



Summary of Vaccine Preventable Diseases Reported to the Michigan Department of Community Health, 2005

This is a summary of reported cases of selected vaccine-preventable diseases in Michigan in 2005. Totals for 2004 are provided for comparison in Table 1 (see last page).

Congenital Rubella - No cases of congenital rubella were reported in 2005.

Diphtheria - No cases of diphtheria were reported in 2005.

***Haemophilus influenzae* invasive disease** – Twenty-four cases of invasive *H. influenzae* disease were reported to the Michigan Department of Community Health (MDCH). Four were in persons under 5 years of age, of which 1 was identified as due to serotype b, a 15 month old female with a presentation of primary bacteremia and a history of 3 doses of Hib vaccine. The remaining cases were serotype e (1), serotype f (1), and not typeable (1).

Measles – One case of measles was reported in the state in 2005, a 12 year old male who had arrived as an immigrant from Yemen on the day of rash onset. His immunization history was unknown. The case was serologically confirmed and a throat swab also tested positive by PCR; the virus was further characterized as belonging to the D4 genotype, a strain previously found in association with measles cases in Ethiopia, India, S. Africa, and parts of Europe. Control measures and case finding efforts, including an assessment of potential aircraft exposures, did not identify any secondary cases.

Mumps – In 2005 there were 24 mumps cases reported to MDCH, representing an 1100% increase over the 2 cases reported in 2004. Cases occurred throughout the year, with a noticeable peak occurring in late spring (see Mumps Figure 1).

Case classification

Twenty cases were classified as Confirmed (defined as having serologic or virologic lab confirmation, or an epidemiologic link to another confirmed case); 18 were positive by mumps IgM serology, and 2 were confirmed by epi-link.

Four were classified as Probable, meeting the CDC/CSTE clinical case definition (an illness with acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland, lasting greater than or equal to 2 days, and without other apparent cause).

Age and sex distribution

Males accounted for 16 cases (67%), females accounted for 8 (33%), the male-to-female case ratio was 2:1.

The median age of cases was 21 years (mean 26.9 years), with a range of 15 months to 72 years. Over 50% of cases occurred in persons 20 years of age and older (see Mumps Figure 2). The majority of reported cases were white (67%).

Vaccine history

Overall, 12 (50%) of cases indicated a history of receipt of at least one dose of mumps-containing vaccine, but only 5 (42%) of these 12 were able to provide a date of mumps vaccination.

