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***Conference Summary***

# Factors Influencing Emerging Infectious Diseases in the Southeastern United States

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During June 23–24, 2009, the Southeastern Center for Emerging Biological Threats (www.secebt.org) at Emory University, Atlanta, Georgia, USA, convened a conference entitled Factors in Emerging Infectious Diseases in the Southeastern United States. Over the past 3 decades, more than two thirds of emerging infectious diseases have had an origin in animals (*1*). The Conference featured more than 20 presentations focusing on the impact of global migration, climate and weather changes, and ecosystem alterations on emerging vector-borne and zoonotic diseases in the Southeast. Opportunities presented by the One Health Initiative (www.onehealthcommission.org) were highlighted.

In his keynote address, Howard Markel, University of Michigan, presented an historical perspective. His analysis showed that the unpredictability of emerging diseases has been difficult to explain to the public during epidemics. There has been a tendency to make the victim a scapegoat and to blame individual persons or groups for importation of disease. He emphasized the importance of transparency in reporting and contrasted the experience of SARS (severe acute respiratory syndrome) with that of the ongoing 2009 (H1N1) influenza pandemic.

Corrie Brown, University of Georgia, discussed the globalization of disease with specific emphasis on the southeastern United States. She concluded that this region of the country was at risk for introduction and spread of microbial pathogens originating in other parts of the world because it serves as a transportation hub for North America and receives a disproportionate share of immigrants.

The importance of travel and migration in disease emergence (*2*,*3*) was a recurrent theme. Emory University's Carlos Franco-Paredes addressed leprosy (Hansen disease) in the Southeast. He linked leprosy in Georgia to the construction boom in Atlanta, which has attracted immigrants, some of whom have undiagnosed disease. Patricia Walker, Center for International Health and International Travel Clinic in St. Paul, Minnesota, discussed Minnesota's experience with refugee health problems.

Minnesota is home to the largest Hmong population in the United States and the largest Somali population outside Somalia. The Minnesota Immigrant Health Task Force identified 8 key steps to improve immigrant health: 1) provide equal access to healthcare for all; 2) respect patients' language preferences; 3) provide equitable payment for necessary healthcare services; 4) develop clinical guidelines and best practices for immigrant healthcare; 5) diversify the healthcare workforce to include more immigrant and minority providers; 6) employ trained medical interpreters; 7) train healthcare providers; and 8) educate patients.

State refugee coordinators from Florida, Georgia, and North Carolina emphasized issues and challenges, including timely arrival notification, lack of resources, language and cultural barriers, health literacy, and stigmatization all of which must be addressed to control emerging diseases among immigrants and refugees.

Subsequent presentations focused on the impact of climate change on health in the region (*4,5*). George Luber, Associate Director for Global Climate Change, Centers for Disease Control and Prevention, emphasized that responding to extreme weather events stresses environmental health services and public health infrastructure.

Rebecca Eisen, CDC's Division of Vector-Borne Infectious Diseases, explored the risk of reintroduction of vector-borne diseases. Reintroduction is made possible by transit between the southeastern United States and climatically similar endemic regions through air travel, cargo ships, exotic pet trade, migratory birds, and intentional release of species. She noted that factors contributing to reintroduction can be divided into vector-specific and vertebrate host-specific categories. She identified 7 vector-specific factors: 1) preferred breeding habitat of the vector present at the site of origin; 2) host preference; 3) vector efficiency; 4) extrinsic incubation period; 5) likelihood of surviving to the second blood meal; 6) efficiency of transovarial transmission; and 7) ability to remain infectious long-term. Vertebrate host-specific factors include duration of infectivity, duration of incubation periods, pathogen load at or above transmission threshold, and degree of virulence.

William Karesh, Wildlife Conservation Society, provided an overview of the interplay among human, animal, and ecosystem health. When avian influenza emerged during 2004–2005, scientists, public health, and animal health officials had little information on its prevalence and geographic distribution. Those studying the disease needed to know where wild birds were migrating and whether they carried influenza (H5N1) virus. The Global Avian Influenza Network for Surveillance in 2006 was created to answer some of these questions (www.gains.org). The partnering of animal and human influenza specialists during the recent influenza pandemic is an example of how an integrated One Health approach can improve preparedness and response to the evolving pandemic.

Nina Marano, Division of Global Migration and Quarantine at the Centers for Disease Control and Prevention, addressed the public health implications of the exotic animal trade. Animals are imported into the United States for a number of reasons, e.g., exhibition at zoos, scientific education, research, and conservations programs, and as companion animals. Increasingly, animals are being legally and illegally imported for a thriving commercial pet trade, particularly through the Internet, rather than through pet stores which are subject to licensure and inspection. Zoonotic diseases associated with pocket pets include salmonellosis, lymphocyctic choriomeningitis, tularemia, and monkeypox.

Marguerite Pappaioanou, Executive Director, Association of American Veterinary Medical Colleges (AAVMC) summarized the challenges and opportunities in achieving an integrated early detection and response system for emerging zoonotic infectious diseases.AAVMC advocates on behalf of the academic veterinary medicine membership and works closely with its American Veterinary Medical Association and other partners promoting global collaboration by linking with veterinary medical educational institutions in developed and developing countries, establishing a dialogue between faculty and students, and fostering capacity building and training. AAVMC enthusiastically endorses the One Health Initiative, with the aim of promoting partnerships across the human, animal, agricultural, and environmental health sectors. AAVMC member institutions in the Southeast are engaged in multidisciplinary and multiinstitutional research, training, and educational programs to help put the One Health Initiative into action.

In summary, the conference identified challenges and opportunities to achieve an effective integrated early

detection and response system for zoonotic diseases in the Southeast. Presenters and conference participants strongly supported the One Health model, which emphasizes that mitigating zoonoses requires an integrated, interdisciplinary approach at the convergence of human disease, animal disease, and environmental science at the local, regional, national, and global levels.

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