of simple epidemics not necessarily with exponential interdiction times. For this family of simple epidemics normal approximations are established to all finite joint state probabilities. Illustrating the applicability of this result is a class of simple epidemics used frequently for modeling purposes for which the normal approximations hold.

Threats without Threateners: Exploring Intersections of Threats to the Global Commons and National Security

RAND CORP

Trevorton, Gregory E., Nemeth, Ed, Srinivasan, Sinduja

1/1/2012

74

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Occasional paper

Could three global issuues – climate change, water scarcity, and pandemics – be posed as national security challenges with interconnected threats to the global commons? And

Great Communicating: Learning from Ronald Reagan’s Public Appeals to Address the Obesity Epidemic in America

JOHN F KENNEDY SCHOOL OF GOVERNMENT CAMBRIDGE MA

Not available

5/4/2005

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CD-05-156

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Presidents of the United States face the formidable challenge of executing their policies and programs, while balancing relationships with political actors that are outside of their control and with whom they must share power. The Congress, the Supreme Court the press, interest groups, and the public are five main actors whose needs and interests merit attention and who can significantly contribute to presidential power. This paper specifically addresses the dynamic relationship between President Reagan and the American public. It uses his success with the War on Drugs” and his failure to address the HIV/AIDS crisis as case studies to demonstrate the potential power of this relationship. Building on this hypothesis

Intervention to Decrease Risk for Sexually Transmitted Diseases (STDs) and the Associated Negative Reproductive Health Outcomes in Women Aboard Ships: A Biopsychosocial Approach

CALIFORNIA UNIV SAN FRANCISCO

Skarier, Mary A.

9/1/1999

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Annual rept. 7 Aug 98-6

Unintended pregnancies (UPs) and STDs with their sequelae of ectopic pregnancy continue to be epidemic among active duty enlisted women. Such reproductive health problems result in major morbidity among affected women as well as posing a potential threat to combat readiness. UPs and STDs result from complex interactions between biological and behavioral factors in military women. The ultimate control in preventing such morbilities must rely on both behavioral and biologic strategies. The primary aim of the project is to develop, implement and evaluate an intervention which emphasizes correct information, motivation and behavioral skills building (IMB Model) coupled with non-invasive screening using urine-based amplified DNA techniques to detect C. trachomatis and N. gonorrhoeae and urine-based pregnancy testing. A pre-test, post-test experimental design was employed to evaluate the impact of the behavioral intervention on the experimental group using both self-report questionnaires (UPF/STD psycosocial and behavioral risk factors) and results from the STD and pregnancy screening tests as measures. The control intervention will consist of a prevention program focusing on nutrition, breast cancer, fitness and injury prevention. Questionnaires and urine testing will be done at pre-test, mid-study, and post-test 6-12 months later. Subjects will include junior enlisted Marine women with N=1000 in the experimental group and N=1000 in the control group.

Inmunidad de Villanos de la Guajira, Colombia, en abril 1983, a la Virus of Venezuelan Encephalitis,

