West Nile Virus in the Americas 1307
Lyle R. Petersen and Edward B. Hayes

Since the first detection of West Nile virus in the Western Hemisphere in 1999, the virus has spread rapidly across the North American continent and as far south as Argentina. An unprecedented pattern of large annual epidemics of human neuroinvasive disease continues in North America, resulting in considerable public health impact. The high infection incidence in humans has resulted in non-mosquito transmission modes, such as through transfused blood and transplanted organs. West Nile virus incursion into Latin America and the Caribbean Islands has resulted in surprisingly low human, avian, and equine morbidity and mortality despite evidence that West Nile virus strains circulating in those regions are similar to those in North America.

Chikungunya: A Paradigm of Emergence and Globalization of Vector-Borne Diseases 1323
Fabrice Simon, Hélène Savini, and Philippe Parola

Chikungunya (CHIK) fever is a tropical arboviral disease responsible for acute polyarthritis which can last for weeks to months. In 2007, the chikungunya virus (CHIKV) reached Europe. Since the beginning of this outbreak, several million cases of chikungunya virus disease have occurred in autochthonous populations and in travelers who were diagnosed after they returned home from epidemic areas. CHIKV, usually transmitted by Aedes aegypti mosquitoes, has now been repeatedly associated with a new vector, Aedes albopictus (the “Asian tiger mosquito”), which has spread into tropical areas previously occupied predominantly by A aegypti, and has dispersed worldwide. Because CHIKV could spread throughout the world, all physicians should be prepared to encounter this arboviral infection, which represents a paradigm for emerging arboviral infections. In this article, the authors review different aspects of this reemerging and fascinating disease, focusing on clinical aspects and lessons from the recent large-scale outbreaks.
Emerging and Re-emerging Tick-Transmitted Rickettsial and Ehrlichial Infections

David H. Walker, Christopher D. Paddock, and J. Stephen Dumler

Recently in the field of rickettsiology, an explosion of new isolates of pathogens have received species designation and new disease names, all of which have been relatively neglected by primary care and infectious disease physicians. A broad group of other tick-associated rickettsial and ehrlichial agents of unknown pathogenicity exist (eg, *R amblyommii*) that may cause confusion in interpreting serologic surveys or a single elevated antibody titer. Rickettsial and ehrlichial diseases are remarkable for their uniform susceptibility to doxycycline but are clinically difficult to distinguish from many viral infections and each another, and therefore misdiagnosis and failure to treat have unfortunate and sometimes tragic outcomes. Globally, many of these bacteria have been named but the genetic differences among them are often small, and many of their clinical manifestations may not be distinguishable diagnostically.

The Social Ecology of HIV/AIDS

Kenneth Mayer, HF Pizer, and Kartik K Venkatesh

The reasons that epidemics occur largely are a function of human behaviors and responses to environmental changes, known as the social ecology of infectious diseases. The AIDS epidemic began in remote parts of Central and West Africa and spread from rural areas to urban centers. The epidemic became a global pandemic. Although screening programs and use of antivirals have decreased the likelihood of HIV transmission, these advances have not reached all centers in the developing world. The epidemic continues to grow despite effective treatment because of the absence of a protective vaccine and the continuation of high risk sexual behavior and substance use.

Geographic Expansion of Dengue: The Impact of International Travel

Annelies Wilder-Smith and Duane J. Gubler

Dengue has emerged as an international public health problem. Reasons for the resurgence of dengue in the tropics and subtropics are complex and include unprecedented urbanization with substandard living conditions, lack of vector control, virus evolution, and international travel. Of all these factors, urbanization has probably had the most impact on the amplification of dengue within a given country, and travel has had the most impact for the spread of dengue from country to country and continent to continent. Epidemics of dengue, their seasonality, and oscillations over time are reflected by the epidemiology of dengue in travelers. Sentinel surveillance of travelers could augment existing national public health surveillance systems.
One Reservoir: Redefining the Community Origins of Antimicrobial-resistant Infections 1391

Ellen K. Silbergeld, Meghan Davis, Jessica H. Leibler, and Amy E. Peterson

This article reviews the evidence concerning the emergence of community-acquired MRSA and highlights the relevance of reservoirs of antimicrobial resistance in humans and animals in the community environment. Although hospital use of antimicrobials has been assumed to generate the highest risk of resistance and transmission of resistant infections, the greater load of antimicrobial use is found in food animal production. The authors conclude that it is important to assess accurately and evaluate the interactions between hospital and community; improve surveillance for resistance of community origin, including agriculture; and to implement policies that prevent increases in community reservoirs of antibiotic resistance.

