VARICELLA ACTIVE SURVEILLANCE PROJECT (VASP) 2005 SUMMARY ANTELOPE VALLEY, CALIFORNIA

BACKGROUND

While usually a mild childhood disease, varicella tends to be more severe in adults, neonates, and immuno-compromised persons and has the capacity to lead to complications that may include pneumonia, encephalitis, and sometimes death. Prior to 1995, about 4 million cases of varicella occurred annually in the US. Of these cases, approximately 11,000 were hospitalized and 100 died (CDC, unpublished data, 1999). When the varicella vaccine was approved for use in 1995, the Los Angeles County (LAC) Department of Health Services (DHS) and the Center for Disease Control and Prevention (CDC) entered into a cooperative agreement to establish active surveillance for varicella in Antelope Valley. The resulting program, the Varicella Active Surveillance Project (VASP), has collected baseline data on varicella incidence, outbreaks, and vaccine coverage since 1995. In 2000, surveillance was enhanced with the addition of herpes zoster (HZ)—for children and adolescents 19 years of age and younger, case interviews and chart reviews have been systematically completed since 2000. As a consequence, the collection of baseline adult HZ and PHN incidence will be an important public health priority. VASP will be collecting detailed case history on all reported cases of HZ and has also added surveillance sites that will better capture adult HZ with the addition of all skilled nursing facilities, dermatology practices, pain management clinics, and additional internal medicine practices. It will be important to track the impact of this new vaccine with regards to its impact on morbidity and hospitalization due to adult HZ.

METHODS

Population Demographics: The Antelope Valley (AV) is a well-defined geographic area, covering approximately 2,000 square miles in the northern eastern section of LAC and includes over 35 communities. In 2005, there were an estimated 350,000 residents: 51% White, 30% Hispanic, 18% African American, and 4% Asian.

Case Definitions: For the purposes of our surveillance the following definitions were employed.

- *Varicella case*—has illness with acute onset of a diffuse papulovesicular rash without other known cause diagnosed or reported by a healthcare provider, school nurse, or parents/guardians.
- *Breakthrough varicella case*—has had documented varicella vaccine at least 42 days prior to onset of varicella.
- *HZ case*—has a unilateral macular-papular or vesicular rash, involving at least one dermatome, diagnosed by a licensed healthcare provider.

Each HZ or varicella case with a completed case interview and/or chart review that validates the case definition and resides within the surveillance area is considered a *confirmed case*. If a provider, reports a HZ or varicella case that cannot be validated with case interview or chart review it is considered a *probable case*.

Data Collection: In 2005, 286 surveillance sites participated VASP's project. Sites included: public and private schools, day care centers, public health clinics, pain management clinics, long term care facilities, adult day care, hospitals, private practice physicians (pediatrics, family practice, neurology, dermatology, and internal medicine), health maintenance organizations and correctional facilities. All reporting sites submitted a "Varicella/Zoster Surveillance Case Log" to VASP on a biweekly basis and applicable reporting sites submitted a "Varicella Vaccine Log" on a monthly basis—this reports all administered varicella doses administered that month.

A member of VASP conducted a structured telephone interview with each case or their parent/guardian. This provided detailed demographic, clinical, and health impact data, as well as identified any additional cases or susceptible contacts within the household. Previous varicella vaccine exposure was documented by one of three methods: provider documentation, vaccine card, and school vaccine records. Data entry

for varicella and HZ was entered into an MS Access database and analysis performed with SAS 9.1. Completeness of reporting was estimated using capture-recapture methods.

