

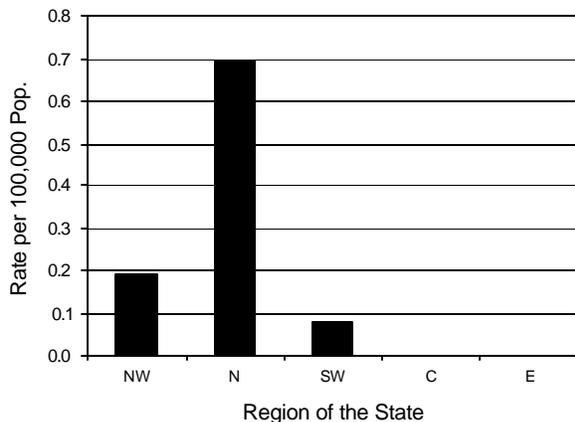
Acquired Immunodeficiency Syndrome (AIDS)

See HIV/AIDS.

Amebiasis

Sixteen cases of amebiasis were reported in 2002 compared to an average of 31.2 in the preceding five years. Onset of illness was distributed between the first (six cases), third (seven cases) and fourth (three cases) quarters. The 1-9 year age group had the highest number of cases and incidence rate (5 cases, 0.6 per 100,000). Race was reported for only 6 of the 16 cases. Of these, three were white, two were black, and one was of the other race category. The incidence rate in males was three times higher than the rate in females (0.3 per 100,000 males compared to 0.1 per 100,000 females). The northern health planning region had the highest number of cases and incidence rate (13 cases, 0.7 per 100,000) as shown in Figure 1.

Figure 1. Amebiasis: Rate by Region, Virginia, 2002



Anthrax

No cases of anthrax were reported in 2002. The last reported anthrax case occurred

during the fall of 2001 when two Virginia residents were identified with bioterrorism-related inhalation anthrax. These cases were caused by intentional release of *Bacillus anthracis* spores through the U.S. postal system. Both individuals were exposed at their respective work places. They both survived. These cases were the first cases of anthrax reported in Virginia since 1970.

Arboviral Infection

Human

Twenty-nine cases of West Nile virus (WNV) infection were reported in 2002, along with two cases of LaCrosse encephalitis and one case of St. Louis encephalitis. All cases of encephalitis had an onset date in the third quarter (July-September). Fifteen cases (52%) of WNV infection were reported in the 50 years and older age group, six (21%) were in the 30-39 age group, and five (17%) were in the 40-49 age group. Males were more at risk for WNV infection than females (0.5 cases per 100,000 vs. 0.3 cases per 100,000 population, respectively). The northern region had the highest incidence of WNV infection (20 cases, 1.0 cases per 100,000 population). The two cases of LaCrosse encephalitis occurred in the southwest region in one male and one female, both aged less than ten years. The St. Louis encephalitis case was reported from the central region in a female in the 50 years and older group. In contrast to the 32 cases of encephalitis reported in 2002, only two cases of arboviral infection were reported in Virginia in 2001; both were cases of LaCrosse encephalitis and occurred in adolescent males with onset of illness in September.

Animal

In 2002, EEE was confirmed in 49 horses; no human cases were reported. Nine hundred thirty-three birds tested positive for West Nile virus (WNV), including crows (753, 81%), blue jays (151, 16%), raptors (6, 0.6%), and 23 (3%) other birds. The majority (80%) of the WNV positive birds were reported from the northern part of Virginia.

Botulism

Infant

Three cases of infant botulism were reported in 2002. One case was reported from each of the northwest, southwest, and eastern health planning regions. All cases were in the white population; two were in females. Using the mouse neutralization test, *Clostridium botulinum* toxin type B was demonstrated in the stool specimen from two infants and in a serum specimen from one infant. None of the infants died.

Foodborne

One case of foodborne botulism was reported from the eastern health planning region in 2002. This case was notable because it occurred in an infant but was determined to be foodborne botulism. *Clostridium botulinum* toxin type A was not found in a stool specimen, but was found in home-canned baby food.

Brucellosis

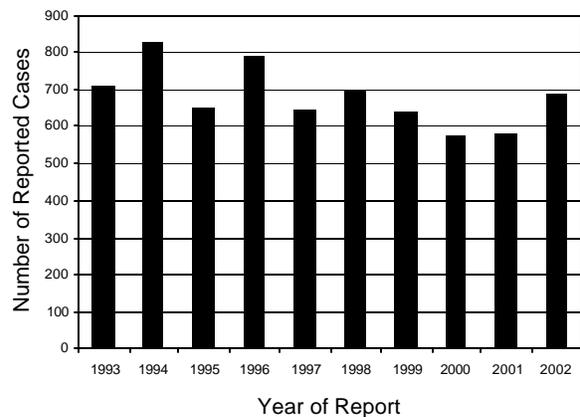
No cases of brucellosis were reported in 2002. One case had been reported the previous year.

Campylobacter Infection

The 686 reported cases of *Campylobacter* infection represent an increase of 18% in 2002

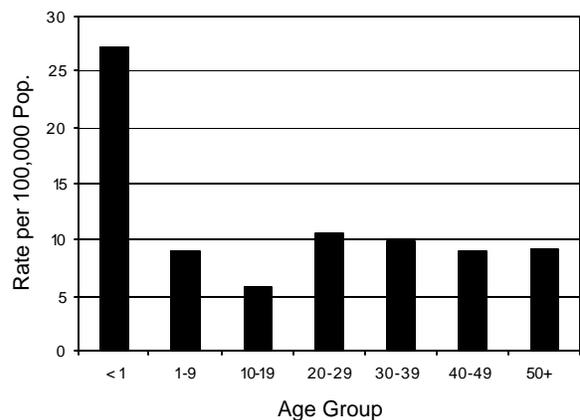
when compared to the 583 cases reported in 2001. This is a change in the trend of a general decline in reported *Campylobacter* infections cases since 1998 (Figure 2). *Campylobacter jejuni* species was reported for 61% of the cases. Other species accounted for 1%. The species was recorded as unknown for 38% of the cases. Peak activity was observed during the second and third quarters when 200 (29%) cases occurred in each quarter.

Figure 2. *Campylobacter* Infection: Ten Year Trend, Virginia, 1993-2002



Infants had the highest incidence rate (27.2 cases per 100,000 population). The lowest incidence rate was in the 10-19 year age group (5.8 cases per 100,000 population) (Figure 3).

Figure 3. *Campylobacter* Infection: Rate by Age Group, Virginia, 2002



Race was not reported for one-third of the cases. However, for cases where race was reported, whites had the highest incidence rate at 7.8 cases per 100,000 population. Incidence was 4.4 per 100,000 among other races and 2.7 per 100,000 among blacks. The number of cases and incidence rate reported was greater in males (363 cases, 10.1 per 100,000) than in females (306 cases, 8.2 per 100,000). Sex was recorded as unknown for 17 cases.

By health planning region, the northwest region had the highest incidence rate (13.6 cases per 100,000 population), followed by the southwest region (12.2 per 100,000). The eastern region reported the lowest incidence rate (7.3 cases per 100,000 population).

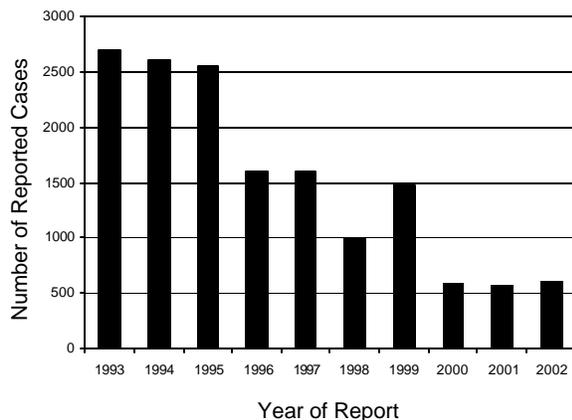
Chancroid

One case of chancroid was reported in 2002 compared to zero cases in 2001.

Chickenpox (Varicella)

The 605 cases of chickenpox reported in 2002 was similar to what was reported during the last two years (563 and 592 cases, respectively). The incidence of chickenpox has declined since the varicella virus vaccine was licensed in 1995 (Figure 4).

Figure 4. Chickenpox: Ten Year Trend, Virginia, 1993-2002



By region, the highest number of cases (261) and the highest incidence rate (14.9 per 100,000) occurred in the eastern health planning region. Incidence rates in the other health planning regions ranged from 3.6 to 9.1 cases per 100,000 population.

In 2002 no chickenpox outbreaks were reported, compared to two outbreaks reported in 2001.

