

Chickenpox and Shingles in Minnesota, 2017

Beginning in 2013, reporting of all cases of chickenpox has been required in Minnesota. This report is based on case reports submitted by schools, health care providers, and child care providers.

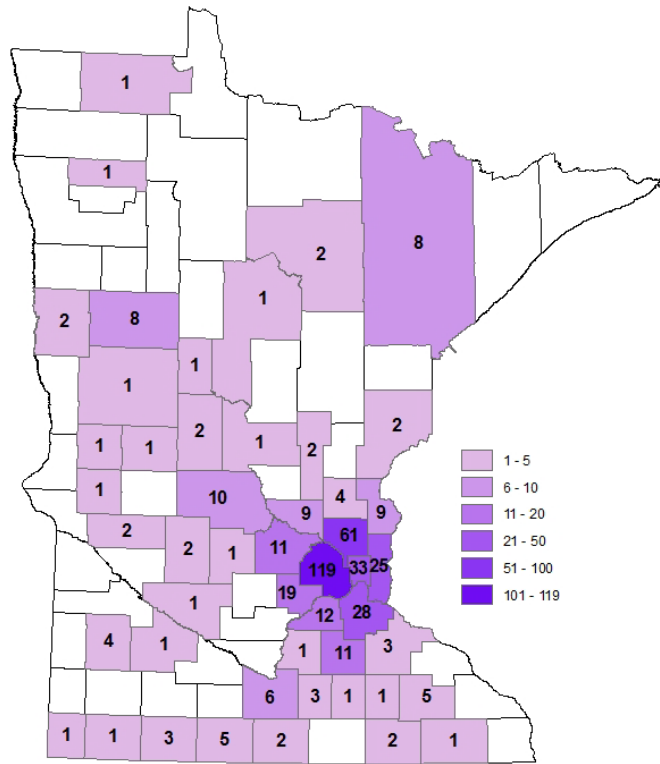
Chickenpox Case Reporting, January to December 2017

In 2017, the Minnesota Department of Health (MDH) received 824 reports of suspected chickenpox. Of these, 432 were identified as probable or confirmed cases and were used for statistics. The annual incidence of chickenpox in Minnesota was eight cases per 100,000 persons, the highest since 2013.

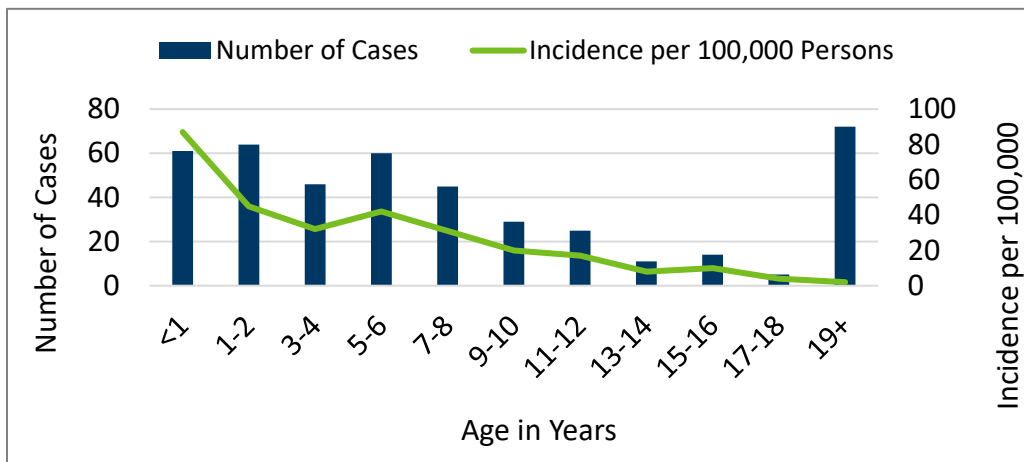
Minnesota varicella (chickenpox) cases by county, 2017