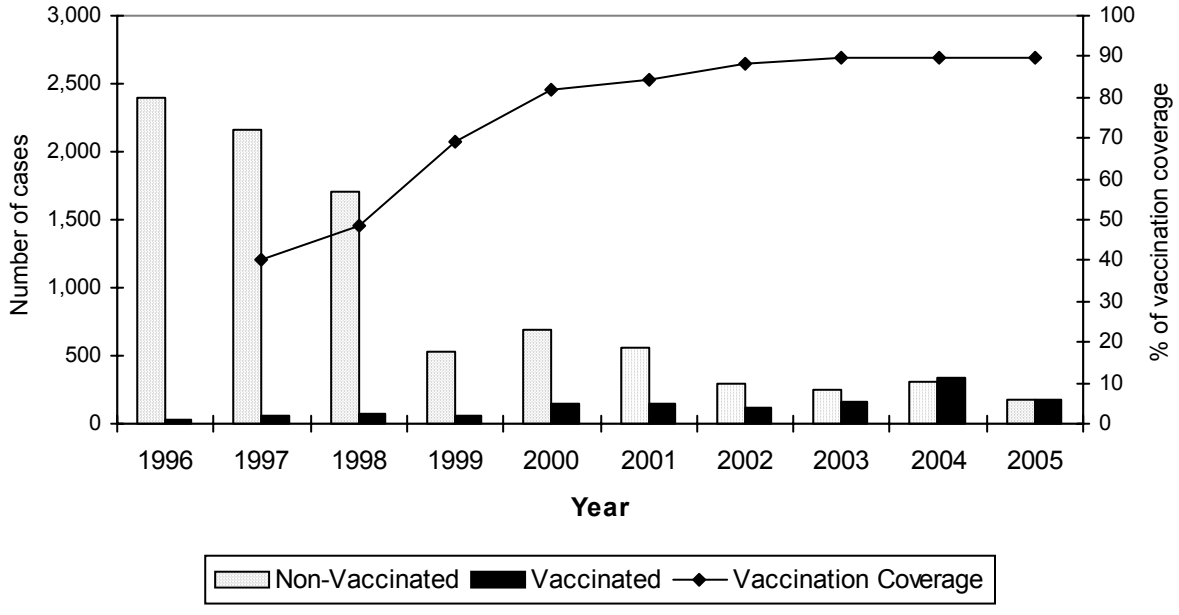
RESULTS

Varicella Disease: Compared to the number of verified varicella cases reported in 1995 (2,934 cases), cases declined by 87% in 2005 (355 cases). This corresponds to an overall decline in varicella incidence from 10.3 per 1,000 persons in 1995 to 1.0 per 1,000 persons in 2005. Looking specifically at 2001 through 2003, the overall varicella incidence remained relatively unchanged (1.2 per 1,000 persons); however, in 2004, varicella incidence increased to 1.8 cases per 1,000 persons and then declined to 1.0 per 1,000 in 2005. Since 1995, the 5-9 year-old age group has had the highest varicella incidence of any age group. The 10-14 year old age group has shown the second highest rates with 3.7 per 1000 persons in 2005. There has been a consistent trend of increasing age of varicella cases—the mean age increased from 9.6 to 10.5 years in 2004 and 2005, respectively.

Since 1995, the hospitalizations from varicella infection have significantly declined. In 1995, 12 hospitalizations due to varicella were reported. In contrast, from 2000 to 2005, between zero to three hospitalizations were documented annually—no hospitalizations due to varicella were reported in 2005. The number of complications after varicella infection also was significantly less in 2005—only 1 (0.28%) case reported complications (otitis media), compared to 17 (4.2%) and 22 (3.4%) cases with complications reported in 2003 and 2004, respectively.

The proportion of reported and verified breakthrough varicella cases has steadily increased since initiating this project from 1% in 1996 to nearly 49% of cases in 2005 (Figure 1). Yet the cumulative breakthrough cases as a percentage of the cumulative vaccine doses remained almost unchanged with 1.97% and 2.0% reported in 2004 and 2005. The median age of breakthrough cases has steadily increased; the median age was 5.7 and 8 years in 2000 and 2005, respectively.

Figure 1. Non-Vaccinated versus Vaccinated (Breakthrough) Cases and Vaccination Coverage by Year



The number of documented varicella outbreaks has shown a consistent decline from 81 reported in 1995 to 7 in 2003. However, in 2004, the number of documented outbreaks increased dramatically to 25. In 2005, the number returned to a level similar to 2003 with eight documented outbreaks (104 cases). Of these eight outbreaks, six occurred in elementary schools and two middle schools. These outbreaks had an average of 13 cases per outbreak. The mean age of the varicella cases was 11.3 years; 48% of the cases were classified as breakthrough.

HZ Surveillance Among Those Younger Than 20 Years of Age: Both verified HZ cases and HZ incidence rates for children and adolescents younger than 20 years of age have steadily decreased during the past six years of surveillance. The overall incidence among those younger than 20 years of age was 67 per 100,000 persons in 2000 then decreased to 49 per 100,000 in 2005. The decline in HZ incidence has been even more significant among those younger than 10 years of age—from 76 per 100,000 persons in 2000 to 27.8 per 100,000 in 2005. Overall, most cases have been older than age 10—in 2005, 42.8% reported from the 15-19 year old age group, 33.9% from the 10-14 year old age group, the median age was 15 years. Increasingly, reported cases of HZ have had a natural history of varicella infection compared to those with a history of previous vaccination. In 2005, 78% (n=44) of the HZ cases had a positive history of varicella, 12.5% (n=7) had a history of vaccination, 3.5% (n=2) recalled both, and 5.4% (n=3) could not be documented. There were no hospitalizations in children and adolescents due to HZ in 2005.

