



Summary of Vaccine Preventable Diseases Reported to the Michigan Department of Community Health, 2007

This is a summary of reported cases of selected vaccine-preventable diseases in Michigan in 2007. Totals for 2006 are provided for comparison in Table 1 (see last page).

Congenital Rubella – No cases of congenital rubella were reported in 2007.

Diphtheria – No cases of diphtheria were reported in 2007.

***Haemophilus influenzae* invasive disease** –

Thirty-one cases of invasive *H. influenzae* disease were reported to the Michigan Department of Community Health (MDCH) in 2007.

Thirteen were in persons 5 years of age or younger. Of these, 11 were serotyped, with one identified as being serotype b (an 8 month old unvaccinated Amish child with meningitis and sequelae including deafness). The distribution of the remaining 10 serotypes in this group was: type f (3 cases), type e (1 case), and non-typeable (6 cases). Both of the 2 cases whose isolates were not serotyped were premature infants (28 weeks and 29 weeks gestation) whose infections were diagnosed on the date of birth.

Among the 13 cases in persons 5 years of age or younger, *H. influenzae* was isolated from blood in 8 cases (61.5%), from CSF in 3 cases (23.1%) and from both blood and CSF in 2 cases (15.4%).

Measles –

Three cases of measles were reported in 2007. Two were part of a multi-state outbreak stemming from an international imported case (a visitor from Japan). The third Michigan case may have been a part of the same outbreak but evidence of direct epidemiologic linkage was lacking. The non-Michigan index case was a 12 y.o. Japanese male who cleared customs in Detroit en route to an international youth baseball tournament in Pennsylvania. He infected two Michigan residents, each of whom experienced rash onsets approximately 14 days later: a 25 y.o. unvaccinated male federal airport worker at the Detroit airport and a 53 y.o. (unvaccinated, born 1954) female passenger on the same flight. Both cases were confirmed by measles IgM serology and by positive RT-PCR tests. Molecular analysis of virus recovered from the 53 y.o. female case indicated an identical genotype (D5) to other cases in the outbreak and to virus circulating in Japan; genotyping was unsuccessful in the 25 y.o. male.

The third Michigan case was 32 y.o. male airport coworker of the first Michigan case; his rash onset was one month after the others, suggesting the source was an undetected case in the chain of transmission, or a separate unknown source not connected to the outbreak. Measles diagnosis was confirmed serologically by positive measles IgM and by a significant rise in measles IgG. Attempts at viral isolation and molecular and genetic characterization of the virus were not successful in this case.

Mumps –

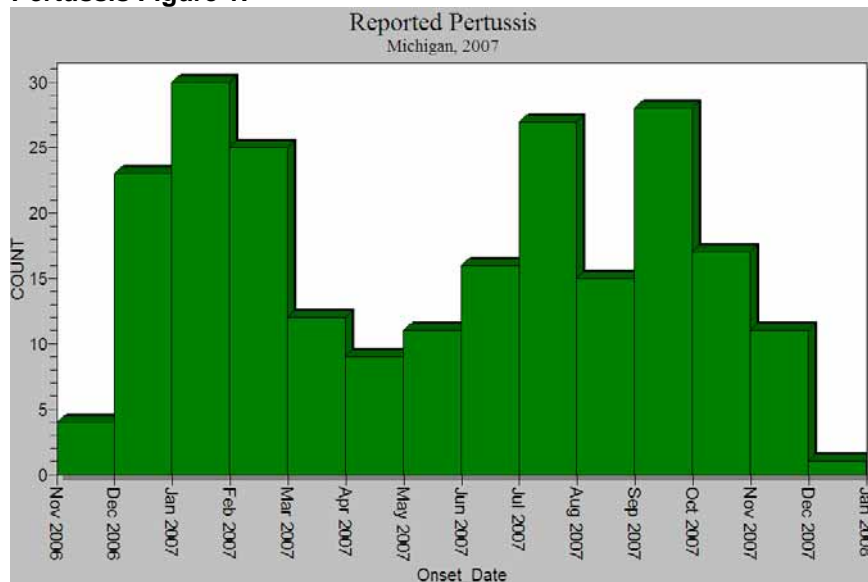
In 2007 there were 29 mumps cases reported, a decline of 66% from the 85 cases reported in 2006. Cases ranged in age from 2 to 68 years (median age 14 years); 13 (45%) were 5 – 19 years of age. Overall, 17 (59%) cases were confirmed, all by mumps IgM serology, and 16 (55%) had a history of receiving at least 1 dose of mumps vaccine (13 had a history of 2 doses). Cases were reported from 20 counties and were seemingly sporadic, with no outbreaks reported.