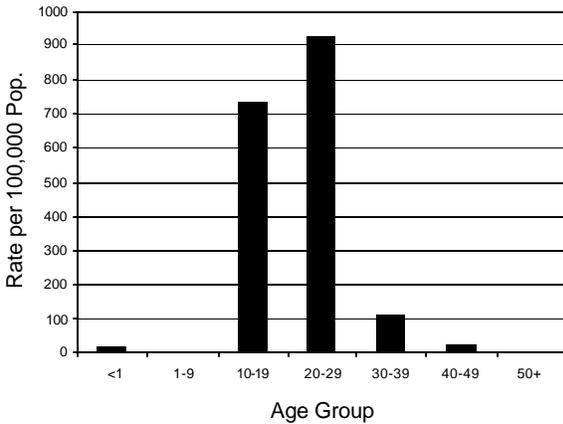
Chlamydia trachomatis Infection

Chlamydia trachomatis infection is the most commonly reported reportable disease in Virginia. During 2002, 18,518 cases of *C. trachomatis* infection were reported. This was a 1% increase over the 18,322 cases reported in 2001 and represents the largest number of cases since 1991.

Incidence rates were highest in the 10-19 and 20-29 year age groups (734.6 per 100,000 and 926 per 100,000, respectively) (Figure 5). Race was recorded as unknown for 2,239 persons. Where race/ethnicity was reported, the highest number of cases (10,537) occurred in blacks who also had the highest incidence rate (735.6 per 100,000), while the other race category had the second highest incidence rate (209.3 per 100,000). The female to male ratio was 4.4 to 1. This difference is more likely due to screening practices than a reflection of true disease incidence.

Cases were heavily distributed in the eastern (6,691 cases, 381.5 per 100,000) and central (4,697 cases, 377.2 per 100,000) health planning regions. The incidence rates in the southwest, northwest and northern health planning regions were 207.2 per 100,000, 193.1 per 100,000 and 122.8 per 100,000, respectively.

Figure 5. *Chlamydia trachomatis* Infection:
Rate by Age Group, Virginia, 2002



The data are expected to underestimate the incidence of *C. trachomatis* infections because (1) screening has been limited to high risk females attending certain public health clinics and the male partners of positive females, (2) as many as 75% of women and 25% of men with uncomplicated *C. trachomatis* infection are asymptomatic, and (3) persons with gonorrhea presumptively treated for *C. trachomatis* infection are not included in the case counts. The Centers for Disease Control and Prevention (CDC) estimate the morbidity due to this organism to be twice that of gonorrhea. There were 10,462 cases of gonorrhea reported in Virginia in 2002, suggesting that there were more than 20,924 *C. trachomatis* infections in 2002, using the CDC method to estimate cases.

Cholera

See Vibrio Infection.

Congenital Rubella Syndrome

See Rubella.

Cryptosporidiosis

This disease became officially reportable in 1999. In 2002, 35 cases were reported compared to 27 cases in 2001. Cases occurred throughout the year but almost half (49%) of the cases occurred during the third quarter. The southwest health planning region reported 16 cases followed by the northern region with seven cases reported. Between three and five cases were reported from each of the other health planning regions. Males had a similar incidence rate as females (0.5 cases per 100,000 vs. 0.4 cases per 100,000, respectively). Sex was not specified for one case. The other race category had the same incidence rate as whites (0.5 cases per 100,000, each). Six percent of cases were in blacks (0.1 case per 100,000), and race was reported as unknown for six cases.

Cyclosporiasis

Cyclosporiasis became officially reportable in 1999. One case was reported in 2002 compared to one case in 2001 and zero cases in 2000. The 2002 case was a female less than ten years of age with no reported history of foreign travel.

Diphtheria

The last reported case of this vaccine preventable disease in Virginia occurred in 1989.

Ehrlichiosis, Human

Ehrlichiosis is an acute disease of humans and animals caused by the bacteria *Ehrlichia*. There are two clinically similar but serologically distinct forms of ehrlichiosis:

human granulocytic ehrlichiosis (HGE) caused by infection with an *Ehrlichia equi*-like agent and human monocytic ehrlichiosis (HME) caused by *E. chaffeensis* infection. The organisms, which are transmitted by ticks, infect two different types of white blood cells. Ehrlichiosis was added to the reportable disease list effective January 1999; however, reports have been recorded since 1986.

Six cases of human ehrlichiosis were recorded in Virginia in 2002 compared to two cases in 2001. One case was identified as HME. The type was not specified for the other cases. Onsets of illness occurred in June, July, and September for the five unspecified type and between May and September for the HME case. Two males and one female were reported from the central health planning region; two males from the northwest and one female from the southwest region of Virginia were also reported. Race was reported as white for five cases and black for one case.

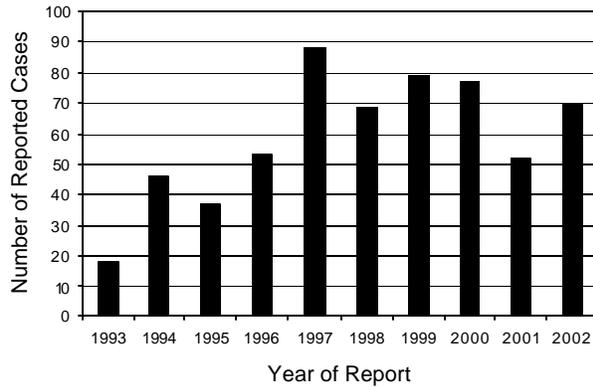
***Escherichia coli* O157:H7 Infection**

Escherichia coli O157:H7 infection became a notifiable condition in Virginia in January 1999; however, the Office of Epidemiology has been maintaining statistical data from voluntary reporting of this disease since 1992. Seventy cases were reported in 2002, a 35% increase from the 52 cases reported in 2001, but less than the five year mean of 73 cases (Figure 6).

Historically, cases have been reported throughout the year but increase beginning in the warmer months. In 2002, activity peaked during the third quarter when 32 (46%) cases occurred. Infants had the highest rate of *E. coli* O157:H7 infection (4.2 cases per 100,000 population) and persons aged 1-9 years had the next highest rate (3.3 cases per 100,000). The incidence rate was 1.0 case per

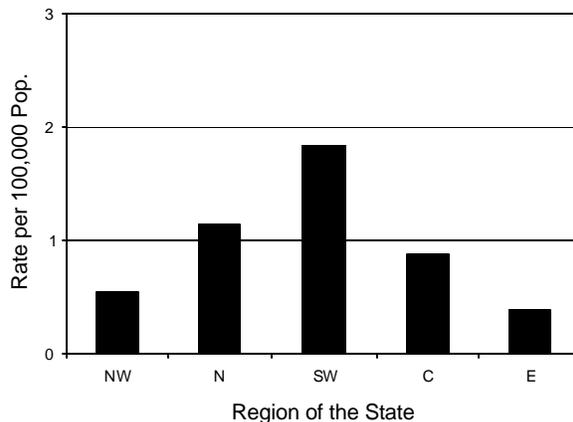
100,000 population or less for each of the other age groups. Race was reported for 61% of the cases. Of these, 39 were in whites (0.7 per 100,000) and two were in blacks (0.1 per 100,000). Females and males had similar incidence rates (1.0 per 100,000 and 0.9 per 100,000, respectively).

Figure 6. *Escherichia coli* O157:H7 Infection: Ten Year Trend Virginia, 1993-2002



The southwest health planning region had the highest incidence rate (24 cases, 1.8 cases per 100,000 population), followed by the northern region (22 cases, 1.1 per 100,000) and the central region (11 cases, 0.9 per 100,000), as shown in Figure 7.

Figure 7. *Escherichia coli* O157:H7 Infection: Rate by Region, Virginia, 2002



One of the most serious complications of *E. coli* O157:H7 infection is hemolytic uremic syndrome (HUS). In 2002, eight people were diagnosed with HUS (see section below). Of these, five were also diagnosed with laboratory confirmed *E. coli* O157:H7 infection. HUS became a notifiable condition in Virginia in December of 2001.

Foodborne Outbreaks

Thirteen foodborne outbreaks were recorded in 2002. These outbreaks are summarized in Table 8 on the following page. The number of ill persons per outbreak ranged from 12 to 75. The etiologic agent was confirmed or suspected as viral for six outbreaks and bacterial for seven.

In six (46%) outbreaks a specific food item or menu was identified as the cause of the outbreak. Specific food items were suspected in two (15%) additional outbreaks. In one of these events cases could not be interviewed, and in the second the laboratory and epidemiological investigation did not confirm the source.

The most common food handling practices that contributed to these outbreaks included the presence of an infected food handler and temperature abuse (i.e., inadequate cooking and improper storage or holding temperatures).

