ever, the paradox of having a sensible TB and a growth of MDR TB is no easy to explain.

We could try to explain the reasons due to a low prevalence of Beijing strain (<10%) and administrative delay in starting specific treatment of 12—15 months detected in the period of 1995 to 2003. This administrative delay happened because after a treatment failure to first and second line therapy, an overall of 12 months; at this moment, cultures and diagnosis for INH/Rifampin resistance were taken. The results took about 3 months, and it was then when we could start a specific treatment.

During all this time, is estimated that a TB patient could infect between 2 to 25 people. This situation could be the cause of infection in the homes, health centers care, patients in the ER with predisposition like AIDS/HIV and Diabetes, and Health Care Personnel that took care of this patients without an adequate protection. Newcomer's molecular studies could help to find the answers to this special situation.

doi:10.1016/j.ijid.2008.05.129

## Controlling Japanese Encephalitis: Advances in Detection and Prevention (invited)

### 55.001

### Measuring Japanese Encephalitis Disease Burden: Challenges in Surveillance and Diagnostics

M. Fischer[1,*], S. Hills[2], E. Staples[1], B. Johnson[1], M. Yaich[2], T. Solomon[3]

[1] *CDC, Fort Collins, CO, USA*
[2] *PATH, Seattle, WA, USA*
[3] *University of Liverpool, Liverpool, United Kingdom*

Japanese encephalitis (JE) is a significant but solvable public health problem. Safe, effective, and affordable vaccines are available to prevent this devastating disease. However, the introduction or expansion of JE immunization programs is often delayed because disease burden is unknown or underestimated. In several countries where JE virus transmission has been proven and sporadic cases have been recognized, JE surveillance does not exist. In other countries, the quality and accuracy of existing surveillance data are uncertain. Although WHO has published JE surveillance standards, these guidelines have yet to be implemented in most countries. Therefore, the numbers and characteristics of JE cases cannot be easily compared between countries or over time. In addition, long-term sequelae associated with JE are often not measured, resulting in an underestimate of the full economic and social impact of the disease. Most JE cases are diagnosed based on clinical syndrome (i.e., encephalitis) without laboratory confirmation. This practice can perpetuate established biases in the epidemiology of JE because cases are only reported from known endemic areas during predefined transmission seasons. As a result, JE may be underreported from areas that lack well-defined seasonal peaks in encephalitis cases, or among patients with unique clinical presentations (i.e., acute flaccid paralysis) or demographics (i.e., adults). In addition, encephalitis cases due or vaccine-associated adverse events. Although many laboratories perform JE diagnostic testing, several steps are needed to ensure the accuracy, reliability, and comparability of the results. Laboratories supporting surveillance efforts should use validated diagnostic assays and standardized testing protocols with strong quality assurance and quality control programs. Improved surveillance with accurate laboratory-based diagnostics is an essential step for better understanding the epidemiology and true burden of JE, and for directing and evaluating effective immunization strategies.

doi:10.1016/j.ijid.2008.05.130

### 55.002

### Japanese Encephalitis in Indonesia: New Findings on Geographical Extent and Disability from the Disease

E.R. Sedyaningsih[1,*], S. Ompusunggu[1], S. Hills[2,3], N.K. Susilarini[1], V. Moniaga[2,3], A. Sasmito[2,3], D. Yuwono[1], G. Wahyuhono[1], M. Sembiring Maha[1], A. Suwandono[1]

[1] *National Institute of Health Research and Development, Jakarta, Indonesia*
[2] *Program for Appropriate Technology in Health, Seattle, USA*
[3] *Program for Appropriate Technology in Health, Jakarta, Indonesia*

*Background:* A two-year prospective study was conducted from January 2005 to December 2006 to estimate the magnitude of Japanese encephalitis (JE) disease burden in Indonesia. All children 15 years of age and under presenting with acute encephalitis syndrome (AES) to selected hospital and health center sites were identified and laboratory testing was conducted to confirm the proportion of cases due to JE virus infection. Epidemiological data were collected to improve understanding of JE disease in Indonesia.

*Methods:* Six provinces with different assumed risks for JE virus transmission were included. At fifteen hospital and health center sites, paired sera, cerebrospinal fluid samples, and at some sites filter paper specimens, were taken from patients who met the WHO criteria for AES. They were tested for antibody to JE and dengue viruses using immunoglobulin M antibody capture ELISA at the National Institute of Health Research and Development in Jakarta.

*Results:* 1496 AES patients (1401 from hospitals, 95 from health centers) were recorded. 74.9% ($n = 1120$) were <5 years old, and 57.6% ($n = 862$) were male. 82 patients (5.5%) had IgM antibody to JE virus: of these, 70.7 % ($n = 58$) were aged <5 years, and 56.1% ($n = 46$) were males. The average length of hospitalization of JE positive patients was significantly longer than those who tested JE negative (12.7 days and 8.8 days, respectively; $p = 0.03$); they were also more likely to suffer from sequelae than those without JE (RR = 3.12; $p < 0.001$). Having pig rearing nearby (less than 5 km from the house) was the main risk factor associated with acute JE infection ($p = 0.004$). However, about half of the JE patients did not live close to a pig population, suggesting that other amplifying hosts such as water birds are also involved in JE virus transmission in Indonesia.