Over the past five years, an average of 341 cases per year of adult HZ (aged 20 years and older) were reported to VASP. Reported adult cases were not verified by medical chart review or case interview. In 2005, 366 cases were reported with a mean age of 56.6 years. Racial data was not consistently reported for this group. In 2005, the highest age-specific incidence was noted among those 70 years and older with 4.7 cases per 1,000 persons.

DISCUSSION

Over the length of the study, there has been a rising proportion of reported varicella that can be classified as breakthrough varicella disease. In more recent years, the proportion has increased from 15% in 2000 to 49% in 2005. This increase of breakthrough varicella in both outbreak and non-outbreak settings provides supports for the recent Advisory Committee on Immunization Practices (ACIP) discussions for the need for a second varicella vaccine booster dose for elimination purposes.1 The timing of the booster varicella dose remains under discussion by ACIP at this time. However, the ACIP has recommended that, in varicella outbreak situations, a second varicella dose should be provided to individuals who have been previously vaccinated. The implementation of this recommendation will be a challenge and is under discussion with the Immunization Programs at both the State of California and LAC.

The consistent documentation that HZ incidence has remained unchanged in the under 20 group, and has significantly declined among those the under 10 years old, should allay fears that varicella vaccination might actually *increase* the risk of future HZ in children. These findings have been summarized in a manuscript describing the epidemiology of HZ in pediatrics and adolescents in the Antelope Valley. The manuscript has been submitted for consideration to the *Journal of Infectious Disease*.

In 2005, much effort has been put into the preparation of an adult HZ case report form and strengthening surveillance by increasing methods that will capture adult HZ. This has lead to increased outreach to skilled nursing facilities, dermatology, internal medicine and to pain management clinics by VASP. In 2006, VASP plans to implement the new adult HZ case report and follow-up on individual HZ cases that are experiencing post-herpetic neuralgia. We hope obtain accurate baseline incidence rates prior to the implementation of the adult HZ vaccine.

1 CDC. Prevention of Varicella—Provisional Updated ACIP Recommendations for Varicella Vaccine Use. Available at: www.cdc.gov/nip/vaccine/varicella/varicella_acip_recs.pdf, last accessed June 1, 2006.

ONGOING RESEARCH PROJECTS

- **Knowledge, Attitudes and Practices (KAP) of Healthcare Providers Regarding Varicella Vaccination.** Surveys were sent to all identified pediatric and family practice physicians, physician assistants, and nurse practitioners in the Antelope Valley to assess their knowledge, attitudes, and practices regarding varicella vaccination 10 years after its introduction. Questionnaire data has now been completed and data analysis is in progress.

Validity of Self-Reported Varicella History among Women in an Antenatal Clinic Population. The objectives of the project are to assess overall varicella seroprevalence among women in an antenatal clinic population, assess the validity of self-reported varicella disease history compared with varicella-zoster virus (IgG) antibody results, and assess follow-up vaccination rate among seronegative enrollees. The project was conducted in collaboration with both CDC's Herpes Viruses Team and Varicella Zoster Virus laboratory. Overall seropositive rate of enrollees was 97.2% (95% CI: 95.4-98.4); this rate was comparable to NHANES III rate of 96.3% (95% CI: 95.7-96.9). The positive predictive value (PPV) of self-reported varicella disease history among enrollees was 99.7% (95% CI: 98.2-100) and the negative predictive value (NPV) of a negative or uncertain disease history was 6.3% (95% CI: 3.5-10.4). Study findings indicate that self-report history of varicella continues to be a strong predictor of positive serology (varicella immunity) while negative or uncertain history is still a poor predictor of negative serology. A poster presentation was completed at the 40th National Immunization conference in Atlanta summarizing the findings from VASP in the Antelope Valley. A manuscript summarizing the combined findings from VASP West Philadelphia and Antelope Valley will be submitted in 2006.

COMMUNITY-ACQUIRED DISEASE OUTBREAKS

ABSTRACT

- In 2004, 170 community-acquired disease outbreaks accounted for 1907 cases of illness (Figure 1).
- Schools were the most common setting of community-acquired outbreaks (58%).

