

Summary of Vaccine Preventable Diseases Reported to the Michigan Department of Community Health, 1996

This report summarizes the occurrence of vaccine-preventable diseases in Michigan in 1996. Features of the descriptive epidemiology of the diseases are provided. Report totals are given in Table 1, below.

Congenital Rubella - One case of congenital rubella was reported in Michigan in 1996, the first in over 10 years. This child was born to a 38 year-old mother who experienced a rash illness early in pregnancy which was not specifically diagnosed as rubella. The parents were natives of Yemen. Although the mother had been screened and found susceptible to rubella during a prior pregnancy (approximately 18 months before this birth), she was not vaccinated against rubella after that pregnancy (as is the standard-of-care recommendation).

Diphtheria - No cases of diphtheria were reported in 1996 (last Michigan case reported in 1980).

***Haemophilus influenzae* invasive disease** - A total of 12 cases of *H. influenzae* invasive disease were reported in 1996. Six of the cases occurred in children under age 7 years; of these, 1 was found to be type b (a 3 month-old child who had received 1 dose of Hib vaccine), 1 was a serotype other than b, 2 were not tested, 1 was not typable, and 1 was reported on the basis of a CSF antigen but the culture was negative so it could not be typed. Of the adult cases (all were over 22 years of age), 1 was serotype b.

The decline in *H. influenzae* incidence in 1996 continued the overall decline seen in the past several years. However, sero-typing of all isolates, which is needed to determine the incidence of disease preventable by immunization, continues to be less than complete. In 1996, 27 % of reported isolates were sero-typed.

Measles - There were a total of 3 measles cases reported in Michigan residents in 1996, the lowest annual number of cases ever reported. All 3 cases were the result of exposures outside of the U.S. All 3 were sero-confirmed. Case 1 was a 38 year-old male whose course of illness suggested exposure while traveling in Germany. His immunization status was unknown. Case 2 was a 10 month-old infant who was adopted from Russia; her rash developed 10 days after arrival in the U.S. Case 3 was a 36 year-old male whose course of illness suggested exposure while traveling in Greece, with rash developing 9 days after returning to the U.S. According to the physician notes the case had not been immunized against measles. In all 3 instances no secondary cases of disease were identified.

Mumps - A total of 48 cases were reported in 1996, a 20% decrease from the 60 cases reported in 1995. All were reported as sporadic (i.e., non-outbreak) cases. Only 3 (6%) were serologically confirmed (all 3 were by positive mumps IgM antibody); the remainder were based

on clinical diagnosis by a physician. Cases ranged in age from 17 months to 59 years. Thirty-eight cases (79%) were under age 19 years; 32 (67%) were 10 years of age or less. Of the 38 cases under age 19 years, case investigation information, including vaccination status, was known for 36 (97%). Of these, 33 (92%) had a history of mumps immunization on or after the first birthday (17 had one dose, 16 had two doses). Among the 3 serologically confirmed cases, two (a one year-old and a 47 year-old) had no mumps immunization history, and one (a 5 year-old) had documentation of one dose.

Pertussis - A total of 59 cases of pertussis were reported in 1996. While this represented a 69% decrease from the number reported in 1995 (103 cases), the number of counties reporting pertussis in 1996 increased by 29%. It is likely pertussis is significantly under-reported especially among older children, adolescents, and adults, all of whom typically experience less severe illness than infants and young children. Of note was a pertussis outbreak occurring in a parochial secondary school, involving adolescents and adults from 3 counties.

Reported cases ranged in age from 4 days to 59 years. The median age of 3 months was noticeably younger than the median age of 21 months among 1995 cases. Seventy-one percent of cases (42/59) were under one year of age (compared with 40% in 1995). There was a slight preponderance of females (32 female, 27 male, female-to-male ratio 1.2:1). Hospitalization was reported for 40 cases (68%). Compared to 1995 (31% hospitalized), this was a significantly higher hospitalization rate ($p < 0.001$), likely a consequence of the younger average age of cases in 1996. Reported complications included X-ray-confirmed pneumonia in 11 cases (28%), and generalized or focal seizures in 3 cases. There were no reported deaths.

Seventy-one percent of cases overall had a history of receiving the age-appropriate number of pertussis vaccine doses, compared with 24% in 1995; this increase may be a reflection of the larger number of 1996 cases in infants, many of whom had an age-appropriate number of vaccine doses but were too young to have completed the initial primary series.

As mentioned, it is believed pertussis, like many notifiable communicable diseases, is and has been historically under-reported. In 1996 the wider geographic dispersion of reported pertussis in Michigan compared to the previous year may be further evidence of under-reporting. This is also suggested by the large proportion of 1996 cases among infants under 1 year of age, who are likely being exposed and infected by older persons in whom pertussis is occurring but not diagnosed or reported.

Rubella - Two cases of rubella were reported in 1996, the lowest annual number of cases reported in Michigan. Both cases occurred in adults, each a result of exposure to rubella overseas; both were sero-confirmed. Case 1 involved a 19 year-old male native of Korea, studying at a college preparatory school in southeastern Michigan. He had visited Korea and returned to Michigan 1 day prior to rash onset. His immunization history could not be reliably documented, but suggested measles and rubella immunization at 13 and 15 months of age, respectively.

Case 2 involved a 45 year-old female (born in 1950) who had been living in Germany and returned to the U.S. 9 days prior to rash onset. She did not recall a prior history of rubella, and had never been immunized against rubella.

No secondary cases were identified from either case.

Tetanus - One case of tetanus was reported in 1996. The case was a 66 year-old female who resided on a farm and who suffered a rabbit bite on an unspecified date prior to onset; she also had dirty puncture wounds reported to be the result of chicken pecks. According to family members she had never been immunized against tetanus.

Table 1 - Number of reported cases of vaccine preventable diseases, Michigan, 1995-1996

Disease	Total Cases 1996	Total Cases 1995	Cases < 5 y.o. 1996	Cases < 5 y.o. 1995
Congenital Rubella	1	0	1	0
Diphtheria	0	0	0	0
<i>H. influenzae</i> invasive	12	18	5	11
Hepatitis B	416	398	14	10
Measles	3	5	1	0
Mumps	60	48	11	15
Pertussis	59	103	47	71
Poliomyelitis	0	0	0	0
Rubella	2	4	0	1
Tetanus	1	1	0	0