DIPHTHERIA OUTBREAK IN THAILAND, 2012; SEROPREVALENCE OF DIPHTHERIA ANTIBODIES AMONG THAI ADULTS AND ITS IMPLICATIONS FOR IMMUNIZATION PROGRAMS

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Abstract. An age distribution shift in diphtheria cases during a 2012 outbreak in northeastern of Thailand suggests adults are increasingly at risk for infection in Thailand. Data regarding immunity against diphtheria among the adult Thai population is limited. We review a 2012 diphtheria outbreak in Thailand and conducted a nationwide seroepidemiological survey to determine the prevalence of diphtheria antibodies among Thai adults in order to inform immunization programs. A total of 41 confirmed cases, 6 probable cases and 101 carriers of diphtheria were reported from northeastern and upper southern Thailand. The diphtheria outbreak in northeastern Thailand occurred among adults aged ≥15 years; sporadic cases occurred among children from upper southern Thailand. We conducted a seroepidemiological survey of 890 Thai adults from 4 age groups (20-29, 30-39, 40-49 and 50-59 years) in 7 different geographical areas of Thailand (Chiang Mai, Ratchaburi, Chon Buri, Nakhon Si Thammarat, Phitsanulok, Khon Kaen and Songkhla). Diptheria toxin antibody levels were measured with a commercially available ELISA test. The seroprotection rate ranged from 83% to 99%, with the highest in eastern Thailand (Chon Buri, 99%) and the lowest in northern Thailand (Chiang Mai, 83%). Diphtheria antibodies declined with increasing age. We recommend one dose of diphtheria-tetanus toxoid (dT) vaccine once after 20 years of age in order to boost the antibody and revaccinations every 10 years to prevent future outbreaks.

Keywords: diphtheria, outbreak, seroprevalence, immunization, adult