Fungal Diseases

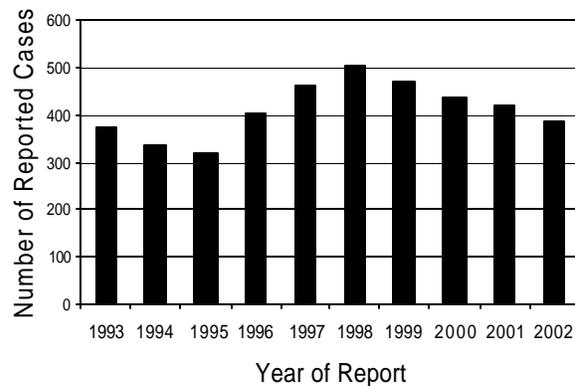
Fungal diseases are not notifiable in Virginia; however, selected fungal diseases are recorded when reports are received. In 2002, recorded fungal infections included 31 cases of aspergillosis, one case of coccidioidomycosis, two cases of cryptococcosis, and one unknown. Eighty-eight percent (30

cases) occurred in the age group 50 years and older and the majority of cases (23) were in females.

Giardiasis

The annual number of reported cases of giardiasis decreased for the fourth consecutive year. The 386 cases of giardiasis reported in 2002 were 7% less than the 417 cases reported in 2001 and 12% less than the 437 cases reported in 2000 (Figure 8). A third of the cases occurred during the third quarter.

Figure 8. Giardiasis: Ten Year Trend, Virginia, 1993-2002



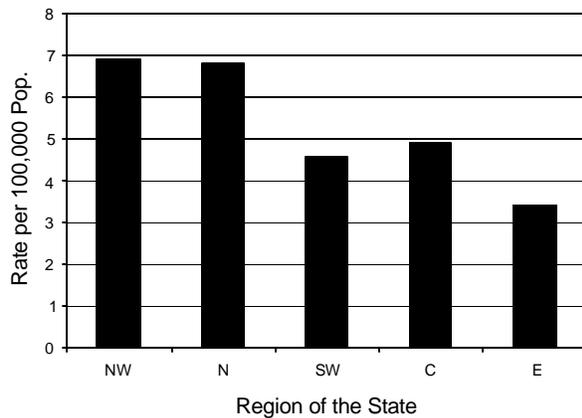
By age, the highest incidence rate occurred in children aged 1-9 years (13.0 cases per 100,000 population), followed by infants (9.4 per 100,000). Race was recorded as unknown for 104 (27%) cases. Of the cases for which race was reported, the other race category had the highest incidence rate (5.0 cases per 100,000 population), followed by whites (4.4 per 100,000), and blacks (1.4 per 100,000). Males were more likely than females to be reported with this disease (5.5 vs. 4.8 cases per 100,000 population, respectively).

Table 8. Foodborne Outbreaks Confirmed in Virginia 2002

Onset date	Locality	Number of		Etiologic agent	Vehicle	Place Where Outbreak Occurred	Factors Contributing to Outbreak
		Cases	Cases				
2/10/2002	Fairfax	23		Norovirus	unknown	restaurant	infected food handler suspected
3/10/2002	Rockingham	10		<i>Salmonella newport</i>	turkey	fundraising dinner	time/temperature abuse cross contamination
3/24/2002	Montgomery	25		Norovirus	unknown	restaurant	infected food handlers suspected
4/21/2002	Hanover	59		Norovirus	fried chicken, potato salad	church supper	unknown
4/23/2002	Chesapeake	57		<i>Clostridium perfringens</i>	turkey suspected pork barbecue suspected	long term care facility	time/temperature abuse
8/8/2002	Montgomery	75		Norovirus	unknown	camp	infected food handlers suspected
8/26/2002	Richmond City	40		<i>Salmonella enteritidis</i>	salad suspected	restaurant	infected food handlers suspected
9/23/2002	Richmond City	15		<i>Salmonella newport</i>	unknown	unknown	unknown
9/28/2002	Salem	17		<i>Campylobacter jejuni</i>	potato salad	catered event	time/temperature abuse cross contamination
10/6/2002	Radford	17		<i>Clostridium perfringens</i>	barbecue	fundraising event	time/temperature abuse
12/20/2002	Fairfax	12		Norovirus	unknown	catered luncheon	unknown
12/21/2002	Giles	20		Norovirus	chicken tenders	restaurant	unknown
12/13/2002	Scott	33		<i>Staphylococcus aureus</i>	ham and chicken	catered dinner	poor hygiene/food handling practices temperature abuse

The northwest and northern health planning regions reported the highest number of cases and had the highest incidence rates (6.9 cases and 6.8 cases per 100,000 population, respectively). The eastern region had the lowest incidence rate (3.4 per 100,000) (Figure 9).

Figure 9. Giardiasis: Rate by Region, Virginia, 2002

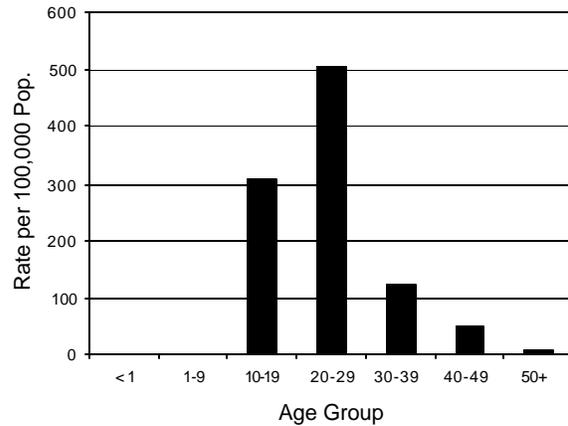


Gonorrhea

In 2002, 10,462 cases of gonorrhea were reported in Virginia. This is a 6% decrease from the 11,082 cases reported in 2001 and represents the first annual decrease in Virginia since 1997. Young adults (aged 20-29 years) had the highest incidence rate (506.2 per 100,000), followed by the 10 to 19 year age group (309.7 per 100,000) as shown in Figure 10.

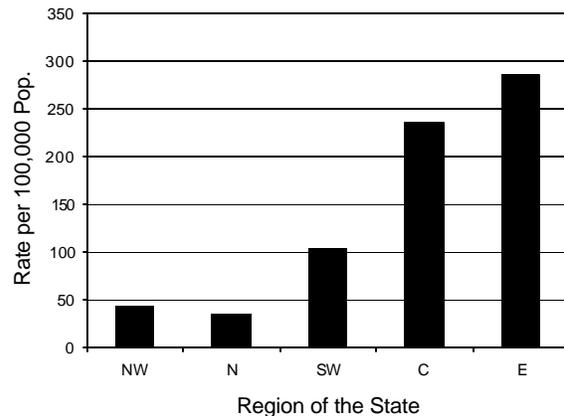
Seventy-eight percent of the cases were in blacks (8,176 cases, 570.8 per 100,000), 11% were in whites (1,188 cases, 22.5 per 100,000), and less than 1% were in the other race category (89 cases, 15.2 per 100,000). Race was not specified for 10%. By gender, 5,441 cases were reported in females (146.4 per 100,000) compared to 5,021 cases in males (140.4 per 100,000).

Figure 10. Gonorrhea: Rate by Age Group, Virginia, 2002



The eastern health planning region reported the most cases (5,028 cases, 286.7 per 100,000), followed by the central (2,949 cases, 236.8 per 100,000), southwest (1,347 cases, 103.0 per 100,000), northern (674 cases, 35.2 per 100,000) and northwest (464 cases, 43.3 per 100,000) regions (Figure 11).

Figure 11. Gonorrhea: Rate by Region, Virginia, 2002



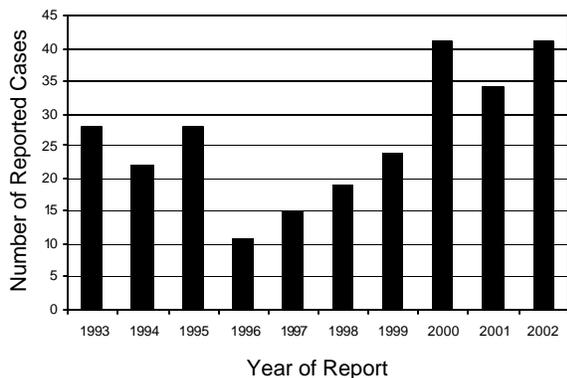
Granuloma Inguinale

In 2002, there were zero cases of granuloma inguinale, compared to one case reported in Virginia in 2001.

***Haemophilus influenzae* Infection, Invasive**

The annual number of reported cases of invasive infections due to all types of *Haemophilus influenzae* increased from 34 cases in 2001 to 41 cases in 2002, the same number of cases reported in 2000 (Figure 12). This is almost twice as much as the average number of cases (21) reported per year between 1993 and 1999.

