

**Outbreak-Associated Cases of Varicella**  
Cases Reported January 1 through September 30, 2008



Investigation by:

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## Introduction

In Kansas, all children enrolled in kindergarten through fifth grade during the 2008-2009 school year are required to have either proof of vaccination against varicella or history of disease pursuant to the phased-in implementation of K.A.R. 28-1-20. In the 2007-2008 school year, this requirement applied to children in kindergarten through third grade. In addition, individual cases of varicella became reportable to the Kansas Department of Health and Environment in 2003. In January 2008, the Office of Surveillance and Epidemiology (OSE) began collecting information on outbreaks of varicella.

## Results

From January 1 to September 30, 671 cases of varicella were reported to OSE and 291 (43.4%) were outbreak related. Gender among the outbreak-associated cases was evenly distributed (Table 1). The majority of the cases were white. Fifty-eight percent of all cases were 'Not Hispanic/Latino' but information was missing on 27% of the cases. Most of the cases were aged 5 to 9 years of age, with a range of 3 months to 36 years (Figure 1). Teachers were among the cases in two of the outbreaks.

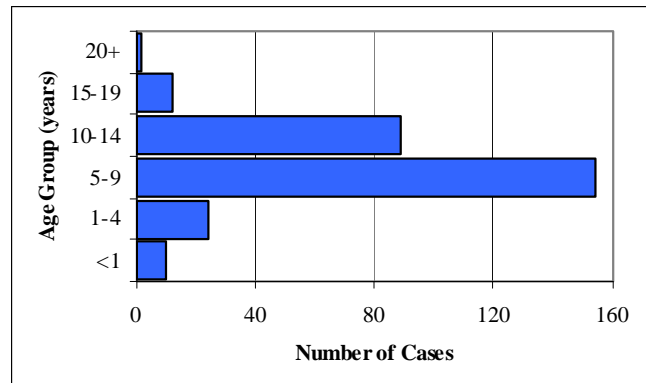
OSE identified eight new outbreaks after September 30 (Table 3). A total of 45 outbreaks have been recognized among children (daycare through high school) in 13 different counties. Over half of the outbreaks were located in four large urban counties. The number of cases associated with an outbreak ranged from 2 to 44 cases.

Seventy percent of the outbreak-associated cases were vaccinated with at least one dose of varicella vaccine (Table 2). Of those vaccinated, 91% had one dose of vaccine and only 5% had the recommended two doses of vaccine. The cases vaccinated with at least one dose of vaccine were more likely to have a mild disease compared to those who were not vaccinated (Figure 3). For the unvaccinated outbreak-associated cases, almost half had no reason listed for not being vaccinated.

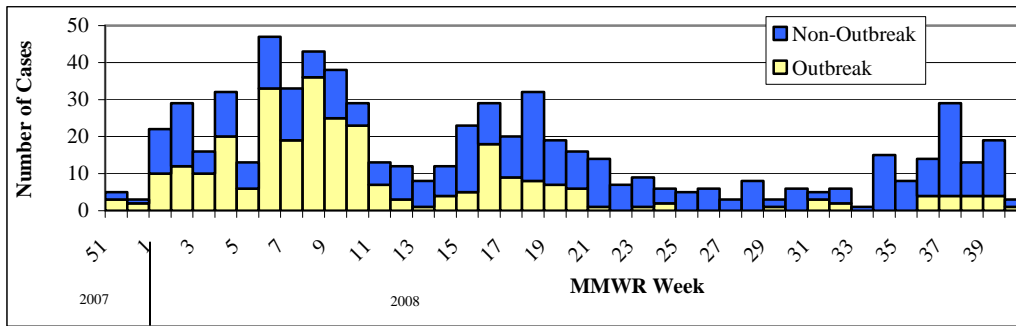
**Table 1: Demographics of Outbreak-associated Varicella Cases**

	n=291
<b>Gender</b>	<b>%</b>
Male	53.3
Female	45.7
Unknown	1.0
<b>Race</b>	<b>%</b>
Asian	1.7
Black	3.8
White	87.3
Multiple race	2.1
Unknown	5.1
<b>Ethnicity</b>	<b>%</b>
Hispanic/Latino	13.7
Not Hispanic/Latino	59.5
Unknown	26.8
<b>Age</b>	
Mean	8.6 years
Range	3 months - 36 years

**Figure 1: Age Groups of Outbreak-associated Varicella Cases**



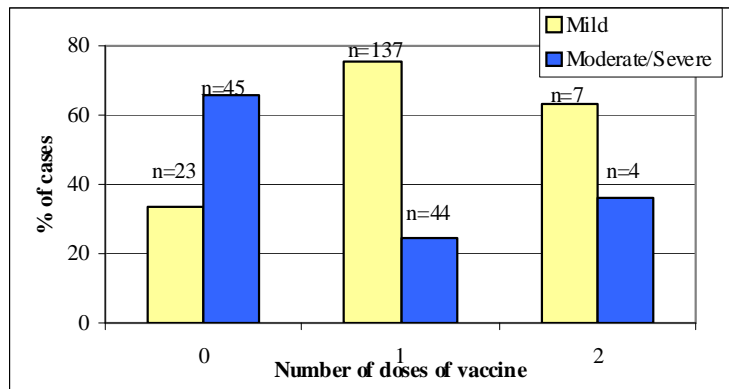
**Figure 2: Epidemiologic Curve of Varicella Cases Based on Onset Date**



