VECTOR-BORNE AND ZOONOTIC DISEASES
Volume 6, Number 2, 2006

Research Paper

Syndromic Surveillance in The Netherlands for the Early Detection of West Nile Virus Epidemics

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ABSTRACT

West Nile virus (WNV) is an arthropod-borne flavivirus that is endemic in Africa, Europe, and Eastern Asia. The recent introduction and rapid dissemination of the virus in the United States as well as an increase in WNV outbreaks in Europe, has raised concerns for its spread in Europe. A surveillance system was developed to allow timely detection of an introduction of WNV infections in The Netherlands. This program focuses on cases presenting with neurological disease and includes the monitoring of hospital discharge diagnoses, trends in cerebrospinal fluid (CSF) diagnostic requests, laboratory testing of CSF, and monitoring of neurological disease in horses. Retrospective data from the hospital discharge records showed yearly peaks of unexplained meningitis and (meningo)encephalitis in the summer. A total of 781 CSF samples from humans and 71 serum and/or CSF samples from horses presenting with neurological disease of suspected viral etiology tested negative for the presence of specific antibodies to WNV. With a coverage rate of 59% in 2003, the probability that a cluster of five WNV cases presenting with neurological symptoms would have been detected was 99%. We conclude that, from 1999 to 2004, no evidence of WNV infection could be found in either humans or horses in The Netherlands. Key Words: West Nile virus—Syndromic surveillance—(Meningo) encephalitis—Antibodies. Vector-Borne Zoonotic Dis. 6, 161–169.

INTRODUCTION

West Nile virus (WNV) is an arthropod-borne (arbo-) flavivirus that is endemic in Africa, Europe, and East Asia (Dauphin et al. 2004). In 1999, the virus was introduced into North America which resulted in a fast dissemination (Zeller and Schuffenecker 2004). By 2005, only two states have not reported any WNV cases (human, animal or mosquito), 2775 persons were diagnosed with WNV fever 52%), or neuroinvasive disease (42%), and 98 died (<www.cdc.gov/ncidod/dvbid/westnile/surv&control04Maps.htm>). The incursion of this virus into a new continent was a major public health burden with high costs due to the initiation of prevention programs such as mosquito control and blood donor screening programs.

WNV is transmitted in natural cycles between susceptible birds and mosquitoes. Hu-

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