

Change of Epidemiological Characteristics and Disease Burden of Varicella Due to Implementation of Mass Immunization Program in Taiwan from 2000 to 2012

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Abstract : Background and purpose: A mass varicella immunization program was established to provide free 1-dose vaccination for all 1-year-old children throughout Taiwan since 2004. The epidemiological characteristics and disease burden of varicella from 2000 to 2012 was investigated and the results will be essential to refine the national immunization policy. Method: We included patients (n = 17,838-164,245) with ICD-9-CM codes 052 (chickenpox) from the 2000 to 2012 National Health Insurance Database. The age, period, and cohort-specific incidence of varicella were calculated. The hospital admission rate, medical costs and indirect costs from the societal perspective of varicella including travel costs to the medical facility, registration fee, productivity losses of the patients and caregivers were also estimated. Result: There were 979,252 patients for medical treatment due to varicella from 2000 to 2012 in Taiwan. The implementation of a routine childhood varicella vaccination program has resulted in 87% decline in morbidity (881.49 to 115.17 per 100,000). The average age of patients increased from 7.9 years to 16.3 years. The overall varicella-related hospital admission rate was 15.5 per 1000 patients, and peaked in the groups of infants younger than 1 year, adults aged from 20 to 39 years and elders over 70 years. Among patients admitted to hospital, 33.5% of them had one or more complications. Patients with underlying diseases had higher admission rate (241.6 per 1,000) and longer duration of hospital stay (6.61 days vs. 4.76 days). The annual varicella-related medical expense declined after 2002 and the proportion of medical costs for admission has increased to 42%. The annual indirect costs from the societal perspective of varicella were 5.29 to 9.63 times higher than varicella-related medical costs. Every one dollar invested in the varicella immunization program, 2.97 dollars of medical and social costs were saved on average. Conclusion: The dramatic decline in morbidity, hospitalization, medical and social costs of varicella can be directly attributed to the implementation of the mass immunization program. Two-dose vaccination is recommended for both children with underlying diseases and susceptible adults to prevent serious complications and hospitalizations.

Keywords : disease burden, epidemiology, medical and social costs, varicella, varicella vaccine

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