Reporting timeliness

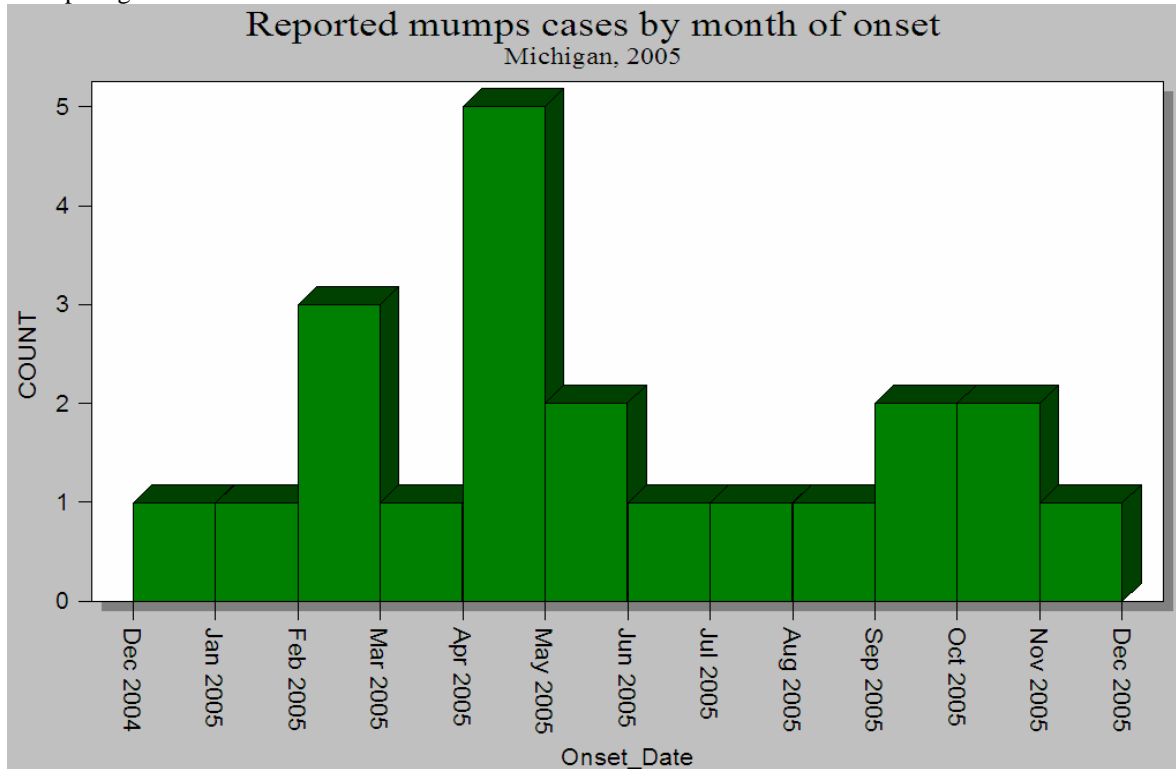
The interval between date of diagnosis (or suspicion of mumps diagnosis) and report to a public health authority ranged from 0 to 61 days (median 10.5 days)

Comment:

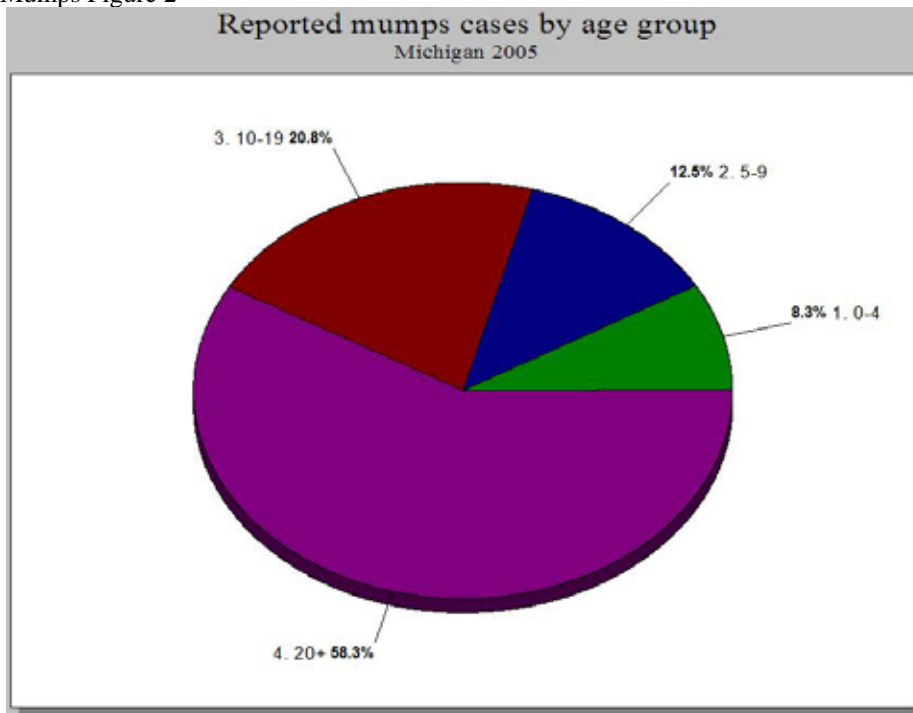
The number of mumps cases reported in Michigan in 2005 was the most since 1998, when 33 cases were reported (see Mumps Figure 3). During 2004–2005, the United Kingdom (UK) experienced a nationwide epidemic of mumps, which peaked during 2005 with over 56,000 cases reported in England and Wales. The majority of confirmed cases during 2004–2005 in the UK were in persons aged 15–24 years, most of whom had not been eligible for routine mumps vaccination according to UK immunization policies. Large outbreaks of mumps have also been occurring in Ireland in recent years. Four of the 24 Michigan cases in 2005 were known to have been import-associated with cases from the UK or Ireland.