DATA

Disease outbreaks are defined as clusters of illness that occur in a similar time or place, or unusual numbers of disease cases above baseline in a specified area. Depending on the nature of the outbreak, investigation responsibility is maintained by either ACDC or Community Health Services with ACDC providing consultation as needed. The outbreaks reported in this section do not include outbreaks associated with food (see Foodborne Outbreaks section) or facilities where medical care is provided (see Healthcare Associated Outbreaks section).

Most reported community-acquired outbreaks in LAC were due to varicella, followed by ectoparasites (scabies and pediculosis) comprising 35% and 21% of all community-acquired outbreaks respectively. Third most common was gastroenteritis (GE) outbreaks of various causes, accounting for 16% of all outbreaks. Collectively these disease categories accounted for 72% of all community-acquired outbreaks (Figure 2, Table 1).

The outbreaks with the most cases tended to be due to 11 norovirus outbreaks reported in 2004, with a mean size of 26 cases per outbreak — most likely reflecting how easily this agent can be transmitted from person-to-person. (Table 1)

The most common settings for illness transmission were schools (elementary schools, middle schools, and high schools) accounting for 58% of all outbreaks. Settings with young children in daycare or pre-school accounted for an additional 25%. Group and retirement home settings were the third most common site of the community-acquired outbreaks reported in 2004 with 13% (Figure 3). Even with the increase in overall frequency of outbreaks in 2004, the percentage breakdown by setting remained similar to past years.

Figure 1
Community Acquired Outbreaks
Number of Persons Affected
LAC, 1998–2004

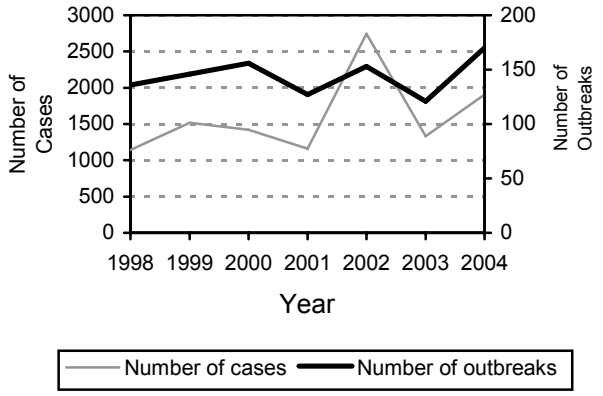
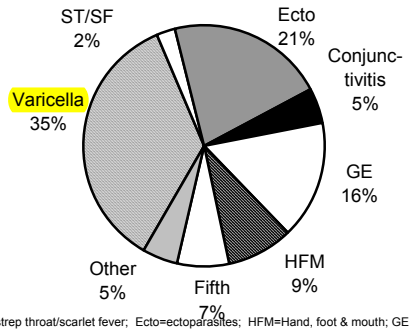
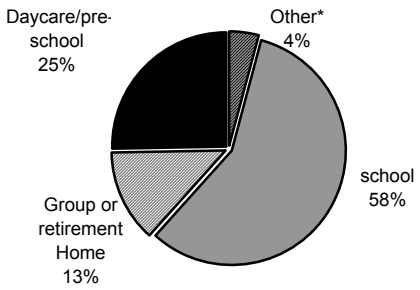


Figure 2
Community-Acquired Outbreaks by Type of Disease*
LAC, 2004 (N=170)



ST/SF=strep throat/scarlet fever; Ecto=ectoparasites; HFM=Hand, foot & mouth; GE - Gastroentestinal; other- ringworm , unknown rash, Hepatitis B, viral meningitis, and staph.

Figure 3
Community Outbreaks by Setting
LAC, 2004 (N=170)



*Other includes households (2), juve camp (3) , and worksite (2)

Table 1. Community-Acquired Outbreaks by Disease — LAC, 2004

Disease	No. of outbreaks	No. of cases	Cases per outbreak (average)	Cases per outbreak (range)
Varicella	60	698	12	4–44
Scarlet fever/strep throat	4	32	8	3–12
Scabies	11	63	6	2–23
Hand, foot & mouth disease	15	102	7	2–13
Pediculosis	25	289	12	3–25
GE illness - Norovirus	11	284	26	8–82
GE illness - Shigella	3	18	10	4–10
GE illness - Salmonella	2	9	15	2–7
GE illness - Giardia	1	3	3	3
GE illness - Unknown	10	156	16	9–35
Fifth disease	12	116	10	2–27
Conjunctivitis	8	81	10	2–32
Other*	8	56	7	3–14
Total	**170**	**1,907**	**11**	**2–82**

* Includes: ringworm (3), unknown rash illness (2), Hepatitis B (1), viral meningitis (1) and staph (1).

