

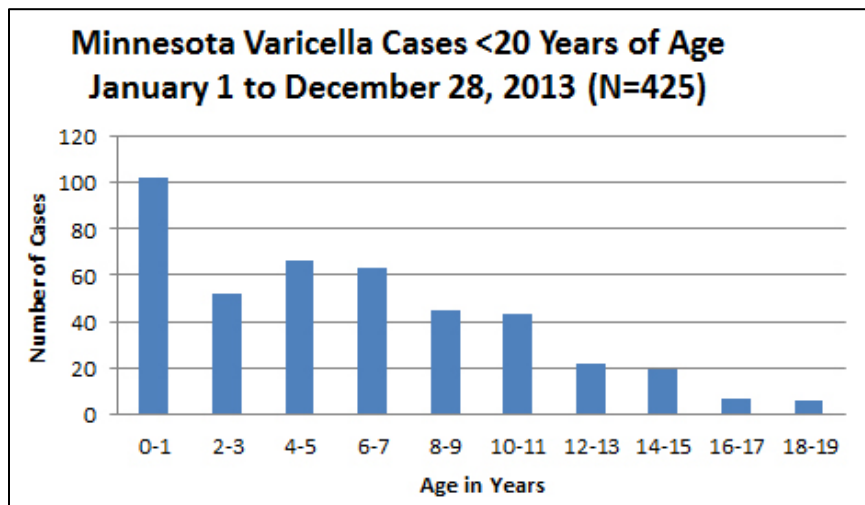
The incidence of chickenpox has changed over the last 15 years with the introduction of chickenpox vaccine and new immunization recommendations and requirements. Starting in the fall of 2006 through the first half of 2012, the total number of chickenpox cases occurring in Minnesota schools was estimated based on the cases reported by randomly selected sentinel schools. The number of chickenpox cases continues to decline, and monitoring chickenpox solely through sentinel schools is no longer adequate.

As of Jan. 1, 2013, all cases of chickenpox are required to be reported. This report is based on case reports provided by medical providers, child care providers, and schools.

### Chickenpox (Varicella) Case Reporting, January 1- December 28, 2013

In 2013, MDH received reports of 767 suspected cases of chickenpox, of which 478 were identified as probable or confirmed cases and were used for statistics. Minnesota had a statewide annual incidence of 9 cases/100,000 population in 2013, which is similar to the most recent available national statistic of 8.3/100,000 (2011). Age information was available for all Minnesota cases.

- 425 cases (88.9%) were less than 20 years old
- 33 cases (6.9%) were 20-39 years old
- 20 cases (4.2%) were more than 39 years old
- The youngest case was 13 days old and the oldest was 63 years of age



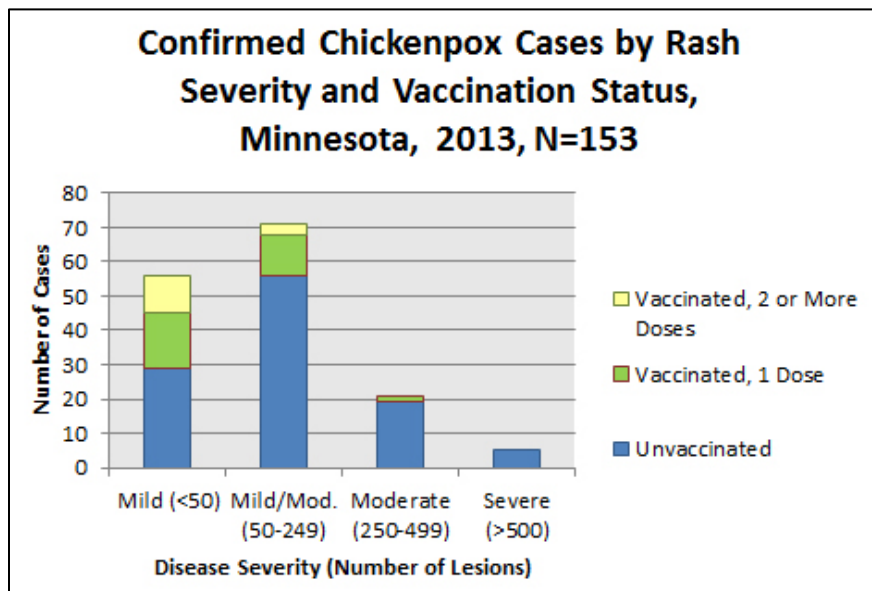
This graph shows the number of cases by age for persons less than 20 years old. Cases peaked at ages 0-1, in part because 53 (52%) in this group were too young to be immunized. A second peak occurred in children aged 4-5, and the number of cases declined in each succeeding age group.