Figure 12. Invasive *Haemophilus influenzae* Infection: Ten Year Trend, Virginia, 1993-2002



Overall, seventy-six percent of cases were in adults aged 50 and older. Four (10%) of the 41 cases reported in 2002 were in persons less than one year of age. Infants and adults aged 50 and older were at the greatest risk with an incidence rate of 4.2 and 1.6 cases per 100,000 population, respectively.

Cases occurred throughout the year; the most cases were reported during the fourth quarter of the year (14 cases, 34%) and the smallest number of cases were reported during the first and second quarters (8 cases each, 20%). Seven cases occurred in blacks for an incidence rate of 0.5 cases per 100,000 population and 21 cases were in whites (0.4 cases per 100,000 population). No cases were reported among persons in the other race

category and race was recorded as unknown for 13 cases. By sex, the risk for disease was similar for females and males (0.6 vs. 0.5 per 100,000, respectively).

The southwest and central health planning regions both had an incidence rate of 1.0 case per 100,000 population. The incidence rate was 0.1 to 0.6 cases per 100,000 population in each of the other health planning regions.

Only two of the *H. influenzae* cases were confirmed to be serotype b. One of those occurred in a child less than one year of age. The serotype was reported as not typeable for 13 cases, as “other” type for nine cases, and not tested or unknown for 17 cases. Three deaths due to invasive *H. influenzae* infection were reported in 2002. Two were adults over 50 years of age and one was a child less than 10 years of age.

Hansen Disease (Leprosy)

No cases of Hansen disease were reported in 2002. One case was reported in 2001.

Hemolytic Uremic Syndrome

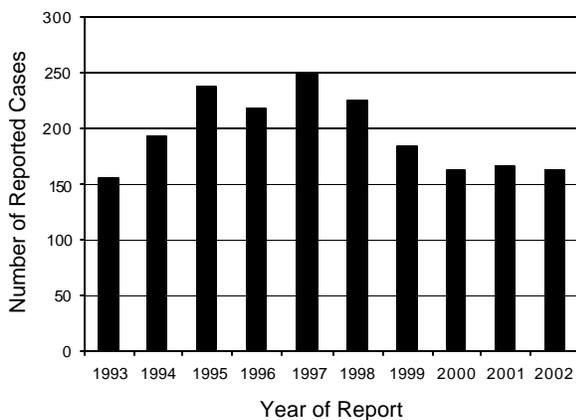
Hemolytic Uremic Syndrome (HUS) became a reportable disease in 2001. In 2002, eight cases of HUS were reported compared to one case in 2001. Five cases were in females and three were in males. The same incidence rate was reported in the white and black populations (0.1 case per 100,000). The majority of cases occurred in the southwest and eastern health planning regions (4 and 3 cases, respectively) with only one case occurring in the northwest health planning region. The 1-9 year olds had the highest incidence rate (6 cases, 0.7 cases per 100,000 population). There was one case each in the 10-19 year age group and the 20-29 year age

group (both with an incidence of 0.1 per 100,000 population). Five cases were confirmed to have had an *E. coli* O157:H7 infection prior to the onset of HUS.

Hepatitis A

The number of reported cases of hepatitis A decreased slightly in 2002. The 163 cases reported in 2002 were 2% less than the 167 cases reported in 2001. Although there was a slight increase in cases in 2001, the overall annual number of reported cases has declined from 1997 to 2002 (Figure 13).

Figure 13. Hepatitis A: Ten Year Trend, Virginia, 1993-2002

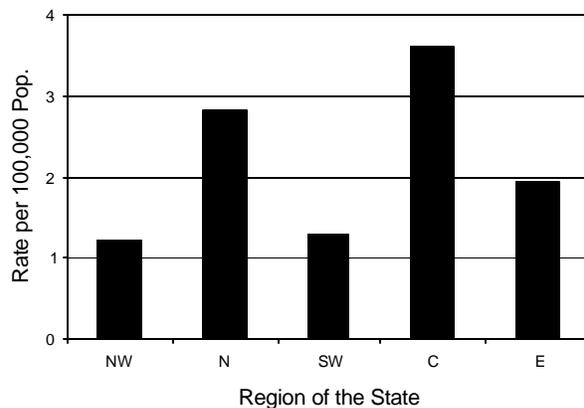


Adults in the 30-39 year age group were at the highest risk for hepatitis A (3.8 cases per 100,000 population), followed by children less than one year of age (3.1 per 100,000). The incidence rate for hepatitis A for the black population was 2.1 per 100,000 compared to 1.7 in whites. Race was not reported for 38 (23%) cases. The incidence rate for males (113 cases, 3.2 per 100,000) was more than two times the rate for females (50 cases, 1.3 per 100,000).

The northern health planning region reported the highest number of cases (54, 2.8 per 100,000), but the central region had the

highest incidence rate (45 cases, 3.6 per 100,000). Incidence rates by region are illustrated in Figure 14. Risk factor data were reported for 89% percent of the hepatitis A cases. Personal contact with a person with hepatitis A (29 cases, 20%) and international travel (14 cases, 10%) were the predominant potential sources of infection reported. Of those who reported international travel, four had traveled to countries in Central and/or South America.

Figure 14. Hepatitis A: Rate by Region, Virginia, 2002



No deaths due to hepatitis A infection were reported in 2002.

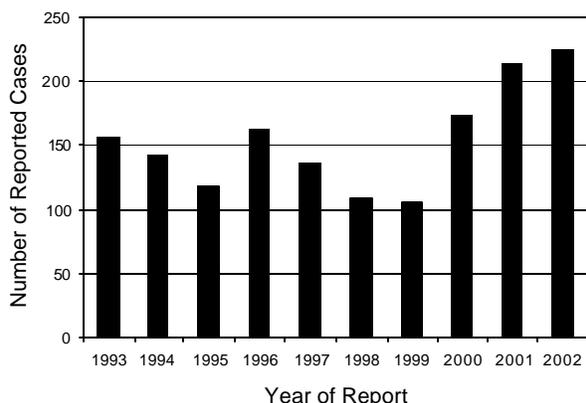
Hepatitis B, Acute

The 224 cases of acute hepatitis B reported in 2002 represented the third consecutive increase in the annual number of reported cases (Figure 15) and the highest annual number of cases since IgM antibody to hepatitis B core antigen (anti-HBc IgM) became a reportable condition by directors of laboratories in 1999.

Higher numbers of cases and incidence rates occurred in the adult age groups. The 20-29 year age group had the highest incidence rate (5.7 per 100,000 population)

followed by the 30-39 year age group (5.6 cases per 100,000). The incidence rate for blacks was 6.5 cases per 100,000 population compared to 1.4 per 100,000 for whites and 0.9 per 100,000 for the other race category. Males had a higher incidence rate than females (4.1 per 100,000 males vs. 2.1 per 100,000 females).

Figure 15. Hepatitis B, Acute: Ten Year Trend, Virginia, 1993-2002



The central health planning region had the highest number of cases reported and the highest incidence rate (77 cases, 6.2 per 100,000), followed by the eastern and southwest regions (3.6 and 3.3 cases per 100,000 population, respectively).

Based on analysis of reported information regarding risk factors from 152 cases, 21 cases (14%) reported previous dental work and 11 (7%) reported contact with an acute or chronic hepatitis B or non-A, non-B case (8 through sexual partners, 3 through household contacts). No deaths due to acute hepatitis B were reported in 2002.

For several recent years, the test for acute hepatitis B (anti-HBc IgM) was omitted from the Current Procedural Terminology (CPT) codes. As a result, this test was not done when physicians ordered the laboratory panel for hepatitis. Therefore, acute cases may not

have been laboratory confirmed. This was corrected in 2000 and may account for some of the increase in cases.

Hepatitis C, Acute

Fifteen cases of acute viral hepatitis C were reported in 2002 compared to three cases reported each year in 2001 and 2000. Disease onset for most (47%) cases occurred during the second quarter of the reporting year.

Cases ranged in age from 25 to 52 years. The white and black populations had similar incidence rates, and males and females had the same incidence rate. Eight cases were reported from the central health planning region, six from the southwest, and one from the east. No deaths due to acute hepatitis C were reported in 2002.

Hepatitis C, acute became reportable in 1999. Until that time, hepatitis non-A, non-B was reportable.