Table 2. Community-Acquired Outbreaks by Disease and Setting — LAC, 2004

Disease	Group Home[a]	School[b]	Preschool or Daycare	Other[c]	TOTAL
Varicella	1	57	2	0	**60**
Scarlet fever/strep throat	0	3	1	0	**4**
Scabies	10	0	0	1	**11**
Hand, foot & mouth disease	0	2	13	0	**15**
Pediculosis	1	20	4	0	**25**
GE illness - Norovirus	8	0	2	1	**11**
GE illness - Shigella	0	0	1	2	**3**
GE illness - Salmonella	0	0	1	1	**2**
GE illness - Giardia	0	0	1	0	**1**
GE illness - Unknown	0	1	7	2	**10**
Fifth disease (Parvovirus)	0	10	2	0	**12**
Conjunctivitis	0	4	4	0	**8**
Other	2	1	5	0	**8**
Total	**22**	**98**	**43**	**7**	**170**

[a] Includes centers for retirement, rehabilitation and the developmentally disabled.
[b] Includes elementary, middle and high schools. No high schools reported outbreaks in 2003.
[c] Includes jails, workplaces, universities/colleges, camp and private homes.

COMMENTS

The number of reported outbreaks in 2004 increased to a seven year high; a 40% increase from 2003 – the lowest mark in the same 7 year time frame. Diseases which contributed to 2004 increase from the previous year were varicella (increasing from 28 to 60 outbreaks), Hand foot and mouth disease (increasing from 8 to 15 outbreaks), and Fifth (Parvovirus) disease (up from 4 to 12 outbreaks). Varicella

remained the most common cause of community-acquired outbreaks in LAC since 1999. (see Varicella Project special report section) In 2004, twenty varicella outbreaks were identified in the Antelope Valley Health District alone (within SPA 1), where a varicella active surveillance project is in place.

Outbreaks were reported from all 8 SPAs (Figure 4). SPA 3 which comprises the San Gabriel Valley clearly had the most outbreaks for 2004.

The chart of community-acquired outbreaks by onset month (Figure 5) shows a bimodal distribution. Months with outbreak peaks tend to be a few months into the traditional school year and a few months after Christmas break. These peaks are predominately caused by varicella and pediculosis. Gastroenteritis outbreaks occurred more evenly throughout 2004.

Community-acquired outbreaks tended to occur in settings associated with two age-specific groups. The clear majority of outbreaks were in school and pre-school settings among children. Varicella, strep throat/scarlet fever and pediculosis (head lice) are most common in this young group. Illnesses in this age group account for the increase in outbreaks from 94 in 2003 to 141 in 2004. The second age group affected by outbreaks is in the older population associated with group-home settings (n=22). In this age category, scabies and norovirus are the most common etiologic agents (Table 2).

Figure 4
Community Outbreaks by SPA
LAC, 2004 (N=170)

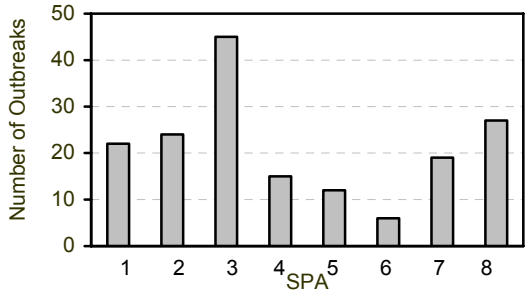
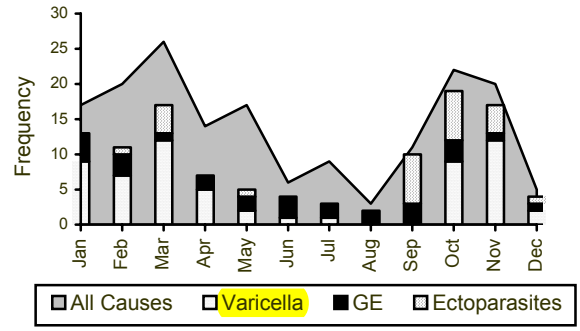