Beginning with the 2009-2010 school year, children entering kindergarten and seventh grade in Minnesota have been required to have two doses of varicella vaccine. Vaccination information was available for 406 probable and confirmed cases, aged 23 and under.

- 218 (53.7%) cases were unvaccinated
- 97 (23.9%) cases were vaccinated with one dose
- 91 (22.4%) cases were vaccinated with two or more doses

The severity of varicella disease is approximated by the number of lesions (spots). Mild disease is defined as fewer than 50 lesions. In the most severe category,  $\geq 500$  lesions, it's difficult to see normal skin on parts of the body, especially the trunk. Lesions in the mouth and throat are more likely when the rash is more severe and can make swallowing uncomfortable, increasing the risk of dehydration.

- In vaccinated individuals, although “breakthrough” chickenpox disease sometimes occurs, the illness tends to be milder, with fewer lesions and quicker recovery.
  - 42 (95.5%) of vaccinated individuals had mild or mild-to-moderate illness
  - 2 (4.5%) vaccinated individuals had moderate illness
  - 0 (0%) vaccinated individuals had severe illness
- Unvaccinated individuals had higher rate of moderate and severe disease than vaccinated individuals
  - 85 (78.0%) unvaccinated individuals had mild or mild- to moderate illness
  - 19 (17.4%) unvaccinated individuals had moderate illness
  - 5 (4.6%) unvaccinated individuals had severe illness



This graph shows that severe disease was not seen in vaccinated individuals, and that most vaccinated individuals with breakthrough chickenpox had mild or mild-to-moderate disease. Most vaccinated individuals who got chickenpox had a single dose of vaccine rather than two doses.

- Hospitalization status was reported for 399 cases.
  - 4 (1.0%) cases were hospitalized
  - 1 (25%) of the hospitalized cases was immunosuppressed at onset of illness
  - None of the hospitalized cases were vaccinated
  - Cases were hospitalized for one to seven days
  
- Most cases of chickenpox are reported without laboratory testing. Testing of lesions is recommended when the rash is not typical of chickenpox, and PCR is the recommended method. Information regarding laboratory testing was available for 424 cases.
  - 82 (19%) cases had laboratory testing performed
  - 46 (85%) of the subgroup of cases aged 18 and older had laboratory testing performed
  - 57 (80%) of 71 lab-confirmed cases were tested by PCR