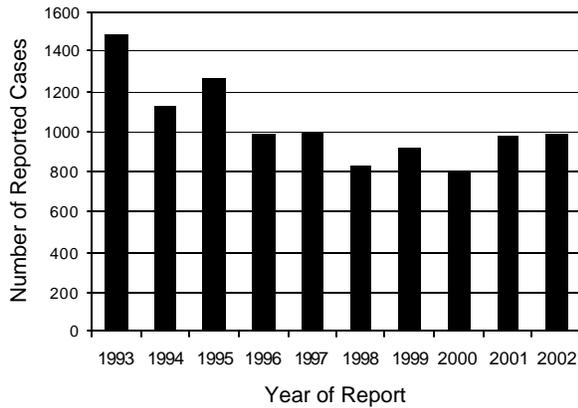
Human Immunodeficiency Virus (HIV) Infection and the Acquired Immunodeficiency Syndrome (AIDS)

HIV

During 2002, 992 new infections of HIV were reported, bringing the cumulative total of cases reported since 1989 to 14,889. The number of new cases was an increase of 2% from the 977 cases reported in 2001 (Figure 16).

Males continue to represent the majority (680 cases, 69%) of HIV infection case reports. The incidence rate for males was 19.0 per 100,000 population compared to 8.4 per 100,000 in females.

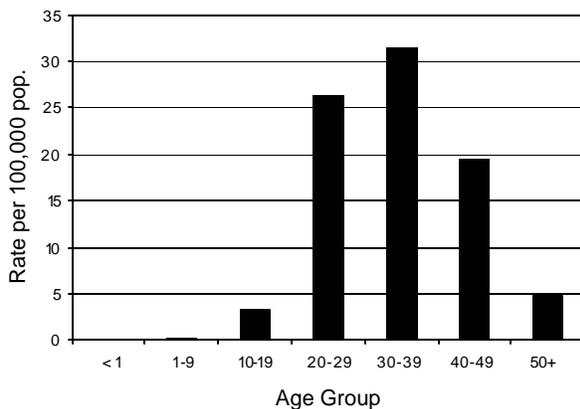
Figure 16. HIV: Ten Year Trend, Virginia, 1993-2002



During 2002, a larger proportion of cases were in blacks (62%, 612 cases) than in whites (28%, 277 cases) or the other race category (10%, 103 cases). The incidence rate in blacks was eight times the incidence rate in whites (42.7 per 100,000 compared to 5.3 per 100,000). The rate for the other race category was 17.6 per 100,000.

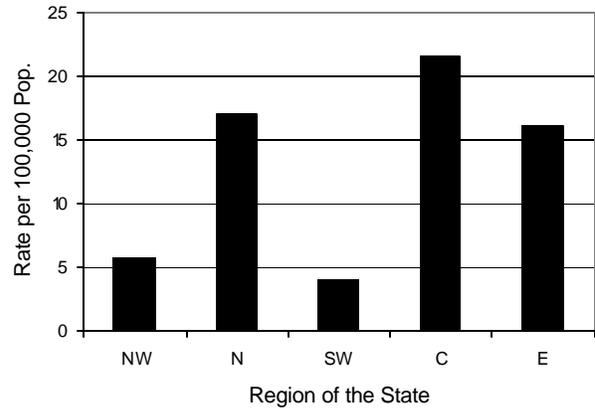
Persons in the 30-39 year age group had the highest incidence rate (373 cases, 31.5 per 100,000), followed by the 20-29 year age group (265 cases, 26.3 per 100,000), and the 40-49 year age group (224 cases, 19.5 per 100,000) as shown in Figure 17. One pediatric (< 13 years of age) HIV infection was reported in 2002. The child was infected through pediatric transfusion.

Figure 17. HIV Infection: Rate by Age Group, Virginia, 2002



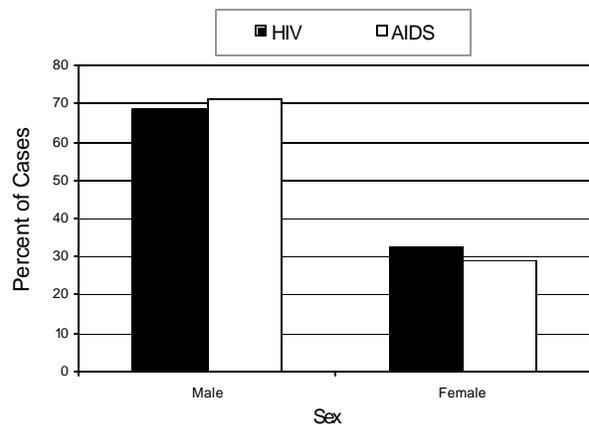
The highest HIV infection incidence rate was reported from the central health planning region (21.5 cases per 100,000 population), followed by the northern (17.0 per 100,000), eastern (16.2 per 100,000), northwest (5.7 per 100,000) and southwest (4.1 per 100,000) health planning regions (Figure 18).

Figure 18. HIV Infection: Rate by Region, Virginia, 2002



Seventeen percent of HIV infections were attributed to heterosexual contact compared to 22% for AIDS, and 30% of HIV infections were attributed to men having sex with men versus 35% for AIDS cases. Females comprised a slightly larger proportion of HIV cases (31%) than AIDS cases (29%), as shown in Figure 19.

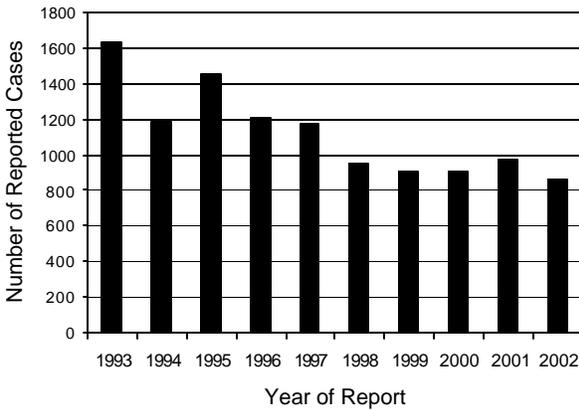
Figure 19. A Comparison of AIDS Cases and HIV Infection by Sex, Virginia, 2002



AIDS

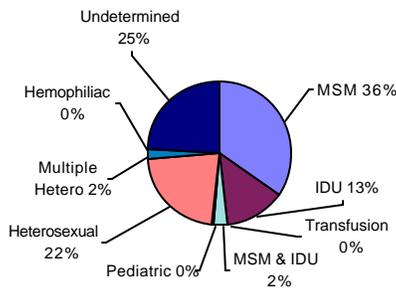
Since the first AIDS cases were reported in 1982, the cumulative number of cases reported through the end of 2002 was 14,740, with 7,811 deaths (53%). In 2002, 866 new cases were reported, representing an 11% decrease from 2001 (Figure 20).

Figure 20. AIDS: Ten Year Trend, Virginia, 1993-2002



AIDS is caused by the human immunodeficiency virus (HIV). Common modes of transmission are through unprotected sexual intercourse (especially anal intercourse) and injecting drug use (IDU). During 2002, men having sex with men (MSM) accounted for the greatest percentage of HIV infection leading to AIDS cases (35%), followed by heterosexual contact (22%) as shown in Figure 21.

Figure 21. AIDS: Mode of Transmission, Virginia, 2002



The majority of cases (621 cases, 72%) were in adults between the ages of 30 and 49. The 30-39 and 40-49 year age groups had the highest incidence rate, with 27.5 and 25.7 cases per 100,000 population, respectively. Three pediatric (<13 years of age) AIDS cases were reported in 2002. All three were infected via maternal transmission.

This is the tenth consecutive year that the black population made up more than 50% of the new AIDS cases (515, 59%). Blacks had an incidence rate more than six times the incidence rate of whites (36.0 per 100,000 compared to 5.4 per 100,000 in whites). The rate for the other race category was 11.6 per 100,000. Males had an incidence rate more than two times the rate in females (17.2 vs. 6.7 per 100,000, respectively).

The northern health planning region experienced the highest incidence rate (17.8 per 100,000), followed by the eastern region (15.6 per 100,000), the central region (8.8 per 100,000), the northwest region (7.1 per 100,000) and the southwest region (5.0 per 100,000).

Persons with AIDS develop a variety of life-threatening opportunistic infections due to immunosuppression. The most commonly diagnosed disease was *Pneumocystis carinii* pneumonia (PCP). Fifteen percent of the cases reported during 2002 developed PCP during the course of the illness. Other frequently diagnosed conditions included HIV wasting syndrome (5%), esophageal candidiasis (5%), extrapulmonary cryptococcosis (2%), pulmonary *Mycobacterium tuberculosis* (2%), and HIV encephalopathy (2%). Over half (65%) of the reported cases were reported as immunologic cases (low CD4 counts) using the 1993 expanded definition of AIDS.

Influenza

The influenza season in Virginia typically runs from the fourth quarter (October - December) of one year through the first quarter (January - March) of the following year. During this period, the health department conducts active influenza surveillance using sentinel physicians from around the state who report cases of influenza-like illness on a weekly basis. Cases are tabulated weekly and the information, along with laboratory identification of viral agents, is used to monitor and define influenza activity in Virginia. Activity is characterized as sporadic, local, regional or widespread. In addition, sporadic cases of influenza-like illness are reported throughout the calendar year through our passive disease reporting system.