The Role of the Traveler in Emerging Infections and Magnitude of Travel 1409

Lin H. Chen and Mary Elizabeth Wilson

Travel and trade have grown immensely. Travelers interact with people and microbes during their journeys, and can introduce infectious agents to new areas and populations. Studying illnesses in travelers is a source of knowledge into diseases of resource-poor regions and the control of these diseases. Travel-associated illnesses also serve to detect emerging infections.

Medical Tourism 1433

Christie M. Reed

Searches of the literature or Internet using the term “medical tourism” produce two sets of articles: travel for the purpose of delivering health care or travel for the purpose of seeking health care. The first usage primarily appears in the medical literature and is beyond the scope of this article, which focuses on travel to seek health care. Still, there are some aspects these two topics have in common: both are affected by ease and speed of international travel and communication associated with globalization, and both raise questions about continuity of care as well as issues related to cultural, language, and legal differences; both also raise questions about ethics. This article describes some of the motivating factors, contributing elements, and challenges in elucidating trends, as well as implications for clinicians who provide pretravel advice and those who care for ill returning travelers.

Role of Immigrants and Migrants in Emerging Infectious Diseases 1447

Elizabeth D. Barnett and Patricia F. Walker

Population migration plays a critical role in the spread of disease by initiating outbreaks of acute diseases, changing the prevalence of infectious diseases at a given location, and changing the face of chronic disease resulting from previous infection. This article focuses on the recent demographic changes
in North America that have facilitated the introduction and spread of new microbial threats, the role migrant populations play in changing the demographics of specific infectious diseases, and the potential responses of clinicians and public health officials in addressing the challenges posed by these infections. The emphasis of the article is on immigrant and migrant populations entering North America; the role of travelers in emerging infectious diseases is addressed in another article in this issue.

Regional Infectious Disease Surveillance Networks and their Potential to Facilitate the Implementation of the International Health Regulations 1459

Ann Marie Kimball, Melinda Moore, Howard Matthew French, Yuzo Arima, Kumnuan Ungchusak, Suwit Wibulpolprasert, Terence Taylor, Sok Touch, and Alex Leventhal

The International Health Regulations (IHR) 2005 present a challenge and opportunity for global surveillance and control of infectious diseases. This article examines the opportunity for regional networks to address this challenge. Two regional infectious disease surveillance networks, established in the Mekong Basin and the Middle East, are presented as case studies. The public-private partnerships in the networks have led to an upgrade in infectious disease surveillance systems in capacity building, purchasing technology equipment, sharing of information, and development of preparedness plans in combating avian influenza. These regional networks have become an appropriate infrastructure for the implementation of the IHR 2005.

Disease Emergence from Global Climate and Land Use Change 1473

Jonathan A. Patz, Sarah H. Olson, Christopher K. Uejio, and Holly K. Gibbs

Climate change and land use change can affect multiple infectious diseases of humans, acting either independently or synergistically. Expanded efforts in empiric and future scenario-based risk assessment are required to anticipate problems. Moreover, the many health impacts of climate and land use change must be examined in the context of the myriad other environmental and behavioral determinants of disease. To optimize prevention capabilities, upstream environmental approaches must be part of any intervention, rather than assaults on single agents of disease. Clinicians must develop stronger ties, not only to public health officials and scientists, but also to earth and environmental scientists and policy makers. Without such efforts, we will inevitably benefit our current generation at the cost of generations to come.

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