County	Cases	County	Cases	County	Cases	County	Cases
Aitkin	0	Fillmore	1	Martin	5	Rock	1
Anoka	61	Freeborn	0	McLeod	0	Roseau	1
Becker	8	Goodhue	3	Meeker	1	St. Louis	8
Beltrami	0	Grant	1	Mille Lacs	2	Scott	12
Benton	0	Hennepin	119	Morrison	1	Sherburne	9
Big Stone	0	Houston	0	Mower	2	Sibley	0
Blue Earth	6	Hubbard	0	Murray	0	Stearns	10
Brown	0	Isanti	4	Nicollet	0	Steele	1
Carlton	0	Itasca	2	Nobles	1	Stevens	1
Carver	19	Jackson	3	Norman	0	Swift	2
Cass	1	Kanabec	0	Olmsted	5	Todd	2
Chippewa	0	Kandiyohi	2	Otter Tail	1	Traverse	0
Chisago	9	Kittson	0	Pennington	1	Wabasha	0
Clay	2	Koochiching	0	Pine	2	Wadena	1
Clearwater	0	Lac Qui Parle	0	Pipestone	0	Waseca	3
Cook	0	Lake	0	Polk	0	Washington	25
Cottonwood	0	Lake of the Woods	0	Pope	0	Watonwan	0
Crow Wing	0	Le Sueur	1	Ramsey	33	Wilkin	0
Dakota	28	Lincoln	0	Red Lake	0	Winona	0
Dodge	1	Lyon	4	Redwood	1	Wright	11
Douglas	1	Mahnomen	0	Renville	1	Yellow Medicine	0
Faribault	2	Marshall	0	Rice	11	Total Statewide	432

Map of varicella cases by county, 2017

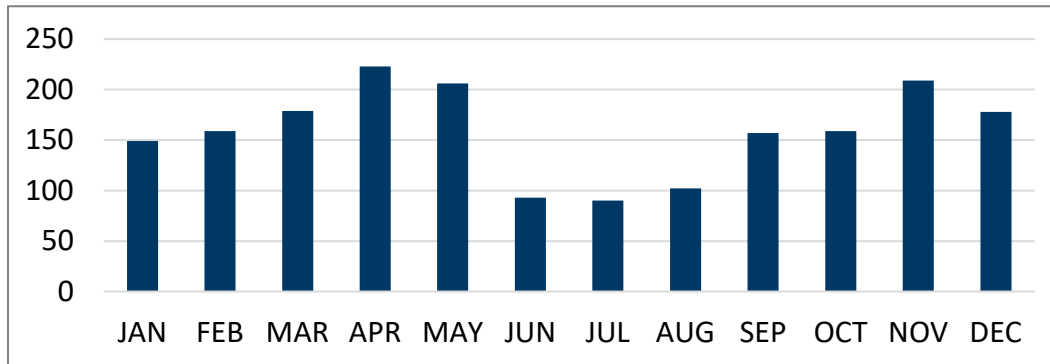


Varicella cases and incidence rate by age group, Minnesota 2017



This graph shows the number and the incidence of probable and confirmed cases by age in years. The incidence/100,000 persons (green line) was highest in children younger than 1 year old, who are too young to be vaccinated. The next peak occurs at age 5-6, the usual age for kindergarten entry. Although incidence was lowest in adults 18 and over, adults who get chickenpox often have more severe symptoms and may require hospitalization. For adults who are not sure that they are immune, MDH recommends consulting a health care provider about testing and/or vaccination. Immunity is especially important for adults who work in a health care or long term care facility, or for those who are considering becoming pregnant.