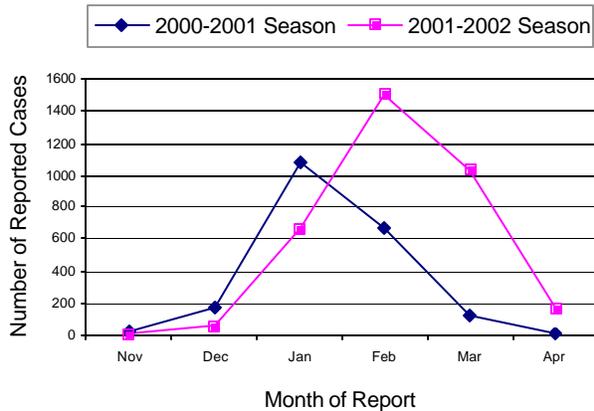
During the 2001-2002 flu season, influenza type A and type B were isolated in Virginia. Widespread activity occurred from mid-January through mid-March, with peak activity during mid-to-late February. An influenza A (H3N2) outbreak in a hospital neonatal intensive care unit in the central region occurred in January. Reports of influenza activity in Virginia extended into May with an influenza B outbreak among school children reported at that time. This outbreak also occurred in the central health planning region.

During the 2002-2003 flu season, influenza type A accounted for 46% of positive isolates and influenza type B accounted for 54% of them. Widespread activity occurred from mid-January to the beginning of March, with peak activity during February. Greater than baseline activity was seen in the northern region through the end of March.

Nationally, influenza A (H1) and B viruses circulated widely with the predominate circulating virus depending on region, county and time of season. Influenza A subtype included A (H1) (70%) and A (H3N3) (30%).

Through the passive surveillance system, 3,486 cases of influenza were reported during calendar year 2002, compared to 1,963 cases in 2001 and 1,909 cases in 2000 (Figure 22).

Figure 22. Influenza-like Illness Reported in Two "Flu Seasons"

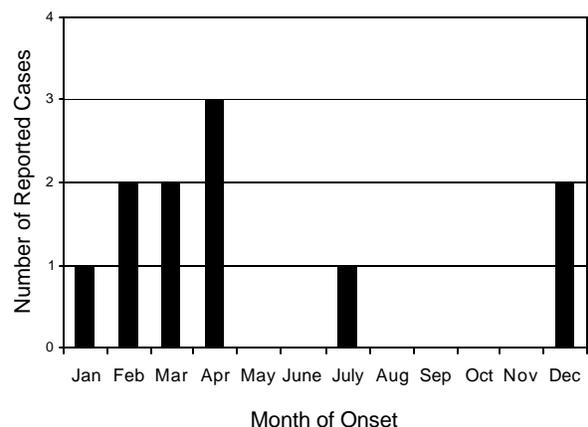


Kawasaki Syndrome

Kawasaki syndrome is an uncommon illness characterized by a high fever and rash. The cause of the illness is unknown. It primarily affects young children under the age of five.

Eleven reported cases of Kawasaki syndrome were confirmed in 2002 compared to 28 in 2001 and 29 in 2000. In 2002 73% of cases were reported during the first half of the calendar year (Figure 23).

Figure 23. Kawasaki Syndrome: Month of Onset, Virginia, 2002



Nine cases reported in 2002 were reported in children less than 10 years of age and two cases occurred in the 10-19 year old age group. Infants accounted for only two (1.8%) cases but had a higher incidence rate (2.1 cases per 100,000 population) for this syndrome than children in the 1-9 age group (0.8 cases per 100,000 population). The incidence rate was the same for the black and white populations (0.2 per 100,000). Males and females had similar incidence rates (0.2 cases per 100,000 population vs. 0.1 case per 100,000 population, respectively).

The northwest health planning region reported the highest incidence rate (3 cases, 0.3 per 100,000 population). Incidence rates in the other health planning regions ranged from 0.1 to 0.2 cases per 100,000 population.

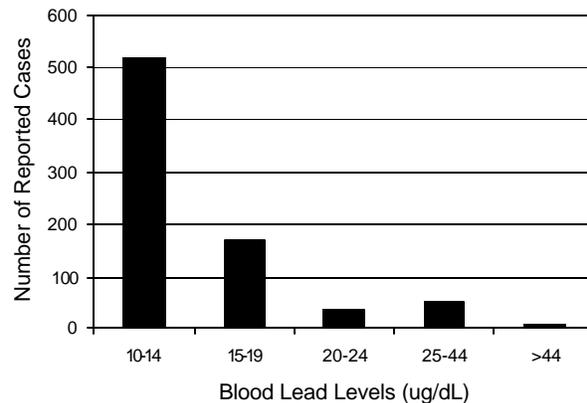
Lead - Elevated Levels in Children

In 2002, 784 children were newly reported with an elevated blood lead level. Virginia law requires reporting to the health department any child under 16 years of age with a venous blood lead level 10 micrograms per deciliter or higher ($\mu\text{g}/\text{dL}$). (Note: the reportable level changed from $\geq 15 \mu\text{g}/\text{dL}$ to $\geq 10 \mu\text{g}/\text{dL}$ in 1999.)

Five hundred seventeen (66%) of the children reported in 2002 had blood lead levels in the 10-14 $\mu\text{g}/\text{dL}$ range (Figure 24). Lead levels in this range are above normal but no treatment is needed. Education is provided and a new test should be done in three months. One hundred sixty-eight (21%) had levels in the 15-19 $\mu\text{g}/\text{dL}$ range, the category for which the CDC recommends nutritional and educational interventions and more frequent screening. Thirty-nine (5%) had levels in the 20-24 $\mu\text{g}/\text{dL}$ range, for which the CDC recommends medical evaluation, environmental evaluation, and environmental remediation. Fifty-three (7%) had levels in the 25-44 $\mu\text{g}/\text{dL}$ range and 7

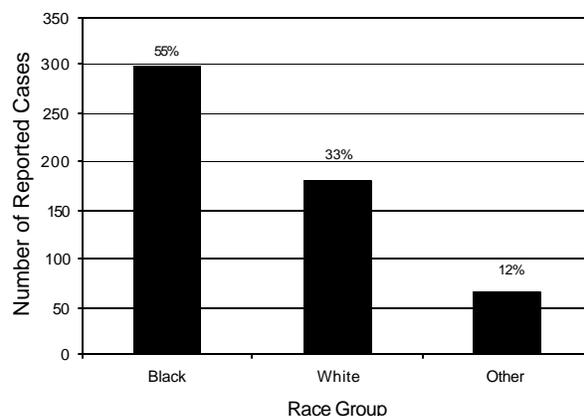
(0.9%) had levels 45 and higher. These high levels require both medical and environmental interventions.

Figure 24. Elevated Blood Lead Levels: Age 0-15 Years, Virginia, 2002



Children aged five years and younger comprised 95% (747 cases) of the reported cases with one and two years being the most common ages at diagnosis (35% and 26% of reported cases, respectively). Race was reported for 543 cases (69%). Of these, 298 (55%) were black, 180 (33%) were white and 65 (12%) were in the other race category (Figure 25). Males comprised 55% of all cases.

Figure 25. Race of Children with Elevated Blood Lead Levels, Virginia, 2002

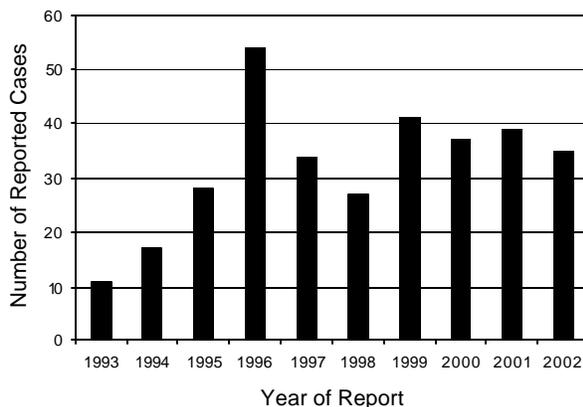


Cases were reported from all health planning regions: central, which includes federally-funded lead prevention programs in Petersburg and Richmond, 278 cases; eastern, which includes funded programs in Norfolk and Portsmouth, reported 203 cases; southwest, which includes funded program in Lynchburg, reported 138 cases; northern reported 95 cases; and northwest reported 70 cases.