FORT DETRICK FREDERICK MD

Savarimuthu, Carlos, Arbelaez, Helmo,

11/18/1971

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Stood samples were taken from 108 persons in La Guajira in April, 1983, about four to five months after an epidemic of Venezuelan encephalitis. It was found that 60.9% of those tested had antibodies against the virus. There was a significant difference between the proportion of immune persons among those who had the disease at the time of the epidemic (72.3%) and among those who had no symptoms of illness at that time (52.3%). The study of the hemagglutination inhibito titre and of the proportion of position reactions to the complement-fixation test seems to confirm the Venezuelan etiology of the epizootic and epidemic of 1942. The results of tests made with antigens of eastern encephalitis and St. Louis encephalitis, and of six influenza antigens, indicate that these viruses had nothing to do with the 1962 epidemic. (Author)
The purpose of the monthly scanning reports is to assess worldwide environment-related events and emerging environmental security-related issues identified in recent years, organized around this definition. Calls for improving international environmental governance are increasing. The technological ability to identify environmental threats and crimes is becoming cost-effective through new sensors and communications. The UN Security Council, the Organization for Security and Cooperation in Europe, and other international bodies are paying increased attention to problems of environmental security. Environmental damages that people and organizations got away with in the past are less likely to escape detection and punishment in the future. Environmental diplomacy is increasingly being used to support conflict prevention efforts and to build international confidence, while human security is gaining recognition in both military and diplomatic circles. Environmental security is gaining recognition in both military and diplomatic circles. Environmental diplomacy is increasingly being used to support conflict prevention efforts and to build international confidence, while human security is gaining recognition in both military and diplomatic circles. Environmental security is a link between the two. The Millennium Project defines environmental security as environmental stability for life support, with three sub-elements: 1) preventing or repairing military damage to the environment, 2) preventing or responding to environmentally caused conflicts, and 3) protecting the environment due to its inherent moral value. This summarizing paper presents the events and emerging environmental security-related issues identified since July 2007, organized around this definition.
Background: The U.S. Department of Veterans Affairs (VA) and Department of Defense (DoD) had more than 18 million healthcare beneficiaries in 2011. Both Departments conduct individual surveillance for disease events and health threats. Methods: We performed joint separate analyses of VA and DoD outpatient data from October 2006 through September 2010 to demonstrate geographic and demographic coverage, timeliness of influenza epidemic awareness, and impact on spatial cluster detection achieved from a joint VA and DoD biosurveillance platform. Results: Although VA coverage is greater, DoD visit volume is comparable or greater. Detection of outbreaks was better in DoD data for 58% and 75% of geographic areas surveyed for seasonal and pandemic influenza, respectively, and better in VA data for 34% and 15%. The VA system tended to alert earlier with a typical H1N1 seasonal influenza affecting older patients, and the DoD performed better during the H1N1 pandemic which affected younger patients more than normal influenza seasons. Retrospective analysis of known outbreaks demonstrated clustering evidence found in separate DoD and VA runs, which persisted with combined data sets. Conclusion: The analyses demonstrate two complementary surveillance systems with evident benefits for the national health picture. Relative timeliness of reporting could be improved in 92% of geographic areas with access to both systems, and more information provided in areas where only one type of facility exists. Combining DoD and VA data enhances geographic cluster detection capability without loss of sensitivity to events isolated in either population and has a manageable effect on customary alert rates.
Japanese encephalitis has attracted attention recently in the United States, Europe, and Japan because of its high lethality and frequency of permanent neurologic sequelae. The clinical disease was described as early as 1871 in Japan, but the causative agent is greatly feared because of its high lethality and frequency of permanent neurologic sequelae. The clinical disease was described as early as 1871 in Japan, but the causative agent is greatly feared because of its high lethality and frequency of permanent neurologic sequelae. The clinical disease was described as early as 1871 in Japan, but the causative agent is greatly feared because of its high lethality and frequency of permanent neurologic sequelae. The clinical disease was described as early as 1871 in Japan, but the causative agent is greatly feared because of its high lethality and frequency of permanent neurologic sequelae. The clinical disease was described as early as 1871 in Japan, but the causative agent is greatly feared because of its high lethality and frequency of permanent neurologic sequelae.
Throughout history, respiratory diseases have been a frequent cause of morbidity in U.S. populations. Because of stress, crowding, and naive immune systems, military training populations are particularly prone to acute respiratory disease epidemics. An examination of the history of respiratory illness at the U.S. Naval Academy revealed, in the earliest decades at the school, respiratory illness was a primary cause of both disease and mortality. With the advent of antibiotics and vaccines, most respiratory-disease mortality has been reduced. Today morbidity remains significant. Health concerns regarding respiratory diseases are heightened by emerging and re-emerging respiratory disease agents, which have increased antibiotic resistance and/or increased virulence. Enhanced surveillance and rapid diagnostic capabilities, placed in military settings, will increase knowledge of the epidemiology of many respiratory diseases. These strategies can lead to earlier treatment and prevention measures, thus halting further transmission of disease and decreasing both morbidity and mortality.

During the most recent history of the Academy, acute respiratory infections have remained a primary cause of medical morbidity.