Figure 5
Community Outbreaks by Selected Diseases and Onset Month
LAC, 2004 (N=170)

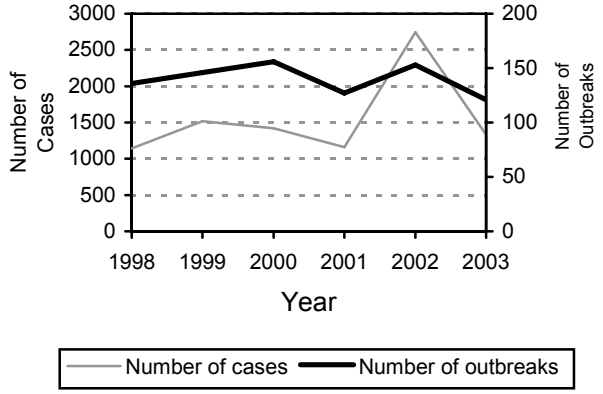


COMMUNITY-ACQUIRED DISEASE OUTBREAKS

ABSTRACT

- In 2003, 121 community-acquired disease outbreaks accounted for 1332 cases of illness (Figure 1).
- Schools were the most common setting of community-acquired outbreaks (59%).

Figure 1
Community Acquired Outbreaks
Number of Persons Affected
LAC, 1998–2003



DATA

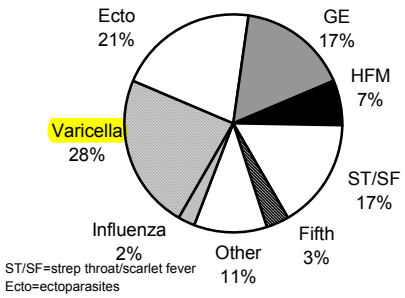
Disease outbreaks are defined as clusters of illness that occur in a similar time or place, or unusual numbers of disease cases above baseline in a specified area. Depending on the nature of the outbreak, investigation responsibility is maintained by either ACDC or by Community Health Services, with ACDC providing consultation as needed. The community outbreaks reported in this section do not include outbreaks associated with food (see Foodborne Outbreaks) or facilities where medical care is provided (see Healthcare Associated Outbreaks).

Most reported community outbreaks in LAC were due to varicella, followed by ectoparasites (scabies and pediculosis) comprising 23% and 21% of all community outbreaks respectively. Third most common were strep throat/strep and gastroenteritis (GE) outbreaks of various causes, each accounting for 17% of all outbreaks. Collectively these diseases accounted for 77% of all community outbreaks (Figure 2, Table 1).

The most common settings for illness transmission were schools—elementary (n=68) and middle schools (n=3), accounting for 59% of all outbreaks. Settings with young children in daycare or pre-school accounted for 19% (n=23) of all outbreaks. Group and retirement home settings were the third most common site of the community outbreaks reported in 2003 with 11% (Figure 3).

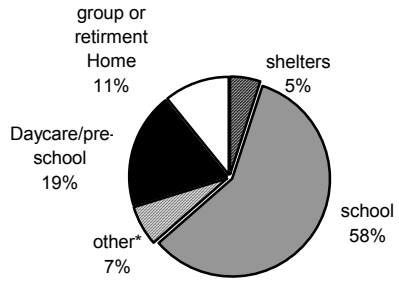
The outbreaks with the most cases tended to be due to norovirus and influenza—most likely reflecting how easily these etiologies can be transmitted from person-to-person. While the overall number of varicella outbreaks went down from 2002 to 2003, the size of the outbreaks that occurred remained the same with 10 cases per outbreak.

Figure 2
Outbreaks by Type of Disease*
LAC, 2003 (N=121)



ST/SF=strep throat/scarlet fever
Ecto=ectoparasites
HFM=Hand, foot & mouth

Figure 3
Community Outbreaks by Setting
LAC, 2003 (N=121)



*other includes tutoring group (1), households (1), camp (1), facility (2), and jails (2)

Table 1. Community Outbreaks by Disease—LAC, 2003[a]

Disease	No. of outbreaks	No. of cases	Cases per outbreak (average)	Cases per outbreak (range)
Varicella	28	268	10	4–28
Scarlet fever/strep throat	20	196	10	2–28
Scabies	12	71	6	2–23
Hand, foot & mouth disease	8	43	5	2–11
Pediculosis	13	101	8	3–26
GE illness - Norovirus	8	209	26	6–61
GE illness - Shigella	3	30	10	5–19
GE illness – Other, unknown	9	134	15	4–38
Fifth disease	4	46	12	7–17
Influenza	3	94	31	22–37
Other[b]	13	140	11	3–22
Total	**121**	**1,332**	**11**	**2–61**

[a] Excludes foodborne outbreaks.
[b] Includes conjunctivitis, herpes simplex, ringworm, unknown respiratory illness and unknown rash.