The preponderance of cases among adults underscores the changing epidemiology of mumps. As has been seen with other vaccine-preventable diseases traditionally associated with childhood, such as measles and rubella, the routine, sustained use of immunizations against these diseases in childhood has resulted in a “right-shift” in the age distribution of cases.

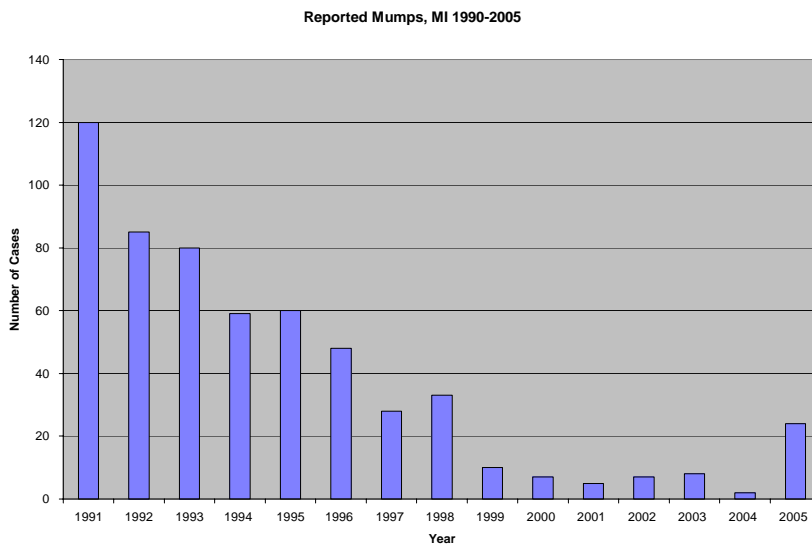
Mumps Figure 1.



Mumps Figure 2



Mumps Figure 3.



Pertussis – In 2005 there were 321 cases of pertussis reported to MDCH, an increase of 7.6% over the 303 cases reported in 2004. The number of cases reported in 2004 and 2005 were substantially greater than previous years and accentuated the trend of increasing incidence of reported pertussis disease cases over the past 2 decades (see Figure 1). Onset date was available for 270 (83%). Cases occurred throughout the year, with two noticeable peaks occurring in March and August (see Figure 2).

Case classification

Of the 321 reported cases, 227 (71%) were entered to MDSS as Confirmed, 94 (29%) as Probable (see case definition and classification criteria, below). However, there is some question as to consistency of case classification MDSS with respect to applying the CDC/CSTE definition and classification scheme.

Fifty one cases (15.8%) had a positive culture result; 114 (35.5%) had a positive PCR result. Three cases (0.9%) were positive by both culture and PCR.

Age and sex distribution

Cases were not evenly split by gender; 197 cases (61.4%) were female, 129 (40.2%) were male, yielding a female-to-male ratio of 1.5:1. Age was reported for 316 (98.4%) of cases; age ranged from 3 days to 81 years, with a median of 10 years. The 0-4 year age group accounted for the largest proportion of cases (nearly 40%), but cases were common among adults, who accounted for over 30% of all reported cases (see Figure 3). Race data were provided for 268 cases (83.1%); of these, 233 (86.6%) were Caucasian, 22 (8.2%) were Black/African American, 7 (2.6%) were Asian, and 6 (3.3%) were Other.