During the 1970s, most young American officers were focused on our sad evacuation from Vietnam, the frightening advances in Soviet intercontinental ballistic missile warheads, or the political cannibalism then consuming leaders in Washington. They thus missed the important stories. A quarter century later, it might be well to revisit those years. Hidden in plain view lay the rise, funding, and technical enablement of certain Third World leaders who now seek nuclear arms and who may soon bring about the detonation of a nuclear device within the West. Such a catastrophe is far more likely today than the Mutual Assured Destruction planned during the Cold War. Where did these people come from, and how complicit were American leaders in their rise? As the 1960s drew to a close, kings and emirs friendly to the West ruled most of the Middle East. India was thought to be a peaceful and nonaligned—although Soviet-friendly—backwater. A glut of cheap oil was on the market. Producing states and independent drillers had to rely on the major oil companies to refine and market their product using price wars, advertising, glassware, and customer service as enticements. Nuclear weapons were solely the province of the Big Five (China, France, Great Britain, the Soviet Union, and the United States), who were the victors of World War II and were enshrined as the permanent members of the United Nations Security Council. But then the idles of early civilization began to rock. As it was, a grimly anti-American radical Islamic government came to power, again with the assistance of an inattentive American President. And once again, the chaos in the wake of that transition triggered another three-fold increase in the price of oil. As the 1970s ended, the stage was set for the nuclear pandemic to come. Since then, the United States has been marked as the enemy in Arab eyes.
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<td>This thesis investigates earthquake rupture and triggering in subduction zones using earthquake observations, statistical and physical modeling. Comparison of rupture characteristics of M &gt;= 7.5 earthquakes with fore-arc structure suggests that frictional heterogeneities (asperities) primarily control the extent of large earthquakes. To identify stress accumulation on the megathrust that could cause an asperity to rupture, this thesis develops a new method to detect space-time variations in stressing rate from earthquake catalogs, based on observations that strain transients due to asperian processes such as fluid flow or slow slip trigger seismicity, often as swarms. These swarms are modeled with two approaches for investigating driving mechanisms in catalogs: the stochastic Epidemic-Type Aftershock Sequence model (Ogata, 1988) and the rate-state friction model (Dieterich, 1994). These approaches are combined into a model accounting for seismicity rate variations due to both aftershocks and asperian processes, which is implemented in a data assimilation algorithm to detect transients in earthquake catalogs. The technique is evaluated with a synthetic test and applied to the Salton Trough in southern California and the Hokkaido corner in northeastern Japan. The algorithm successfully identifies asperian transients in these multi-decade catalogs and may ultimately be useful for mapping spatial variations in frictional conditions on the megathrust.</td>
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<td>Molecular Mechanisms and Treatment Strategies for Obesity-Associated Coronary Artery Disease, an Imminent Military Epidemic</td>
<td>Tabas, Ira</td>
<td>12/1/2007</td>
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<td>There is an epidemic of obesity in the military. Obesity leads to insulin resistance syndromes, notably metabolic syndrome and type 2 diabetes. The major cause of death in these syndromes is atherothrombotic vascular disease, including coronary artery disease. Therefore, when retired military personnel and their families reach middle age, there will be an epidemic of obesity-related vascular disease. We have made major progress on the key tasks over the past year. We have completed our study on a commonly used drug for obesity-related diabetes, pioglitazone, showing that it promotes plaque progression in vivo (published in Circulation). This study is very important, because recent clinical studies have implicated this class of drugs in heart disease. Indeed, pioglitazone is being used and studied in military personnel. We have also made major progress in understanding how a particular property of adiponectin, a beneficial hormone that is decreased in obesity, is associated with heart disease.</td>
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<td>Recognizing the limits of military power in today’s security environment, the Department of Defense (DOD) is collaborating with other U.S. federal agencies to achieve its missions around the world. DOD’s combatant commands, such as U.S. Southern Command (SOUTHCOM) and U.S. Africa Command (AFRICOM), play key roles in this effort. Both aim to build partner nation capacity and perform humanitarian assistance, while standing ready to perform a variety of military operations. Among its missions, SOUTHCOM supports U.S. law enforcement and intelligence agencies in the Americas and Caribbean in disrupting illicit trafficking and narco-terrorism. As DOD’s newest command, AFRICOM works with U.S. diplomacy and development agencies on activities such as maritime security and pandemic response efforts. Today GAO issued reports that the subcommittee requested on SOUTHCOM (GAO-10-801) and AFRICOM (GAO-10-794), which in part evaluated how each collaborates with U.S. interagency partners. This testimony summarizes that work and provides observations from ongoing work on U.S. counterpiracy efforts by focusing on 3 key areas essential for interagency collaboration.</td>
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Two cases of influenza-like illness associated with untypeable influenza A were identified in Southern California during March 2009. One was initially identified as influenza using an experimental diagnostic device in a clinical trial, while the other was identified at a local reference lab using a diagnostic PCR assay. In both cases, analyses yielded negative results for strain-specific tests targeting currently circulating strains of human influenza A, namely seasonal H1 and H3. These two samples became the first reported cases of the 2009 pandemic H1N1 (2009/H1N1) influenza strain. The first reportable characterization was made from the second collected specimen on April 15 at the CDC's central lab using traditional culture and sequencing methods. The novel nature of the strain and its apparent zoonotic origins were initially characterized using the first collected specimen at the Naval Health Research Center in San Diego, California, on April 13, using an experimental molecular analysis tool, PCR/ESI-MS, designed to amplify PCR products from any strain of influenza and to generate informative (phylogenetic) strain identifications through mass spectrometry of PCR amplicons.
Domestic Violence Prior to and During Pregnancy within a Selected Military Population and its Relationship to Depressive Symptomatology