Minnesota varicella cases by month, 2013-2017

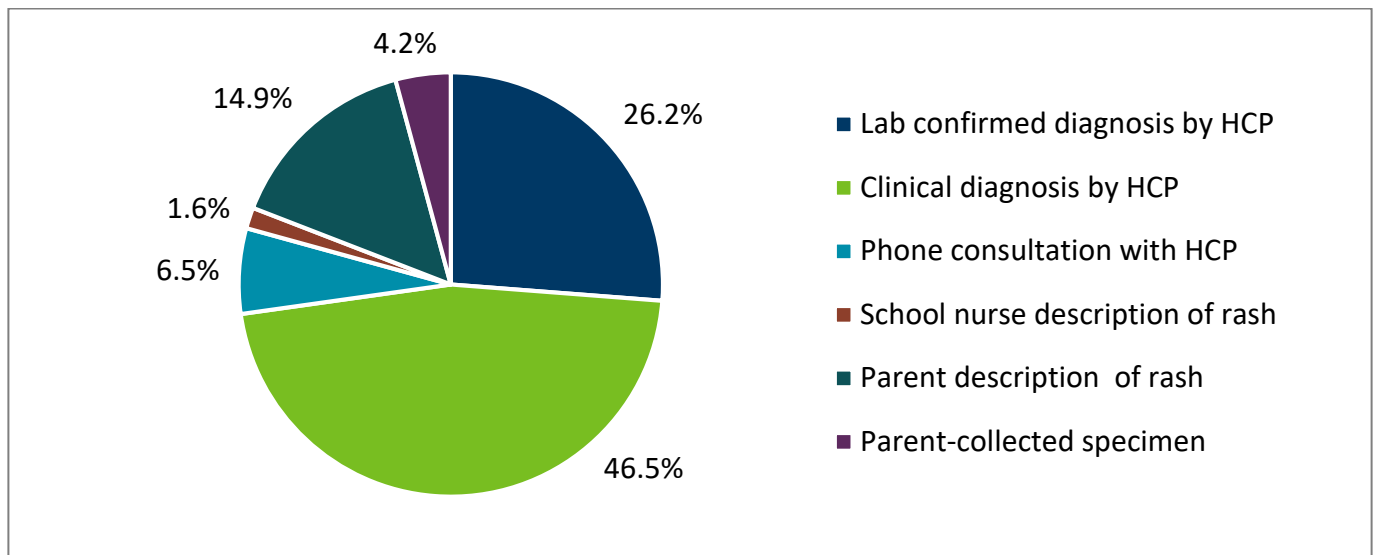


This graph shows that over the last five years, reported varicella cases have peaked between March and May, with another peak occurring in November. This suggests that exposures in school over time are important, and that summer and winter breaks help to reduce transmission. However, because schools are frequently the sole reporters of cases, the number occurring in summer may be underrepresented.

Identification of Cases Used for Statistics

MDH encourages laboratory testing for the virus that causes chickenpox. However, cases may be used for most statistical purposes if verified in other ways. Most commonly, MDH receives evidence of a clinical diagnosis made by a health care provider (HCP). If neither of these are available, cases may be included if symptoms can be verified by the case, parent/guardian, or other means (see below).

How varicella cases were identified in Minnesota, 2017

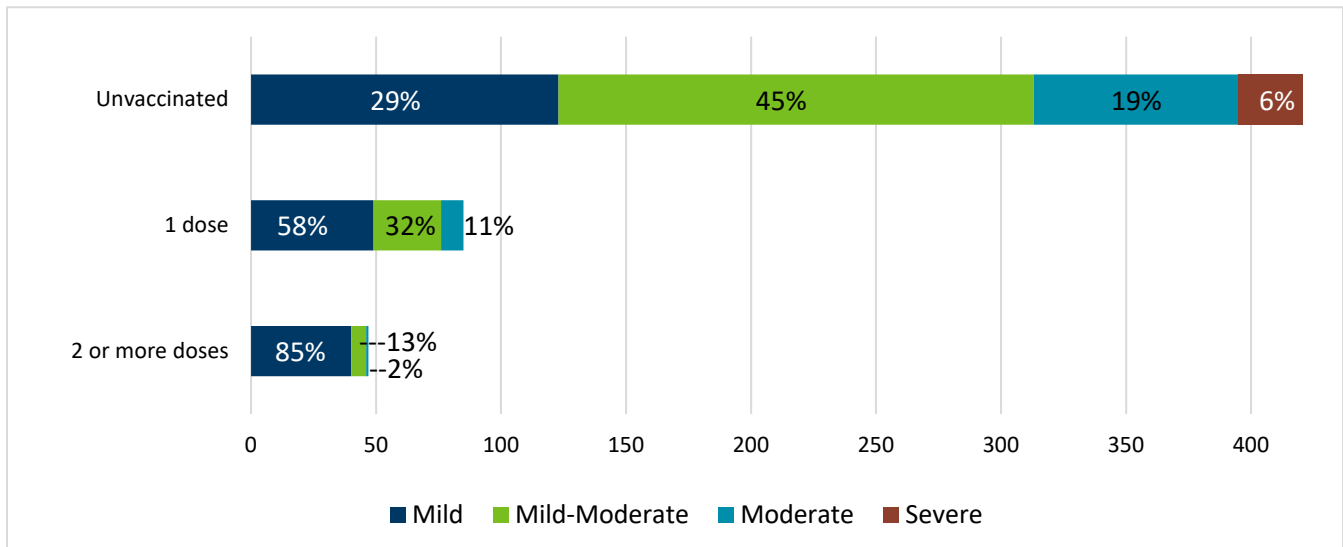


Cases reported to MDH were most commonly seen by health care providers (HCPs) who diagnosed them clinically (46.5%) or confirmed them by laboratory testing (26.2%), but the remaining 27.2% of cases did not visit HCPs. Most of those cases were initially reported to schools and childcares by parents or guardians of cases, and symptoms were described to MDH staff during follow-up phone interviews. MDH provides specimen collection kits and testing at no charge to parents and guardians of suspected cases during outbreaks at schools and child care centers.