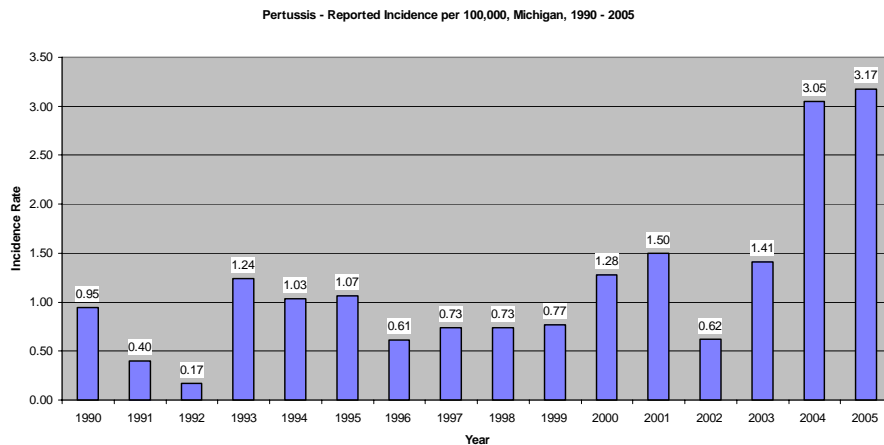
Vaccine history

Information of vaccination history was available for 238 (74.0%) case records. Of these, 152 (63.9%) indicated receipt of at least one dose of pertussis-containing vaccine. A date of vaccination for one or more doses was provided for 82 (54.0%) of the 152 cases indicating prior receipt of pertussis-containing vaccine. Among 201 cases under 20 years of age with information on vaccine history, 122 (61%) had a vaccine date in the case report for one or more doses.

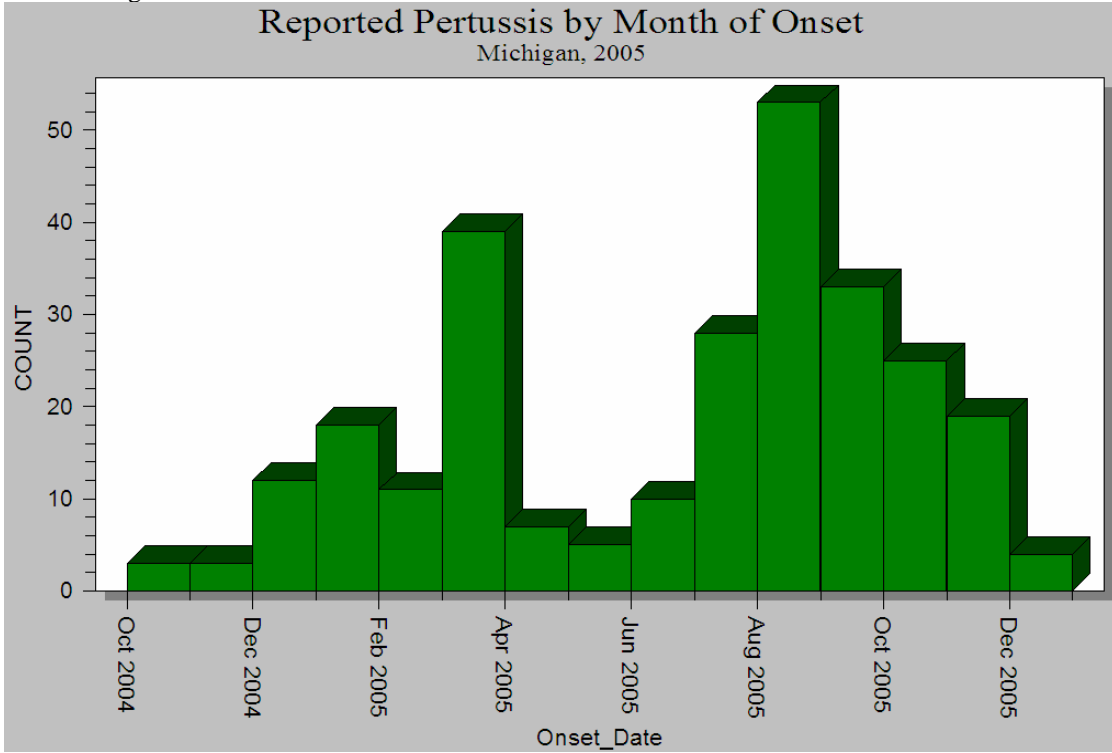
Presentation and course

Paroxysm of cough was reported in 232 cases (72.3%), post-tussive vomiting in 154 (48%), and whoop in 121 (37.7%). Pneumonia based on chest X-ray was reported in 16 (5%). Forty nine (15.3%) of cases were reported hospitalized, with a median stay of 4 days (range 1 day – 53 days).