In this study, the prevalence of abuse during pregnancy was investigated. It was found that 3.4% of participants had been abused during the current pregnancy, and 9.4% had been abused prior to (within the last year) or during the current pregnancy. A significant difference was found between abused and nonabused participants and total scores on the Beck Depression Inventory (t = -5.23, p = .000). Abuse was significantly correlated with depressive symptomatology (r = .2931, p = .000).

The purpose of this contract is to carry out emerging infectious disease surveillance in Kenya. Specific areas in which work is performed include respiratory illness surveillance (particularly influenza), acute febrile illness surveillance, malaria resistance surveillance, diarrhea etiology and antimicrobial resistance surveillance, sexually transmitted illness surveillance, and capacity building. KEMRI maintained surveillance sites in Ministry of Health clinics and hospitals throughout Kenya. KEMRI operated reference laboratories for this work in Nairobi, Kericho, and Kisumu, including the arbovirus reference laboratory, the antimalarial resistance surveillance, and antimicrobial resistance surveillance, sexually transmitted illness surveillance, and capacity building. 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Distinct Patterns of IFITM-Mediated Restriction of Filoviruses, SARS Coronavirus, and Influenza A Virus


1/6/2011

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Journal article

Interferon-inducible transmembrane proteins 1, 2, and 3 (IFITM1, 2, and 3) are recently identified viral restriction factors that inhibit infection mediated by the influenza A virus (IAV) hemagglutinin (HA) protein. Here we show that IFITM proteins restricted infection mediated by the entry glycoproteins (GPl,2) of Marburg and Ebola filoviruses (MARV, EBOV). Consistent with these observations, interferon-β specifically restricted flaviviruses and IAV entry processes. IFITM proteins also inhibited replication of infectious MARV and EBOV. We observed distinct patterns of IFITM-mediated restriction: compared with IAV, the entry processes of MARV and EBOV were less restricted by IFITM1, but more restricted by IFITM3. Moreover, murine Ifitm5 and 6 did not restrict IAV, but efficiently inhibited flavivirus entry. We further demonstrate that replication of infectious SARS coronavirus (SARS-CoV) and entry mediated by the SARS-CoV spike (S) protein are restricted by IFITM proteins. The profile of IFITM-mediated restriction of SARS-CoV was more similar to that of filoviruses than to IAV. Trypsin treatment of receptor-associated SARS-CoV pseudovirions, which bypasses their dependence on lysosomal cathepsin L, also bypassed IFITM-mediated restriction. However, IFITM proteins did not reduce cellular cathepsin activity or limit access of virions to acidic intracellular compartments. Our data indicate that IFITM-mediated restriction is localized to a late stage in the endocytic pathway. They further show that IFITM proteins differentially restrict the entry of a broad range of enveloped viruses, and modulate cellular tropism independently of viral receptor expression.

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ADA358591

Distinct Patterns of IFITM-Mediated Restriction of Filoviruses, SARS Coronavirus, and Influenza A Virus


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ADA645881

The 2009 Influenza Pandemic: An Overview

Lister, Sarah A., Redhead, C. S.

