

6.6 Vaccine-Preventable Diseases

Vaccine preventable diseases are at their lowest levels ever. However there are still areas for concern regarding these diseases and immunization levels. For example, childhood immunization levels for the U.S. are not at 100% and immunization rates for those aged 65 and older are even lower. In addition, economic and racial disparities exist for immunization levels throughout the U.S. Examples of vaccine preventable diseases include chickenpox, H. influenzae disease, measles, mumps, pertussis and rubella.

From 2004-2008 there were no cases of measles reported to the Kalamazoo County Communicable Disease Surveillance Program, three cases of rubella and five cases of mumps. During this time period four cases of H. influenzae disease were reported. Data regarding chickenpox (varicella) and pertussis are presented in individual sections.

**Vaccine-Preventable Diseases Reported to Kalamazoo County
Communicable Disease Surveillance Program, 2004 – 2008**

Vaccine Preventable Disease	Number of cases reported
Chickenpox (Varicella)*	649
Diphtheria	0
H. influenzae Disease (Invasive)	4
Measles	0
Mumps	5
Pertussis	454
Polio	0
Rubella	3
Tetanus	0

*Includes chickenpox cases reported both individually and in aggregate (numbers for other diseases include only probable or confirmed cases)

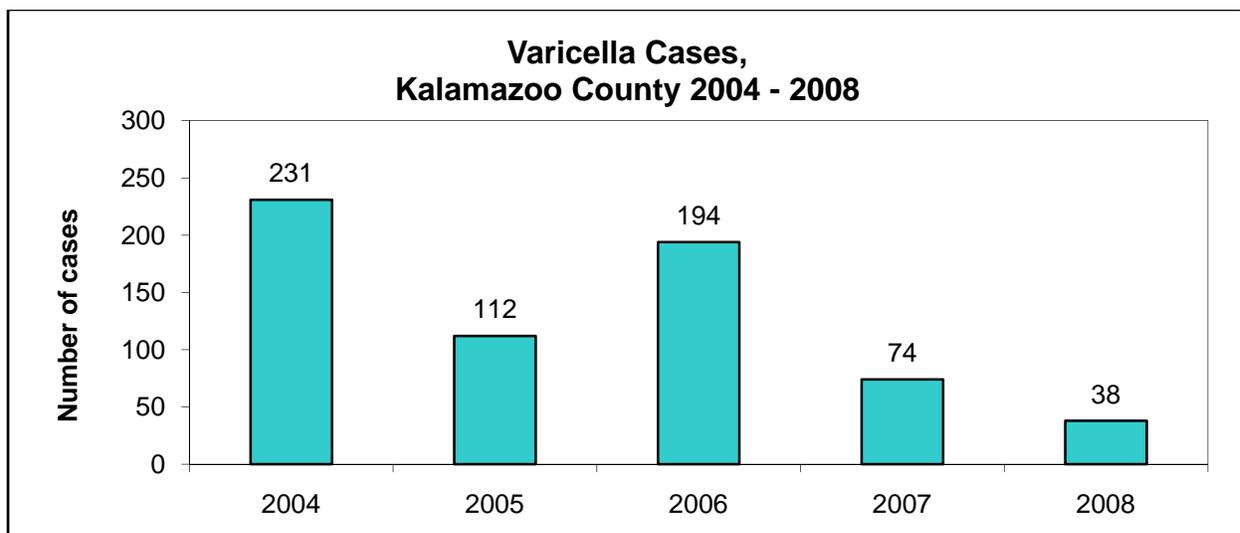
Michigan Disease Surveillance System, completed cases as of 7/28/09

6.6.1 Chickenpox (Varicella)

Prior to the licensing of the chickenpox vaccine in 1995, virtually all persons in the U.S. acquired chickenpox or varicella by adulthood. The primary symptom of chickenpox is an itchy skin rash of blister-like lesions that are usually found on the face, scalp or upper portion of the body. The rash usually appears first on the scalp, moves to the trunk and then to the extremities. Adults may have one to two days of fever and malaise prior to rash onset, but in children the rash is often the first sign of disease.