Severity of Disease and the Effect of Vaccination

Cases with severe rash are more likely to have lesions in the mouth and throat, which can make swallowing uncomfortable and increase the risk of dehydration. Severe disease also increases the risk of other complications which may require hospitalization for treatment, such as secondary infections caused by bacteria. Vaccination is very effective at preventing chickenpox and nearly 100% effective at preventing severe cases.

Confirmed chickenpox cases by vaccination status and rash severity, Minnesota, 2013-2017 (N=554)



This graph shows that over the last five years, most of the confirmed cases in Minnesota occurred in unvaccinated individuals. When chickenpox occurred in vaccinated persons, it was mild in 85% of cases who had had 2 doses of vaccine and in 65% of cases who had had 1 dose of vaccine. Among unvaccinated cases, only 29% had mild chickenpox. The most severe cases of chickenpox occurred only in unvaccinated individuals.

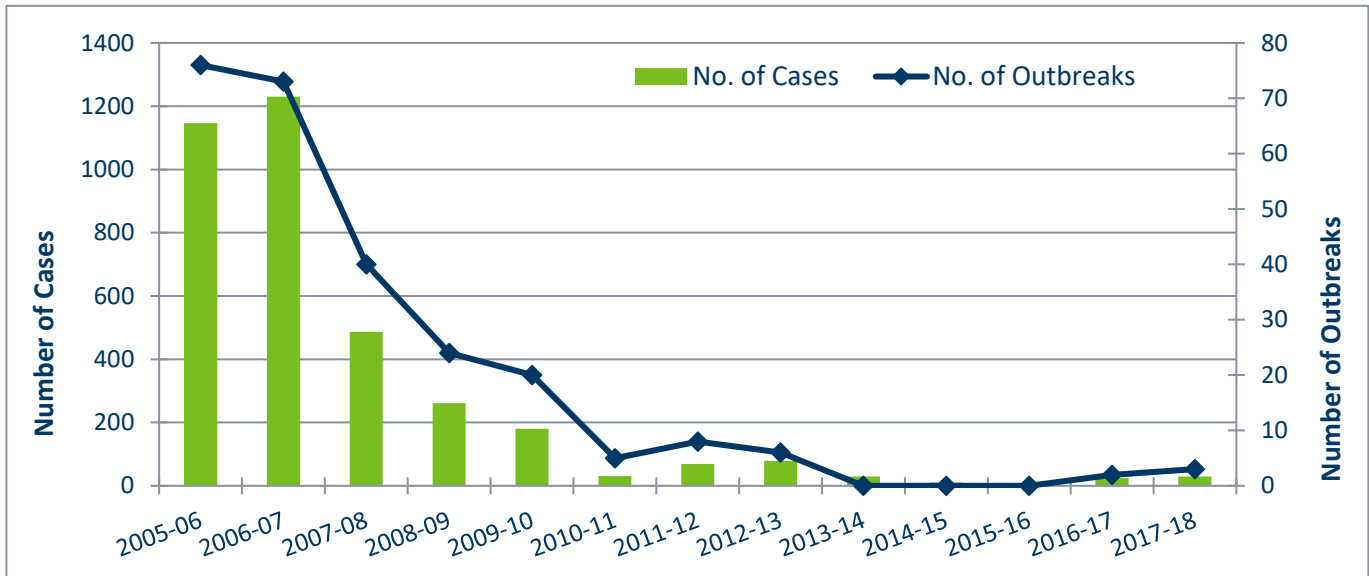
Hospitalized Cases of Chickenpox

During 2017, 10 individuals with varicella (chickenpox) were hospitalized, but no deaths were reported. Five had severe disease and/or complications including pneumonia, secondary bacterial infection of the skin and/or the bloodstream, and dehydration. Eight (80%) of the hospitalized individuals had never received the varicella vaccine. One individual had been vaccinated with one dose and was hospitalized as a precaution because of a weakened immune system. The vaccination history of the remaining individual, an adult, was unknown.

Chickenpox (Varicella) School Reporting

Schools are required to report individual cases of chickenpox, as well as outbreaks of five or more cases. During the 2017-18 school year, three schools reported outbreaks. Vaccination has dramatically reduced the number of outbreaks, and also influences their size. The two schools with large outbreaks reported that 80-85% of their students were vaccinated for varicella, significantly lower than the statewide average of 93%. In addition to outbreaks, Minnesota schools reported 111 cases of chickenpox which occurred singly or as part of clusters involving two to four students.