Table 2. Community Outbreaks: Disease by Setting—LAC, 2003

Disease	Group Home[a]	School[b]	Preschool or Daycare	Shelter	Other[c]	TOTAL
Varicella	0	25	0	0	3	**28**
Scarlet fever/strep throat	0	15	5	0	0	**20**
Scabies	5	0	4	1	2	**12**
Hand, foot & mouth disease	0	3	5	0	0	**8**
Pediculosis	2	9	0	1	1	**13**
GE illness – Norovirus	4	2	1	1	0	**8**
GE illness – Shigella	1	1	0	1	0	**3**
GE illness – Undetermined	0	1	4	2	2	**9**
Fifth disease	0	4	0	0	0	**4**
Influenza	0	2	1	0	0	**3**
Other	1	9	3	0	0	**13**
Total	**13**	**71**	**23**	**6**	**8**	**121**

[a] Includes centers for retirement, rehabilitation and the developmentally disabled.
[b] Includes elementary, middle and high schools. No high schools reported outbreaks in 2003.
[c] Includes jails, workplaces, universities/colleges, camp and private homes.

COMMENTS

In contrast to 2002 with a reported 153 outbreaks, the year 2003 had the lowest level of outbreaks reported in the last 5 years. The decrease in outbreaks from the previous year occurred across the diseases categories. Varicella had the most noticeable decrease from 43 outbreaks to 28—a 35% drop. Varicella remained the most common cause of community-acquired outbreaks in LAC since 1999. Overall GE illness outbreaks went down, yet increase lab capabilities allowed improved diagnosing abilities and more GE outbreaks were recognized as norovirus. Only the disease category of scarlet fever/strep throat increased from the previous year—16 to 20 reported outbreaks.

Community-based outbreaks tended to occur in settings associated two age-specific groups. The clear majority was in pre-teen aged children in elementary schools (n=71) or in pre-school/daycare settings

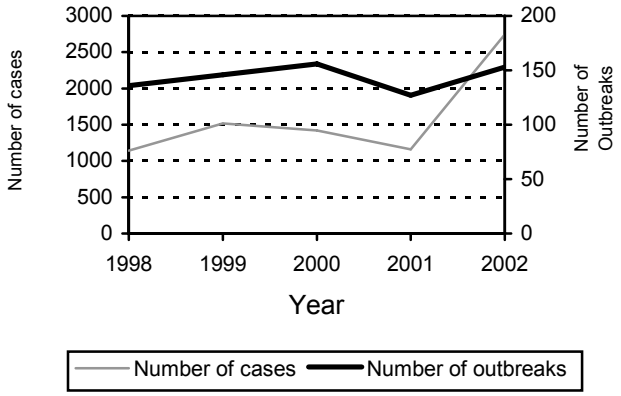
(n=23). Varicella, strep throat/scarlet fever and pediculosis (head lice) are most common in this young group. The second group is in the older population in group-home settings (n=13). In this age category, scabies and norovirus are most common (Table 2). The incidence of norovirus has increased in the last two years with additional reports from long-term medical care institutions (see Healthcare Associated Outbreaks and Special Reports).

COMMUNITY-ACQUIRED DISEASE OUTBREAKS

DISEASE ABSTRACT

- In 2002, 29 of 182 (16%) reported and investigated community-acquired outbreaks were foodborne (see Foodborne Outbreak section). The remaining 153 community outbreaks accounted for 2,745 cases of illness.
- Schools were the most common setting of community-acquired outbreaks (54%).

Figure 1
Community Acquired Outbreaks
Number of Persons Affected
LAC, 1998–2002



DATA

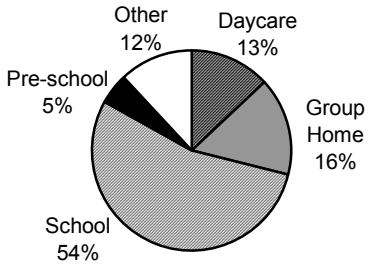
Disease outbreaks are defined as clusters of illness that occur in a similar time or place, or unusual numbers of disease cases above baseline in a specified area. Depending on the nature of the outbreak, investigation responsibility is maintained by either ACDC or by Community Health Services, with ACDC providing consultation as needed.