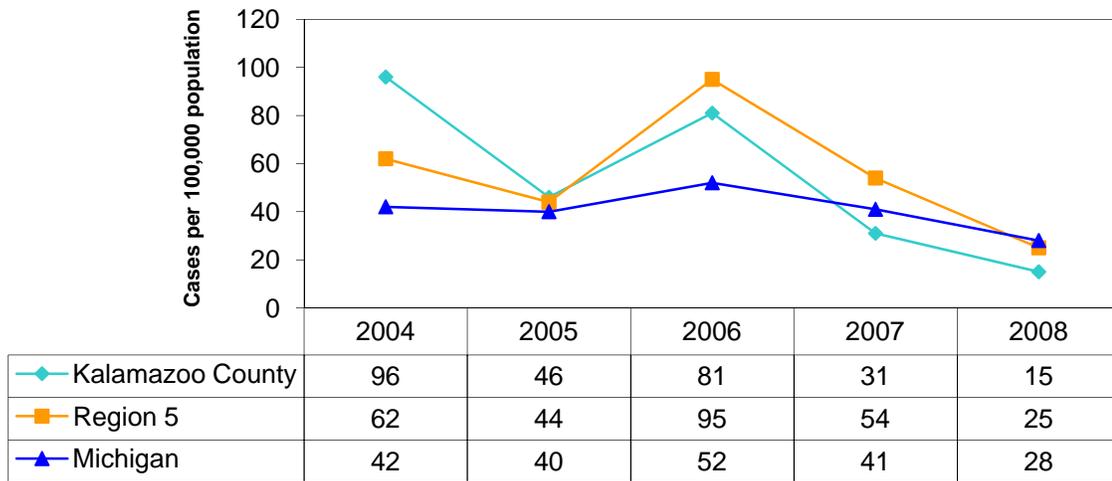
Chickenpox is a viral infection that is most often transmitted person to person by contact with respiratory droplets from a coughing or sneezing infected person. In addition, transmission can occur by direct contact or inhalation of aerosols from vesicular fluid of skin lesions of acute varicella or zoster (shingles). Chickenpox is one of the most easily transmitted diseases, especially in the early stages of the eruption. All persons who have not had chickenpox are at risk; however, some persons are at greater risk including teachers of young children, those living in institutional settings, persons in the military, women of childbearing age, and international travelers. The incubation period is two to three weeks and the period of communicability is approximately two days before the onset of the rash until the rash has crusted (usually five days).

In Kalamazoo County during 2004-2008 there were 649 cases reported to the Kalamazoo County Communicable Disease Surveillance Program with an average of 130 cases per year. In 2004 and 2006 rates in the county were higher than those for the state of Michigan; rates in 2005, 2007 and 2008 were similar in Kalamazoo County, the region and Michigan.



Michigan Disease Surveillance System, completed cases as of 7/28/09

**Varicella Rates:
Kalamazoo County, Region 5 and Michigan 2004 - 2008**



Michigan Disease Surveillance System, completed cases as of 7/28/09

In 2006, varicella became an individually reportable disease. Rather than submitting aggregate counts weekly to the health department, reporting entities now report cases individually by name so that a case investigation can be conducted (as is done with most other communicable diseases with required reporting). For this reason case demographics are only available for cases reported 2006 or later.

**Chickenpox: Demographic Characteristics of
Kalamazoo County Cases, 2006-2008**

N=306	Number of Cases	Percent of Total
Sex		
Female	146	48%
Male	157	51%
Unknown	3	1%
Age Group		
<1 yr	12	4%
1-4 yrs	39	13%
5-9 yrs	168	55%
10-14 yrs	68	22%
15-19 yrs	8	3%
20-24 yrs	4	1%
25-29 yrs	0	0%
30-34 yrs	1	0%
35-39 yrs	3	1%
40-44 yrs	1	0%
45-49 yrs	0	0%
50-54 yrs	1	0%
55-59 yrs	0	0%
60-64 yrs	0	0%
65-69 yrs	1	0%
>70 yrs	0	0%
Unknown	0	0%

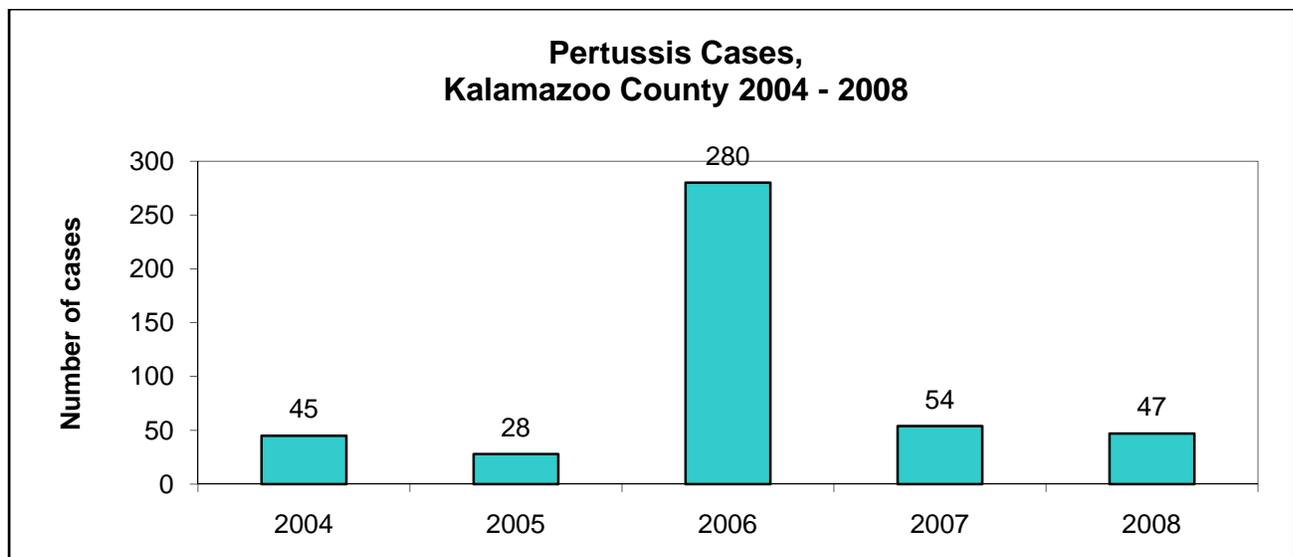
Michigan Disease Surveillance System, completed cases as of 7/28/09