Legionellosis

Legionellosis is a disease caused by *Legionella* bacteria. Most cases occur as single isolated events, though outbreaks may occur. Thirty-five laboratory-confirmed cases of legionellosis were reported in 2002 compared to 39 cases in 2001 (Figure 26). Adults aged 50 and older had the highest incidence of legionellosis (22 cases, 1.1 per 100,000). Males had a slightly higher incidence rate than females (21 cases, 0.6 per 100,000 population vs. 14 cases, 0.4 per 100,000, respectively). The white population comprised 66% of cases (23 cases, 0.4 cases per 100,000 population), but blacks had a slightly higher incidence rate (7 cases, 0.5 per 100,000). One case was in the other race category and race was unknown for four cases.

Figure 26. Legionellosis: Ten Year Trend, Virginia, 1993-2002



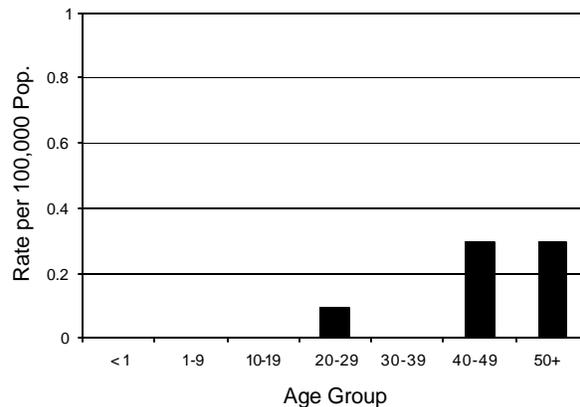
No outbreaks of legionellosis were reported in 2002. The southwest health planning region reported the highest incidence rate (1.1 cases per 100,000 population). Each of the other health planning regions had an incidence rate of less than 1.0 per 100,000. One death due to legionellosis was reported.

Listeriosis

Listeriosis, an infection often caused by eating food contaminated with the bacterium *Listeria monocytogenes*, affects primarily pregnant women, newborns, and persons with weakened immune systems. Ten cases of listeriosis were reported in 2002 compared to an average of 12.4 during the preceding five years. Cases occurred throughout the year, though 70% of cases had onset in the third and fourth quarters of the year.

Cases of listeriosis were reported in the 40-49 and 50 years and older age group (0.3 cases per 100,000 for both groups) and the 20-29 year age group (0.1 case per 100,000) (Figure 27). By race, nine were white (0.2 cases per 100,000 population) and one was reported as race unknown. Males and females had similar incidence rates (0.2 cases per 100,000 and 0.1 case per 100,000 population, respectively).

Figure 27. Listeriosis: Rate by Age Group, Virginia, 2002



Five cases were reported from the southwest health planning region (0.4 cases per 100,000) compared to three from the northwest region (0.3 cases per 100,000) and one each from the northern and eastern regions (each with 0.1 case per 100,000). No cases were reported from the central health planning region.

L. monocytogenes was isolated from the blood in eight of the cases and in cerebrospinal fluid in two patients. Two deaths due to listeriosis were reported.

Lyme Disease

Lyme disease is a tickborne disease that was first identified in 1977. It can cause neurologic and musculoskeletal problems which, if not treated properly, may become chronic. In Virginia, 259 cases of Lyme disease were reported in 2002, representing a 66% increase above the 156 cases reported in 2001 (Figure 28), and the highest number of cases reported in Virginia since it became reportable in 1989. The majority (85%) of cases occurred between April and September (Figure 29) and cases were reported in all age groups. Infants less than one year of age had the highest incidence rate (5.2 cases per 100,000), while the 20-29 year age group had the lowest rate (2.0 per 100,000). No deaths due to Lyme disease were reported.

Figure 28. Lyme Disease: Ten Year Trend, Virginia, 1993-2002

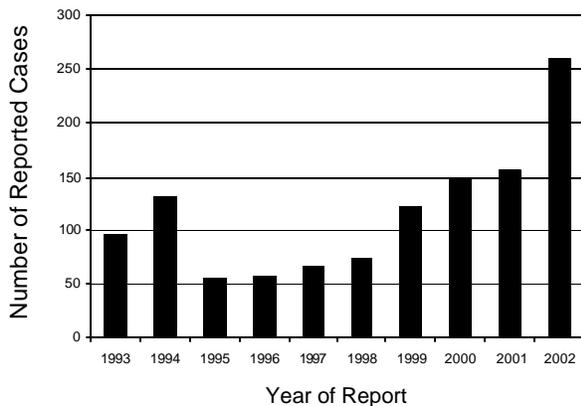
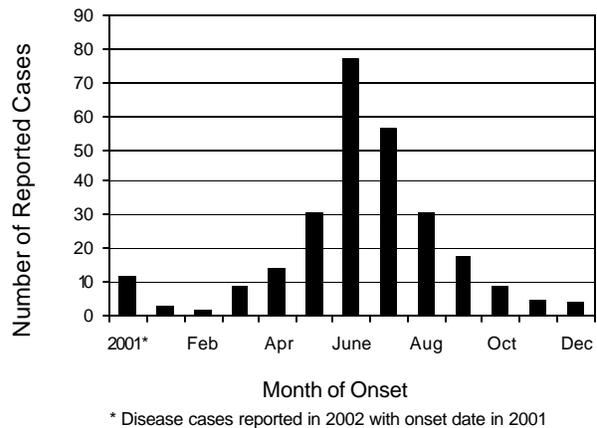


Figure 29. Lyme Disease: Month of Onset, Virginia, 2002



Females had a slightly higher incidence rate (141 cases, 3.8 per 100,000) than males (118 cases, 3.3 per 100,000). The incidence rate among whites (220 cases, 4.2 per 100,000) was seven times higher than in blacks (8 cases, 0.6 per 100,000). Race was not reported for 24 persons (9%).

The predominant clinical sign reported was erythema migrans (157 cases, 61%). Other conditions reported were arthritis (111 cases, 43%), Bell's palsy (32 cases, 12%), radiculoneuropathy (11 cases, 4%), lymphocytic meningitis (5 cases, 2%), and encephalitis (6 cases, 2%).

Cases of Lyme disease were reported from all health planning regions with the highest proportion of cases (63%) and the highest incidence rate reported from the northern region (8.6 per 100,000). The counties of exposure reported most frequently were Fairfax (69 cases, 27%) and Loudoun (65 cases, 25%).

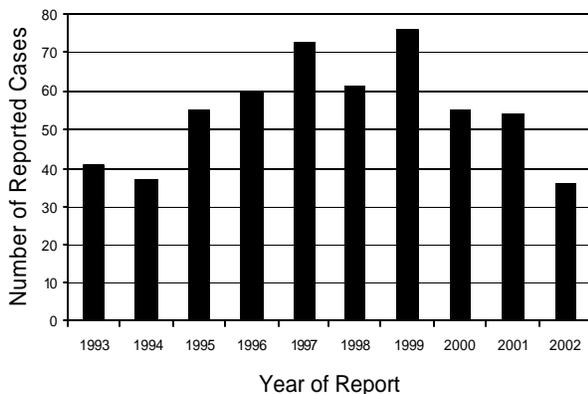
Lymphogranuloma Venereum

No cases of lymphogranuloma venereum were reported in 2002. The last reported case was one reported in 2000.

Malaria

In 2002, 36 cases of malaria were reported compared with 54 cases in 2001 (Figure 30). All but two of the people reported with malaria are believed to have acquired the disease while in another country. Of those reported, Africa was the probable source of malaria for 31 cases, India three cases, Southeast Asia one case, and Papua New Guinea one case. Two people from the northern region who were reported with *Plasmodium vivax* probably were bitten by infected mosquitoes that had bitten a malaria infected person in their area.

Figure 30. Malaria: Ten Year Trend, Virginia, 1993-2002



Infants had the highest incidence rate of 2.1 cases per 100,000 population. All other age groups had incidence rates between 0.2 and 1.0 per 100,000. Race was reported as unknown for 4 (11%) cases. Where race was reported, blacks had the highest incidence rate (1.3 cases per 100,000 population), followed by the other race category (0.3 per 100,000) and whites (0.2 per 100,000).

The northern health planning region reported 12 cases (33%) and an incidence rate of 0.6 per 100,000, which was similar to the northwest region (9 cases, 0.8 per 100,000). Each of the other health planning regions reported from two to seven cases.

Only 13 cases reported taking any chemoprophylaxis. Of these 13 cases, one completed the entire course of medication, 4 did not complete therapy or took medication incorrectly. Information on the completion of treatment was unavailable for eight cases.