8/6/2009

Not available

CRS-R40554

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Congressional rept.

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Congressional rept.
AD1013966 Evaluation of the Protective Efficacy of Recombinant Vesicular Stomatitis Virus Vectors Against Marburg Hemorrhagic Fever in Nonhuman Primate Models

Uniformed Services University Of The Health Sciences Bethesda United States

Daddario-DiCaprio,Kathleen

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Technical Report

Marburg (MARV) and Ebola (EBOV) viruses cause severe and often fatal hemorrhagic diseases for which there are currently no vaccines or therapies approved for human use. The reported potential of filoviruses as biological weapons (Alibek, Handelmann 1999; Miller J 2001; Borio, Inglesby et al. 2002) and the recent attention drawn to outbreaks of emerging and re-emerging viruses, such as the 2004-2005 epidemic of MARV hemorrhagic fever (HF) in Angola (WHO 2005; Tower, Krivostov et al. 2006; CDC 2005), has significantly increased public recognition of these deadly pathogens. The development of effective treatments and therapies has been an ongoing challenge since these viruses were first discovered. The requirement for biosafety level (BSL)-4 containment has served as a major impediment towards the development of therapeutics. To date, the only available form of treatment for Filovir HF is intensive supportive care. With continual developments of biocontainment laboratories nationwide, additional and more promising means of treatment and prevention are needed for laboratory workers. Furthermore, the recent MARV outbreak in Angola, with case fatality rates approaching 90 percent, desperately calls attention to the fact that there is critical and pressing need for effective countermeasures against the Filoviruses. This thesis entails evaluating in nonhuman (NHP) models a live, attenuated, recombinant vesicular stomatitis virus (rVSV) vector platform expressing the transmembrane glycoprotein (GP) gene of MARV as both a preventative vaccine and Marburg (MARV) and Ebola (EBOV) viruses cause severe and often fatal hemorrhagic diseases for which there are currently no vaccines or therapies approved for human use. The reported potential of Filoviruses as biological weapons (Alibek, Handelmann 1999; Miller J 2001; Borio, Inglesby et al. 2002) and the recent attention drawn to outbreaks of emerging and re-emerging viruses, such as the 2004-2005 epidemics of MARV hemorrhagic.

AD0449520 Simultaneous Genomic Selection of Multiple Enteric Bacterial and Viral Pathogens, Including SARS-CoV and RVFV

TEXAS UNIV AT AUSTIN Payne, Shelley,Peters, C. J., Makino, Shinji,Oliver, Berry, Weiss, Christy, Kornguth, Steve,Carruthers, Lenny, Chin, Robert

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Conference paper

A multiplexed screening system to detect pathogenicity islands (PI) of bacteria causing enteric disease and pathogenicity factors (PF) associated with the SARS-associated coronavirus (SARS-CoV) and Rift Valley Fever Virus (RVFV) has been developed. Pathogenic bacteria contain DNA sequences (PI) that code for proteins enhancing the ability of the bacteria to cause disease in the host, while viruses possess genomic sequences (PF) that are associated with their pathogenicity. By quickly screening for multiple pathogenicity island and factor sequences, end-users will have the capability to detect the first signs of an enteric or viral bioattack without requiring screening for a particular organism.

AD0135197 Investigations of Hemorrhagic Fever with Renal Syndrome (HFRS)

INSTITUTE OF IMMUNOLOGY AND VIROLOGY BELGRADE (YUGOSLAVIA)

Glajc, Ana

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Midterm rept.

Five hundred and forty four rodents and small mammals were trapped in various regions of Yugoslavia and examined. Antibodies to hantaviruses, immunofluorescent (IF) antibodies were detected in the blood samples of 129 animals. Antigens were detected in the lung samples of 139 animals. Sixty-seven animals tested positive for both the presence of antibodies in the sera and antigens in the lungs. Studies on the immune status of healthy people in various HFRS endemic areas were conducted. Blood samples from over 700 forest workers, farmers, and other individuals with considerable outdoor exposure were collected and tested serologically for antibodies to hantaviruses. Approximately 336 individuals possessed hantaviral antibodies. In 1989, an HFRS epidemic occurred throughout Yugoslavia, over 600 individuals were hospitalized and 15 deaths occurred. The epidemic occurred in all six republics and two provinces of Yugoslavia, in both previously recognized and newly recognized foci areas.
Responding to the Unthinkable: The Reserve Components’ Role in Recovering from a Biological Incident