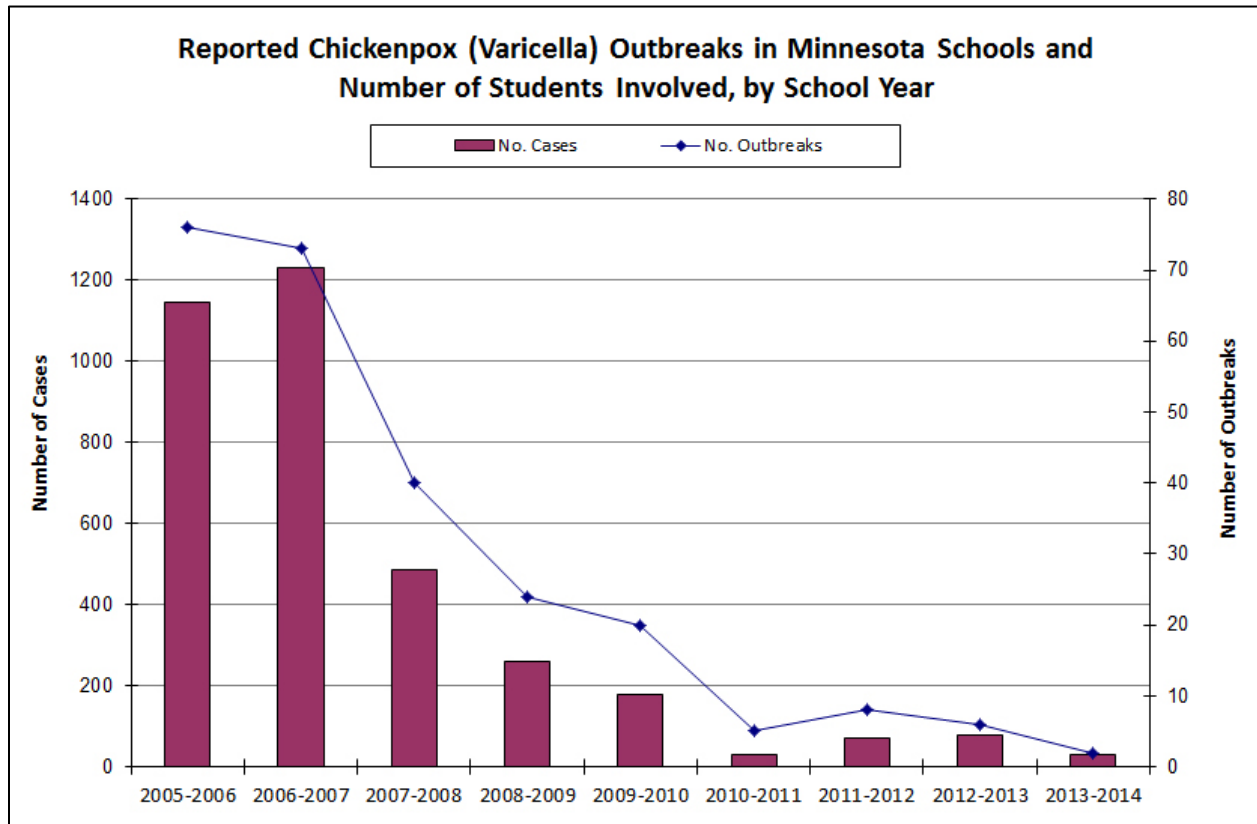
Reported cases resided in 56 of 87 Minnesota counties:

| <b>Minnesota Varicella Cases by County, January 1 –December 28, 2013</b> |              |               |              |               |              |               |              |
|--|--------------|---------------|--------------|---------------|--------------|---------------|--------------|
| <b>County</b>  | <b>Cases</b> | <b>County</b> | <b>Cases</b> | <b>County</b> | <b>Cases</b> | <b>County</b> | <b>Cases</b> |
| Anoka  | 20           | Douglas       | 1            | Martin        | 2            | Scott         | 10           |
| Becker   | 4            | Faribault     | 1            | Meeker        | 4            | Sherburne     | 13           |
| Big Stone  | 1            | Freeborn      | 3            | Mille Lacs    | 1            | Sibley        | 4            |
| Blue Earth   | 1            | Goodhue       | 5            | Mower         | 2            | St. Louis     | 6            |
| Brown  | 5            | Hennepin      | 115          | Nicollet      | 4            | Stearns       | 14           |
| Carlton  | 1            | Houston       | 4            | Olmsted       | 9            | Steele        | 1            |
| Carver   | 18           | Hubbard       | 2            | Otter Tail    | 3            | Todd          | 3            |
| Cass   | 2            | Isanti        | 3            | Pine          | 2            | Wabasha       | 1            |
| Chippewa   | 1            | Jackson       | 2            | Polk          | 5            | Wadena        | 45           |
| Chisago  | 3            | Kandiyohi     | 3            | Ramsey        | 52           | Waseca        | 6            |
| Clay   | 2            | Koochiching   | 1            | Red Lake      | 1            | Washington    | 26           |
| Crow Wing  | 5            | Lake          | 1            | Redwood       | 2            | Watonwan      | 3            |
| Dakota   | 33           | Le Sueur      | 2            | Renville      | 1            | Winona        | 2            |
| Dodge  | 1            | Lyon          | 2            | Rice          | 4            | Wright        | 10           |