Reported chickenpox (varicella) outbreaks in Minnesota schools and number of students involved, by school year

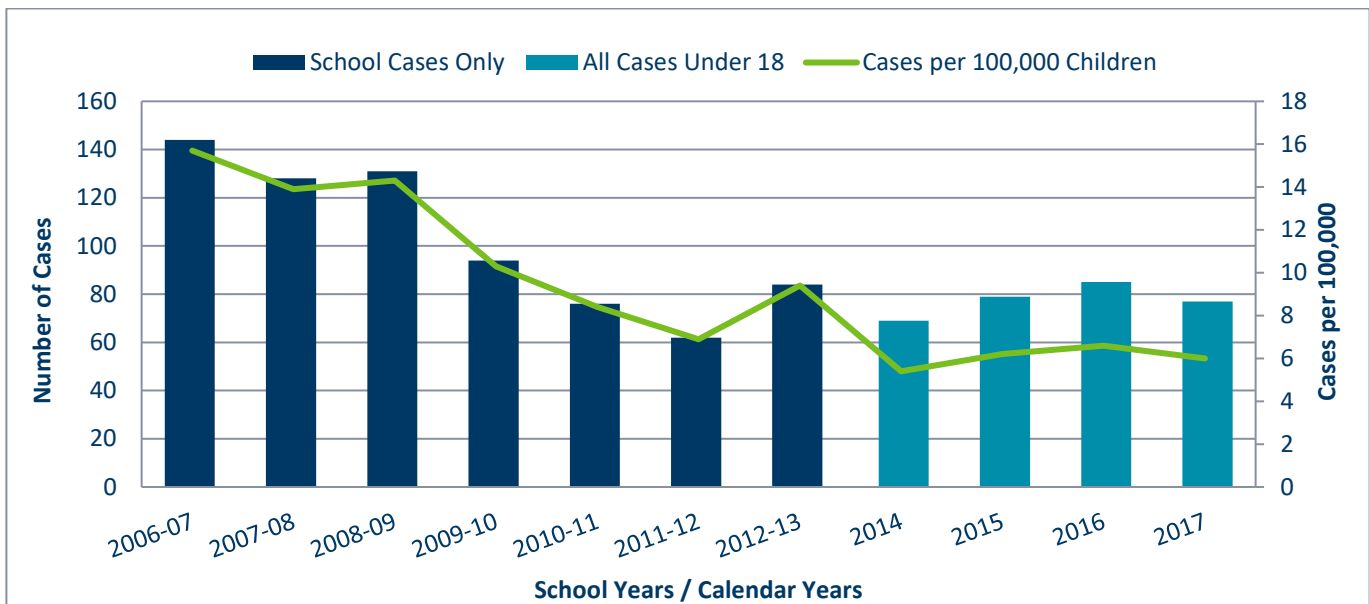


This graph shows that outbreaks of chickenpox in Minnesota schools have declined dramatically since requirements for vaccination against chickenpox were introduced in 2004 and in 2009-10.

Shingles (Zoster) in Minnesota Children Under 18 Years of Age

Shingles in children is uncommon. In 2017, 77 probable and confirmed cases were reported. Two known risk factors for childhood shingles are having had chickenpox at younger than 1 year of age and having a weakened immune system. However, most cases occur without a known triggering event. Starting in 2006, schools were asked to report cases of shingles in children.

Shingles (zoster) cases under age 18, Minnesota, 2006-2017



CHICKENPOX AND SHINGLES IN MINNESOTA, 2017

This graph shows that as more children were vaccinated for varicella, the number of cases of childhood shingles started to decline. Beginning in 2014, child care and health care providers were also asked to report cases of shingles in children. As a result the number of cases reported increased slightly, but the actual incidence of disease (green line on graph) has remained lower than it was in 2006-2008, when surveillance began.

Children who have had the chickenpox usually carry the wild type chickenpox virus, which can reactivate and cause shingles, occasionally in childhood, although it's more likely to happen as a person ages. Vaccinated children may carry the vaccine strain, but it is a weakened form of the chickenpox virus and is less likely to cause shingles, which appears to account for the decline in childhood cases. Our surveillance results support previously published research regarding the effect of vaccinating for chickenpox on shingles in children.

For more information on shingles in children and complicated cases of shingles in adults, see the "Varicella and Zoster" articles in the [Disease Control Newsletter](#) (www.health.state.mn.us/divs/idepc/newsletters/dcn/index.html).

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