6.6.2 Pertussis (Whooping Cough)

In the 20th century pertussis was one of the most common childhood diseases and a major cause of childhood mortality in the United States. However, since widespread use of the vaccine began in the 1940s, pertussis incidence has decreased more than 98%. Early symptoms include insidious onset of a runny nose, sneezing, low-grade fever, and a mild cough. During the second stage (paroxysmal stage) the cough gradually becomes more severe occurring in short rapid bursts characterized by a high-pitched whoop. Recovery is gradual and can range from weeks to months.

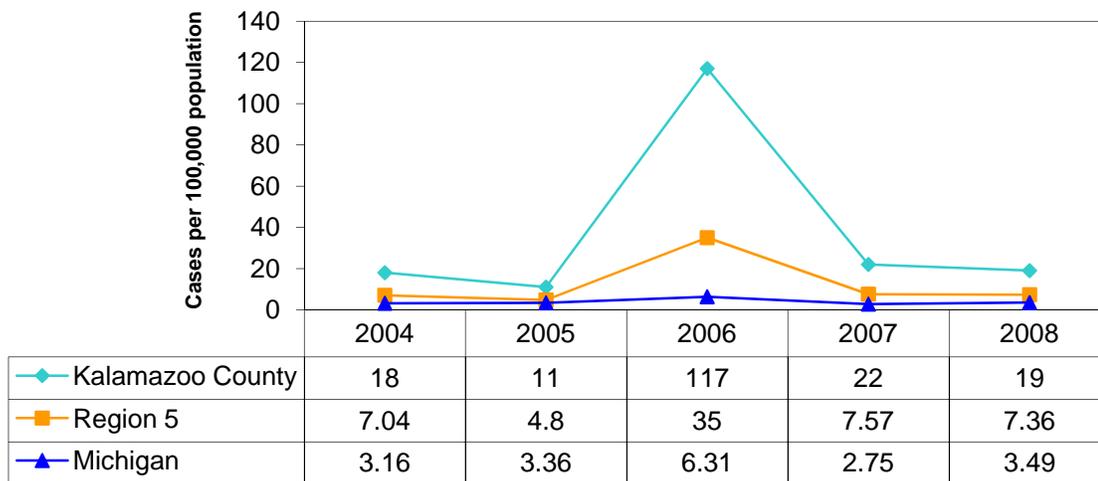
Transmission most commonly occurs through contact with respiratory droplets or by contact with airborne droplets of respiratory secretions. The incubation period of pertussis ranges from five to ten days. Pertussis is highly communicable with a contagious period occurring from seven days following exposure to three weeks after onset of paroxysms. The period of maximum contagiousness usually occurs before a diagnosis of pertussis is suspected. Young infants are at greatest risk for acquiring clinical pertussis and for pertussis related complications.

In Kalamazoo County from 2004 through 2005, an average of 37 cases per year were reported. During 2006, 280 cases were reported. In 2006 the county disease incidence rate was much higher than the rate in the region or the state. For more information and analysis of this increase in pertussis cases, please refer to “*Section 6.12 Special Reports: Pertussis Outbreak in Kalamazoo County, 2006*” of the Kalamazoo County Health Surveillance Data Book. In 2007 and 2008 the number of cases again declined to an average of 50.5 cases per year.



Michigan Disease Surveillance System, completed cases as of 7/28/09

**Pertussis Rates:
Kalamazoo County, Region 5 and Michigan 2004 - 2008**



Michigan Disease Surveillance System, completed cases as of 7/28/09

**Pertussis: Demographic Characteristics of
Kalamazoo County Cases 2004-2008**

N=454		Number of Cases	Percent of Total
Sex			
Female		234	52%
Male		219	48%
Unknown		1	0%
Age Group			
<1 yr		45	10%
1-4 yrs		47	10%
5-9 yrs		114	25%
10-14 yrs		68	15%
15-19 yrs		52	11%
20-24 yrs		20	4%
25-29 yrs		8	2%
30-34 yrs		15	3%
35-39 yrs		16	4%
40-44 yrs		14	3%
45-49 yrs		16	4%
50-54 yrs		12	3%
55-59 yrs		5	1%
60-64 yrs		5	1%
65-69 yrs		7	2%
>70 yrs		10	2%
Unknown		0	0%

Michigan Disease Surveillance System, completed cases as of 7/28/09