### Chickenpox (Varicella) School Outbreak Reporting 2013-14

In addition to reporting individual cases as they occur, schools are still asked to report outbreaks. The number of outbreaks has declined dramatically since 2005-06. During the 2013-14 school year:

- 2 of 2,464 (0.1%) Minnesota schools reported outbreaks
- 30 students and 0 staff were included in 2 outbreaks
- Cases per outbreak ranged from 6 to 24
- Most cases in outbreaks were not immunized against chickenpox

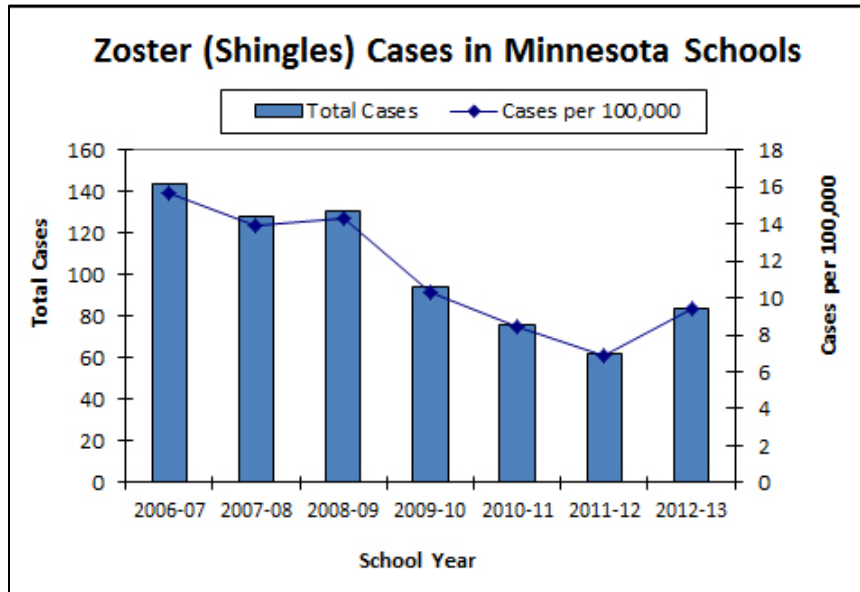


This graph shows that outbreaks of chickenpox in Minnesota schools have declined since requirements for one dose (2004) and two doses (2009) of chickenpox vaccine took effect.

### Shingles (Zoster) in Minnesota Schools 2012-13

MDH conducts surveillance for shingles in schools. Over the last seven school years, as increasing numbers of students have been immunized for chickenpox, shingles cases have declined from 15.7/100,000 (2006-07 school year) to 9.4/100,000 (2012-13 school year).

- Shingles is most common in individuals over 50 but can occur at any age.
- Cases are caused by reactivation of the virus which causes chickenpox (“wild type” strain).



This graph shows that the number of cases of shingles in children has declined over the years since vaccination for chickenpox was first required for school.

For additional Minnesota shingles data, see the “Varicella and Zoster” article in the 2013 Disease Control Newsletter, available on the MDH website at [www.health.state.mn.us/divs/idepc/newsletters/dcn/sum13/varicella.html](http://www.health.state.mn.us/divs/idepc/newsletters/dcn/sum13/varicella.html).