

Epidemiology Bulletin

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Japanese B Encephalitis – Taiwan Area

Although significant progress was made in controlling Japanese B encephalitis (JE) in Taiwan in the late 1960's, the incidence of the disease has changed little in the past 10 years (Figure 1). In 1984, the most recent year for which surveillance data are available, there were 239 total JE cases (179 suspect and 60 serologically confirmed) and 20 deaths for a case fatality rate of 8.4%. The case fatality rate during the last decade has fluctuated between 8.4% and 20%. The majority of JE cases occur in children 10 years of age, however, the median age of cases has gradually increased from 6 to 10 years during the period 1975 to 1984. Presently, JE accounts for nearly 1% of all deaths in Taiwan in the 5-9 year age group.

JE occurs throughout the Taiwan Area (Figure 2A), however, the incidence per 100,000 population is highest in five counties (Figure 2B): Taitung (2.4), Hualien (2.2), Hsin Chu (2.1), Tao Yuan (1.6), and Taipei (1.6). These counties, located in the northern and eastern region of Taiwan, have large rice growing areas which are the ideal breeding sites for *Culex tritaeniorhynchus* and *C. annulus*, the principle vector mosquitoes for JE in Taiwan. As for many vector-borne diseases, the incidence of JE is highly seasonal; transmission occurs from May to September and peaks in June and July. The most important reservoirs of JE virus in Taiwan are swine, although birds and some reptiles may also play a limited role in harboring the virus.

Mouse-brain JE vaccine was first introduced in Taiwan in 1965. Shortly after its introduction, there was a substantial decline in the incidence of the disease, although vector control activities were also carried out during this period. From 1968 to 1974, the number of children immunized with JE vaccine increased 4-fold; however, since 1975 the number remained relatively constant despite an approximate 20% increase in the population. According to the present immunization schedule, the primary two-dose JE vaccination series is administered to children between 15 and 27 months of age with a two

Fig 1. The number of cases and deaths due to Japanese B Encephalitis in Taiwan Area, 1955-1984

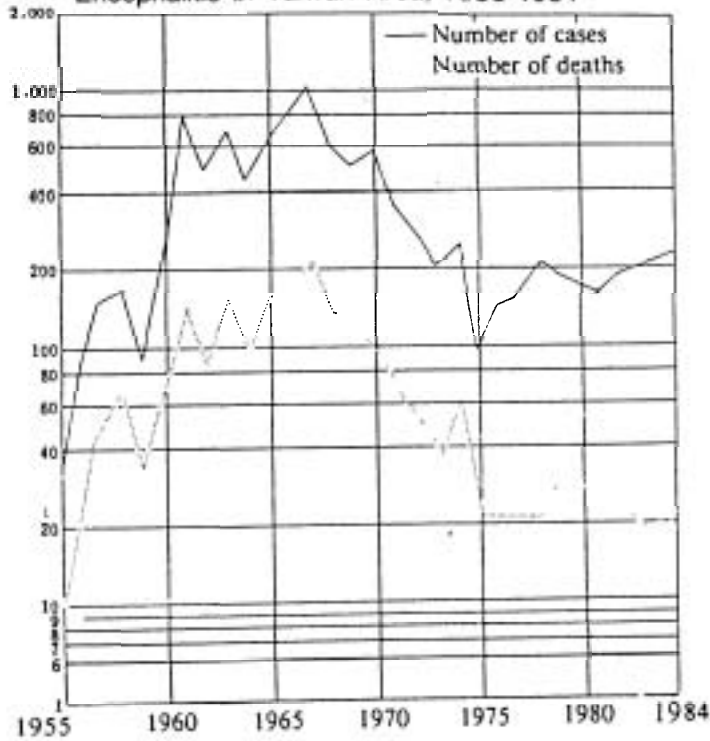


Fig 2A Number of cases of Japanese B Encephalitis by county, Taiwan Area (1975-1984)

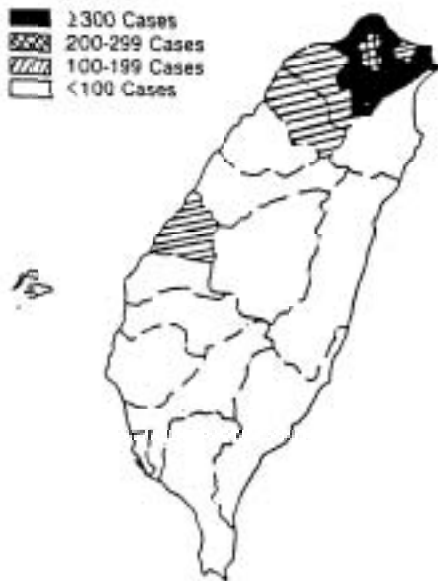


Fig 2B. Average incidence per 100,000 population of Japanese B Encephalitis by county, Taiwan Area (1975-1984)



week interval between doses. Booster doses are given one year later and upon entering first grade. The efficacy of two doses of mouse-brain vaccine was estimated to be 80% in a field trial conducted in Taiwan in 1965¹. The duration of vaccine-induced immunity is not known with any certainty, but since it is an inactivated vaccine, immunity probably does not last longer than a few years.

The reason for the increase in the median age of cases in the past ten years is unknown, but may be due to the protection afforded young children by the booster dose of JE vaccine given in first grade. A similar phenomenon has been observed in other Asian countries with JE immunization programs². School immunization programs should begin no later than March to offer maximum protection for the entire JE season.

A World Health Organization (WHO) Working Group on the prevention and control of JE met in Tokyo in 1983 to review the epidemiology of the disease and recommend ways to strengthen surveillance and control¹. Data presented at this meeting indicated that the epidemiology of JE has changed during the past 10 years. JE has recently been recognized in areas where it was not previously reported (parts of Nepal and India), and some countries which had experienced a period of quiescence for many years (Republic of Korea) had a sudden resurgence of cases. These data indicate that Taiwan needs to maintain close surveillance for JE and also explore new ways to further reduce the annual incidence and mortality from this disease.

Reported by the Taiwan Provincial Institute of Infectious Diseases; Bureau of Disease Control, Department of Health, Executive Yuan.

References

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2. WHO Japanese encephalitis surveillance: report of a WHO Working Group. *Wkly Epidem Rec* 1984; 59:21-2.