Pertussis –

In 2007, 292 pertussis cases were reported to MDCH, a decline of 54% from the 632 cases reported in 2006, but still considerably higher than the annual average of 78 cases reported in the period 1990-2000. Case onsets occurred throughout the year (see Pertussis Figure 1). Geographically, cases occurred broadly throughout the state, with cases reported from 53 counties. Females accounted for 56% of cases. Cases ranged in age from under 1 week to 81 years. Adults (20 years of age and older) accounted for 53% of cases. Positive culture results were reported for 23 cases (8%), positive PCR tests were reported for 84 (29%). There were no deaths reported.

Information on vaccination history was available for 188 (64%) case records. Of these, 152 (52%) indicated receipt of at least one dose of pertussis-containing vaccine. Among 136 cases under age 20, 107 (79%) indicated a history of at least one dose of pertussis vaccine.

Pertussis Figure 1.



Rubella –

Three cases of rubella were reported in 2007. All three were foreign-born graduate students attending a university in west Michigan. The source of infection was unknown; all 3 cases had onsets within a 5-day period, suggesting they may have been commonly or sequentially exposed to a single, unknown case. Each case was confirmed by rubella IgM serology. Genotyping was successful for 2 of the 3 cases, which were typed as 2B, with identical genetic sequences. They

were closest to CDC reference strains from Seattle (an India import) and China, but no epidemiological connections were made to cases in those areas.

Tetanus – No cases of tetanus were reported in 2007.

Varicella –

In 2007, a total of 4,191 cases of chickenpox were reported, a decline of 19% from the previous year. Gender was reported for 4,073 (97%); there were slightly more males (male-to-female ratio 1.03:1). Age was reported for 4,157 (99%), and ranged from 2 months to 107 years, with a median of 8 years. The largest number of cases was reported in the 5-9 year-old age group (2,292, 55% of cases), followed by the 10-19 year-old age group (1,242, 30% of cases) – see Varicella Figure 1.

Severity of illness was approximated by estimates of the number of lesions as reported in one of four categories: less than 50, 50 – 249, 250 – 500, and more than 500. Such categorical estimates of number of lesions were reported for 3,336 (79.6%) cases. Of these, 3,216 (96%) had information on prior vaccination history. Previous receipt of varicella vaccination was associated with milder illness (risk ratio 0.2383, 95% confidence limits 0.2057;0.2762, $p < 0.005$; for purposes of this analysis, cases with fewer than 50 lesions were considered mild, and cases with 50 or more were considered moderate-to-severe). This was similar to a finding from 2006 Michigan data and supports conclusions from various studies suggesting that breakthrough varicella disease occurs in some vaccinated persons but tends to be a milder illness than cases in unvaccinated persons.

Varicella Figure 1.

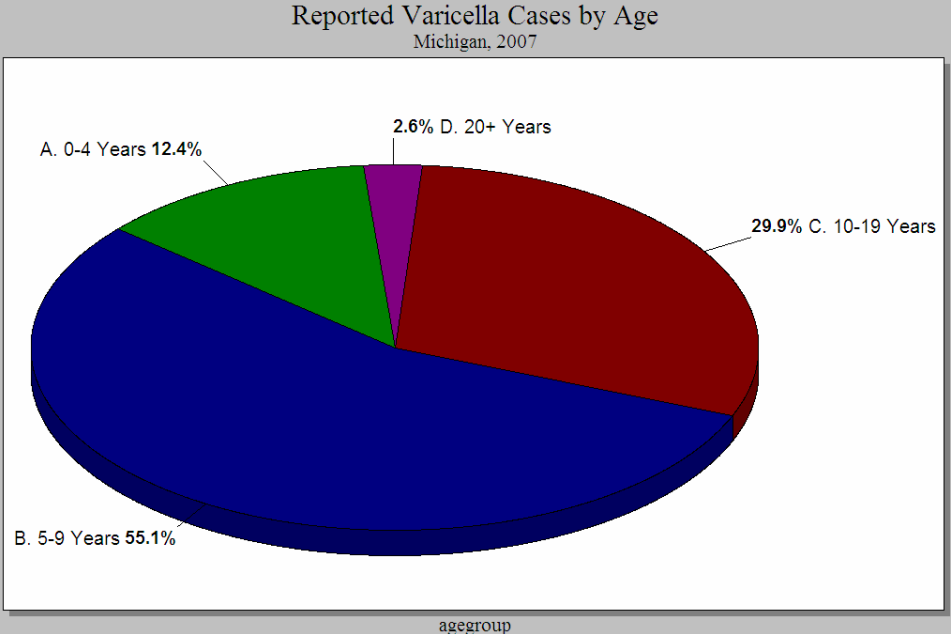


Table 1 - Number of reported cases of selected vaccine preventable diseases, Michigan, 2007 and 2006.

Disease	Total Cases 2007	Total Cases 2006
Congenital Rubella	0	0
Diphtheria	0	0
<i>H. influenzae</i> invasive <5 years (serotype b)	13 (1)	6 (0)
Measles	3	1
Mumps	29	85
Pertussis	292	632
Poliomyelitis	0	0
Rubella	3	1
Tetanus	0	3
Varicella	4,191	5,200