Most reported community outbreaks in LAC were due to varicella (28%), followed by ectoparasites (scabies and pediculosis) and gastroenteritis (GE), each of these two diseases account for 18% of all outbreaks (Figure 2).

During 2002, methicillin-resistant *Staphylococcus aureus* (MRSA) and varicella were diseases with the highest number of total cases. The two diseases with the highest number of cases per outbreak were MRSA and influenza (Table 1).

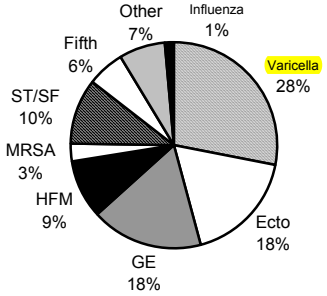
The most common settings for illness transmission were schools (elementary through high school), accounting for 54%, and group homes (16%, Figure 3).

Figure 3
Community Outbreaks by Setting*
LAC, 2002 (N=153)



*Excludes foodborne outbreaks

Figure 2
Outbreaks by Type of Disease*
LAC, 2002 (N=153)



ST/SF=strep throat/scarlet fever
Ecto=ectoparasites
HFM=Hand, foot & mouth
*Excludes foodborne outbreaks

Table 1. Community Outbreaks by Disease—LAC, 2002[a]

Disease	No. of outbreaks	No. of cases	Cases per outbreak (average)	Cases per outbreak (range)
Varicella	43	412	10	3–29
Scarlet fever/strep throat	16	138	5	2–30
Scabies	16	88	6	2–9
Hand, foot & mouth disease	14	72	5	2–12
Pediculosis	11	92	8	2–22
GE illness - Norovirus	5	87	17	7–30
GE illness - Shigella	6	72	12	5–22
GE illness - Undetermined	16	328	21	5–62
Fifth disease	9	115	13	2–30
MRSA	4	938	235	2–920
Influenza	2	240	120	53–187
Other[b]	11	163	15	2–108
Total	**153**	**2,745**	**18 (avg.)**	**--**

[a] Excludes foodborne outbreaks.
[b] Includes conjunctivitis, herpes simplex, impetigo, psittacosis, ringworm, rotavirus, typhoid fever, unknown respiratory illness and unknown rash.

Table 2. Community Outbreaks: Disease by Setting—LAC, 2002

Disease	Group Home[a]	School[b]	Preschool	Daycare	Other[c]	TOTAL
Varicella	2	38	0	1	2	**43**
Scarlet fever/strep throat	0	13	0	3	0	**16**
Scabies	10	1	0	2	3	**16**
Hand, foot & mouth disease	0	3	3	7	1	**14**
Pediculosis	4	5	1	1	0	**11**
GE illness – Norovirus	4	0	0	0	1	**5**
GE illness – Shigella	1	1	0	0	4	**6**
GE illness – Undetermined	2	7	4	2	1	**16**
Fifth disease	0	8	0	1	0	**9**
MRSA	1	0	0	0	3	**4**
Influenza	0	2	0	0	0	**2**
Other	0	4	0	3	4	**11**
Total	**24**	**82**	**8**	**20**	**19**	**153**

[a] Includes centers for retirement, rehabilitation and the developmentally disabled
[b] Includes elementary, middle and high schools.
[c] Includes jails, workplaces, universities/colleges and private homes.

COMMENTS

Varicella has remained the most common cause of community-acquired outbreaks in LAC since 1999, when it surpassed ectoparasites. However, the number of varicella outbreaks dropped from 35% of total outbreaks in 2001 to 28% in 2002. This may be due in part to the mandated use of varicella vaccine among school-aged children. Although varicella was the most common cause of outbreaks in 2002, it did not account for the most cases of illness. The sizable increase in the total number of cases in 2002 is mainly due to a large outbreak of MRSA in a jail (920 cases).

In 2002, the number of community-acquired outbreaks increased 20% from the previous year (2001 had 127 outbreaks, 2002 had 153 outbreaks) the average number of cases per outbreak also increased (2001 had an average of 8.6 cases per outbreak, 2002 had an average of 18 cases per outbreak). Schools have continued to be the most common location for community outbreaks (54%); however, during 2002 group-homes (16%) have replaced pre-schools as the second most common site.