**Table 2: Vaccination Information on Outbreak-associated Varicella Cases**

	n=291
<b>Vaccinated</b>	<b>%</b>
Yes	70.1
No	27.8
Unknown	2.1
<b># of Doses (if vaccinated)</b>	<b>%</b>
1	90.7
2	5.4
Unknown	3.9
<b>Reason for Not Vaccinated</b>	<b>%</b>
MD Diagnosis of Previous Disease	4.9
Parent Diagnosis of Previous Disease	8.6
Medical Contraindication	4.9
Parental Refusal	0.0
Religious Exemption	3.7
Other	17.3
Under Age for Vaccination	12.6
Unknown	48.1

**Figure 3: Severity of Disease and Number of Vaccinations of Outbreak-associated Varicella Cases**



**Table 3: Varicella Outbreaks in School Settings, Reported January 1 through June 30, 2008**

County	Onset date of 1st case	Onset date of most recent case	Total cases	Type of facility	Daycare	Grades Involved																					
						Preschool Pre-K	K	1	2	3	4	5	6	7	8	9	10	11	12	Unknown							
Cowley	12/15/2007	1/5/2008	3	Grade School								2	1														
Sedgwick	12/21/2007	1/24/2008	8	Grade School								4	4														
Sedgwick	1/3/2008	2/18/2008	5	Grade School/Junior High					2		2							1									
Ford	1/4/2008	1/8/2008	4	Grade School																						4	
Cowley	1/5/2008	1/19/2008	6	Grade School				1	1	1	2	1															
Cowley	1/5/2008	3/2/2008	10	Grade School					1	5	3																1
Cowley	1/7/2008	2/6/2008	5	Grade School				1	1	1	2																
Cowley	1/9/2008	1/22/2008	3	Grade School											2	1											
Johnson	1/10/2008	2/8/2008	5	Grade School											5												
Sedgwick	1/11/2008	3/9/2008	34	Grade School					4	3	12	8	4	1													2
Morris	1/19/2008	1/23/2008	2	Pre-school																							
Cowley	1/20/2008	2/6/2008	3	Pre-school																							
Sedgwick	1/21/2008	1/21/2008	2	Grade School									3														
Johnson	1/22/2008	2/11/2008	4	Junior High School														1		3							
Johnson	1/22/2008	4/18/2008	44	Grade School					10	5	17	8	4														
Johnson	1/27/2008	2/14/2008	2	Pre-school					2																		
Barton	1/28/2008	1/29/2008	2	High School																						2	
Johnson	2/4/2008	3/6/2008	5	Grade School					1				1	1	1												1
Sedgwick	2/9/2008	2/28/2008	14	Grade School/Junior High											10	1	2										1
Johnson	2/9/2008	2/16/2008	2	Junior High School													2										
Johnson	2/9/2008	2/22/2008	2	Junior High School														1		1							
Harvey	2/12/2008	2/28/2008	19	Daycare	19																						
Johnson	2/13/2008	2/16/2008	2	Grade School					2																		
Barton	2/13/2008	2/28/2008	2	Pre-school					2																		
Johnson	2/16/2008	2/17/2008	2	Grade School						2																	
Sedgwick	2/16/2008	2/28/2008	3	Grade School						2	1																
Meade	2/18/2008	3/3/2008	6	Grade School/Junior High					1	2					1		1										1
Reno	2/19/2008	3/16/2008	9	Grade School								7															2
Johnson	3/13/2008	4/9/2008	2	Grade School									1	1													
Johnson	3/23/2008	3/31/2008	2	Grade School									1	1													
Douglas	4/2/2008	4/14/2008	2	Grade School									1	1													
Wyandotte	4/2/2008	4/24/2008	4	Junior High School																							4
Wyandotte	4/3/2008	4/14/2008	2	Grade School													6										
Douglas	4/7/2008	4/21/2008	2	Grade School									2														
Wyandotte	4/7/2008	4/30/2008	10	Grade School						1																	9
Douglas	4/12/2008	4/21/2008	3	Grade School											3												
Wyandotte	4/19/2008	5/13/2008	4	Grade School									1		1												2
Sedgwick	4/20/2008		11	Grade School																							11
Johnson	4/23/2008	5/8/2008	6	Grade School/Junior High								2	1	2	1												
Johnson	5/2/2008	5/19/2008	8	Grade School							1		2	3	2												
Wyandotte	5/9/2008	05/12/2008	4	Junior High School																							2
Dickinson	6/5/2008	6/10/2008	3	Daycare	3																						
Dickinson	7/13/2008	8/6/2008	8	Daycare	6																						2
Douglas	9/2/2008	9/15/2008	4	Junior High School													2										2
Marshall	9/8/2008	9/24/2008	5	Grade School/Junior High						1				1	3												

Shaded grades indicate those grades that require either history of vaccination or disease. In the fall of 2008, the requirements for vaccination changed to include school attendees through 5<sup>th</sup> grade.

Shaded counties indicate new outbreaks since June 30, 2008