ARMY WAR COLL CARLISLE BARRACKS PA CENTER FOR STRATEGIC LEADERSHIP

Traxing, Bert, Trayster, John

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Issue paper, Volume 118

With the potential proliferation of chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) capabilities throughout the world an already challenging security environment grows even more daunting every day. Whether occurring naturally, released unintentionally, or dispensed with a deliberately diabolic intent, the effects of a release of these mechanisms can transom even the immediate devastation they may portend. Beyond massive death and injury, these agents could attack the very core of the Nation’s security, economic strength, and physical and mental well-being. As such, the military component of this Nation’s defense must begin pondering the unthinkable, postulating the role it may have to play in mitigating, responding to, and recovering from this kind of catastrophe. With that possibility in mind, the United States Army War College’s Center for Strategic Leadership conducted a focused workshop bringing together over 100 participants from local, regional, state, and federal entities to review contemporary plans, policies, and procedures for Disaster Response, and to postulate how those initiatives could meet the required response following the catastrophic introduction of a CBRNE event. Particular focus was directed on how the Army’s Reserve Components, the Army Reserve, and the National Guard, would fit into the equation. Three different scenarios were considered one biological, one radiological, and one nuclear. This paper addresses the workshop’s findings related to response following a pandemic biological incident in the United States.

MULT THEOREMS FOR THE MULTI-URN EHRENFEST MODEL

CORNELL UNIV ITHACA NY DEPT OF INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

Rehurt, Donald L.

7/1/1967 28 TR-19 Not available U A - 01 Approved for public release; distribution is unlimited. Technical rept., unlimited. This document release; distribution is unlimited. This document is not available from DTIC in microfiche.

In the multi-urn Ehrenfest model N balls are distributed among d+1 (d>2) urns. At discrete epochs a ball is chosen at random from one of the d+1 urns, each of the N balls has probability 1/N of being selected. The ball chosen is removed from its urn and placed in urn i with a given probability pi. The state of the process is specified by the occupation numbers of the various urns. The principal result in this paper is to obtain limit theorems for the occupation numbers, suitably translated and scaled, as N tends to infinity. Applications of this model in statistical mechanics, networks of queues, and epidemic theory are discussed. [Author]

2006 Global Emerging Infectious System Annual Report, Fiscal Year 2000

AFHSC

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The DoD-Global Emerging Infectious System (DoD-GEIS) was established in 1997 in response to Presidential Decision Directive NSTC-7 on emerging infections. The directive expanded the mission of the DoD to include support of global surveillance and response, and to postulate how those initiatives could meet the required response following a pandemic biological incident in the United States.

In-Depth Analysis of a Machine-Learning-Based Network Routing Protocol For Topology in a Highly Mobile Testbed

NAVAL POSTGRADUATE SCHOOL MONTEREY CA MONTEREY United States

Brown, Jason R.

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The thesis studies the performance of a machine-learning-based DTN routing protocol, QGeo. QGeo is based on the reinforcement learning model called Q-learning whereby an agent in some context takes an action, gains a reward and adapts its decision-making policy based on the rewards value. QGeo is implemented in the ns-3 simulator, and the implementation in this work is based on the previously implemented GAPR protocols. QGeo is then tested in ns-3 alongside GAPR, GAPR2 and GAPR2a, as well as the more commonly known Epidemic, Vector and Central DTN protocols. Testing is performed rigorously across four simulation scenarios. The Helsinki scenario simulates mobile traffic in a city, the Omaha and Bold Alligator scenarios simulate amphibious military exercises with various properties, and the Swarm scenario simulates the behavior of a drone swarm based on real-world sensor flight data. This thesis ultimately shows that QGeo is a highly selective protocol in terms of making forwarding decisions, based primarily on the Q-learning mechanism. This thesis also advances the research previously done at the Naval Postgraduate School in DTN research and development by furthering the testing effort of the protocols that have been implemented. Finally, an added benefit of this study is the incorporation of the Swarm scenario to the DTN testbed, increasing the range of testing capability for comparison of DTN routing protocol characteristics.