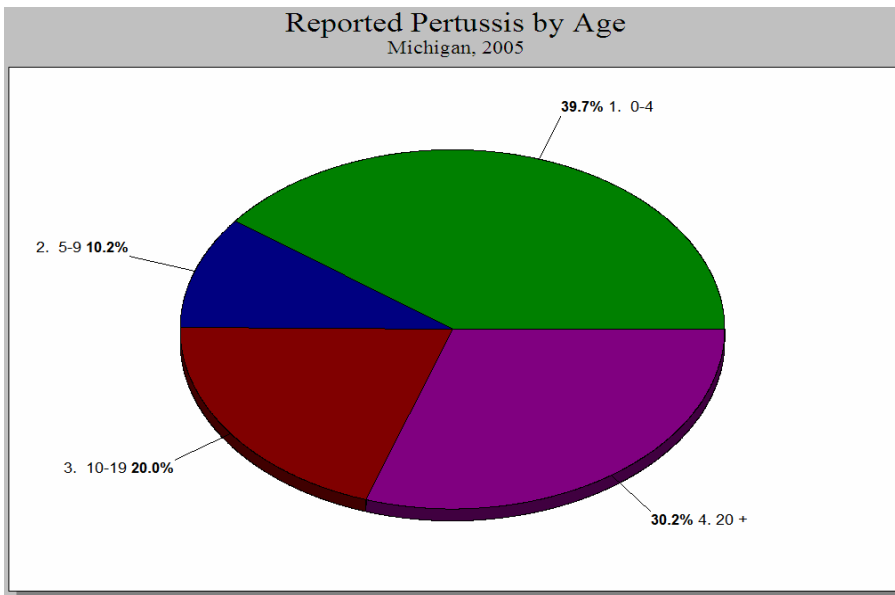
Pertussis Figure 1.



Pertussis Figure 2.



Pertussis Figure 3.



Rubella - One case of rubella was reported in Michigan in 2005 in February, a 27 year old female who emigrated from Vietnam to the US in July 2004. The case was asymptomatic, denying rash, fever, and other signs and symptoms. She was tested in connection with an ob/gyn visit and assessed for various immunities, including rubella. For unknown reasons a rubella IgM test was ordered and was reported to be positive. The immunization history was unknown. No additional cases were identified.

Tetanus – One case of tetanus was reported in Michigan in 2005, a 37 year old male whose illness was described as localized to the foot; he gave a history of suffering a puncture to the affected foot (stepped on a nail) 5-9 days prior to seeking care. He was hospitalized for 12 days.

Varicella – A change in the surveillance approach to varicella in Michigan began in the 3rd quarter of 2005: instead of being reportable in aggregate weekly case counts, varicella cases became reportable as individual cases, similar to the way most other reportable diseases are reported. Because the change came part way through the year, 2005 data consists of both aggregate and individual case counts. In 2005, a total of 4,004 cases were reported, a 5.6% decrease from the 4,240 cases reported in 2004.

Table 1 - Number of reported cases of selected vaccine preventable diseases, Michigan, 2005 and 2004.

Disease	Total Cases 2005	Total Cases 2004
Congenital Rubella	0	0
Diphtheria	0	0
<i>H. influenzae</i> invasive <5 years (b serotype)	4 (1)	7 (1)
Measles	1	0
Mumps	24	2
Pertussis	321	303
Poliomyelitis	0	0
Rubella	1	0
Tetanus	1	0
Varicella	4,004	4,240