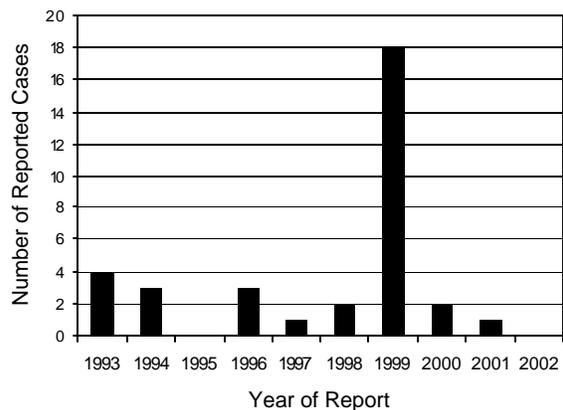
P. falciparum was reported in 18 cases, 16 of whom had known travel histories to Africa, one who had travel history to India, and one to Malawi. *P. vivax* accounted for 8 cases. Two cases reported travel to Africa one case to Asia, and one to India. Two cases who resided in Virginia reported no travel history. *P. malariae* was reported in two cases, both of whom had traveled to Africa. *P. ovale* was also reported in two cases with travel to Africa. The species was reported as unknown in three cases. No cases were reported in U.S. military personnel. The status of the remaining cases was reported as U.S. civilians (eight cases), civilians of other countries (one case), and status unknown (27 cases).

No deaths from malaria were reported.

Measles

No measles cases were reported in Virginia in 2002 compared to one case in 2001 and two cases in 2000 (Figure 31).

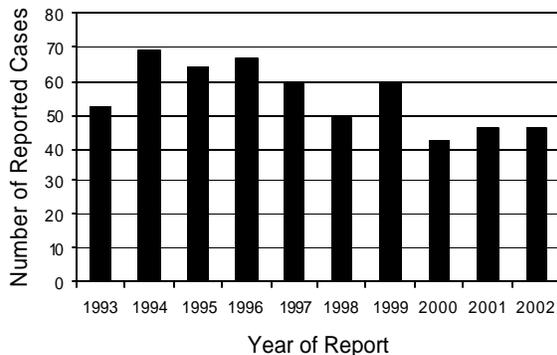
Figure 31. Measles: Ten Year Trend, Virginia, 1993-2002



Meningococcal Infection

The number of cases of meningococcal infection reported in 2002 was 46, which is the same number of cases reported in 2001 and 10% more than the 42 cases reported in 2000 (Figure 32). Onset of illness was distributed throughout the year with the peak number of cases occurring in the second quarter (15 cases, 33%).

Figure 32. Meningococcal Infection: Ten Year Trend, Virginia, 1993-2002

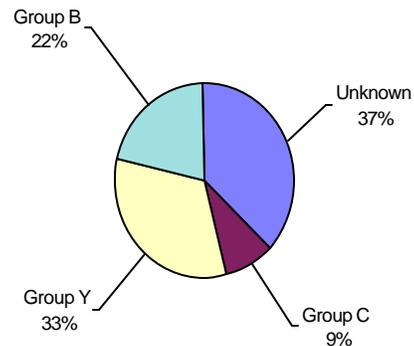


Infants had the highest incidence rate of all age groups (12.6 cases per 100,000 population). The incidence rate was less than 1.0 per 100,000 for each of the other age groups. The black population had a higher incidence rate (0.8 cases per 100,000 population) than whites (0.4 per 100,000). The incidence rate in males and females was similar, at 0.6 and 0.7 per 100,000 respectively. Five to 12 cases were reported from each of the health planning regions. The highest incidence rate was reported from the southwest health planning region (0.9 cases per 100,000), followed by the eastern region (0.7 cases per 100,000).

Serogroup was identified for 29 (63 %) of the reported cases: 15 group Y, ten group B, and four group C (Figure 33). *Neisseria meningitidis* was isolated from blood in 26

cases, from cerebrospinal fluid (CSF) in 16 cases, from blood and CSF in three cases, and from joint fluid in one case.

Figure 33. Meningococcal Serogroups, Virginia, 2002



Four cases of meningococcal disease occurred in college students in 2002. Three of the cases attended public college, one attended a private college. No cases provided a vaccine history. Studies show that crowded living conditions, such as campus dormitories, increase the risk of contracting the disease. A 2001 Virginia law requires students enrolling in any four-year Virginia public college or university for the first time to be immunized against meningococcal disease. However, the student or the minor student's parent may decide against the vaccination and sign a waiver.

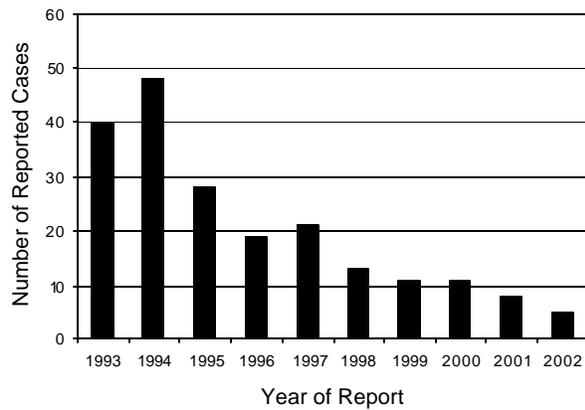
Four persons, ranging in age from three to 51 years, died from meningococcal infection in 2002. Two of these deaths were associated with serogroup Y disease and two with serogroup B.

Mumps

Reported mumps cases continue to decline. The number of cases (5) reported in 2002 is the lowest number of mumps cases reported in the last twenty years (Figure 34). Cases occurred in the first three quarters of

the year, with most cases (40%) reported in the second quarter of the year. No cases were reported in the fourth quarter. Children in the 1-9 year age group had the highest incidence rate for mumps (0.2 per 100,000). Adults in the 30-39 and 50 years and older age groups both had an incidence rate of 0.1 cases per 100,000 population. No cases were reported for the other age groups.

Figure 34. Mumps: 10 Year Trend, Virginia, 1993-2002



Incidence rates were the same for the white and black populations (0.1 case per 100,000 population), and all the cases were female (0.1 case per 100,000 population).

Incidence rate for mumps was similar for the central, northwest and northern health planning regions (between 0.1 and 0.2 per 100,000). The southwest health planning region had no cases.

Nosocomial Outbreaks

A nosocomial outbreak refers to any group of illnesses of common etiology occurring in patients in hospitals or nursing homes acquired while confined in such facilities. Twenty-four nosocomial outbreaks were reported in 2002 (Table 9 on following page).

Eighteen outbreaks were characterized by symptoms of gastroenteritis. Norovirus was laboratory confirmed as the cause of each of these outbreaks. *Haemophilus influenzae*, nontypeable, was isolated in an outbreak of upper respiratory infection and conjunctivitis involving twenty-seven people in a nursing home. One outbreak of unspecified respiratory disease was reported in a healthcare center, and one outbreak with symptoms of cough, fever, and headache but with no known etiologic agent was reported in a nursing home. Influenza was reported in one outbreak in a neonatal intensive care unit (NICU). There was a hospital outbreak with five cases involving multiple types of infections following a surgical procedure. There was also an outbreak of *Serratia marcescens* in a hospital involving eight patients in the NICU. The outbreak was controlled through hand-washing education and isolation and cohorting of the infected patients.

Ophthalmia Neonatorum

Sixteen cases of ophthalmia neonatorum caused by *Chlamydia trachomatis* infection were reported in 2002. This is a 186% increase from the five year mean of 5.6 cases.

Other Outbreaks

This section includes seventeen outbreaks that occurred in 2002 that are not described in other sections of this report (Table 10 on page 33).

Norovirus virus was confirmed as the cause of five outbreaks. In most of these outbreaks, the mode of transmission was person to person. *Salmonella newport* was confirmed in one outbreak in a childcare setting. *Shigella sonnei* was reported in three outbreaks in childcare facilities, and in one district-wide outbreak. Methicillin-resistant *Staphylococcus aureus* was reported as the infectious agent in two outbreaks in correctional facilities. There was an outbreak of a

Table 9. Nosocomial Outbreaks Confirmed in Virginia, 2002

Onset date	Locality	Number of Cases	Etiologic agent	Vehicle	Place Where Outbreak Occurred
12/4/2001	Norfolk	8	<i>Serratia marcescens</i>	unknown	hospital
12/12/2001	Carroll	5	post surgery infections	unknown	hospital
1/30/2002	Richmond City	17	influenza	person to person	neonatal ICU
2/28/2002	Henrico	30	Norovirus	person to person	nursing home
3/14/2002	Alexandria	62	Norovirus	person to person	healthcare center
3/28/2002	Chesterfield	35	Norovirus	person to person	retirement community
4/8/2002	Arlington	28	Norovirus	person to person	assisted living
7/17/2002	Bedford	26	<i>Haemophilus influenzae</i>	person to person	nursing home
8/16/2002	Richmond County	52	unknown	unknown	healthcare center
10/16/2002	Chesterfield	60	unknown	unknown	nursing home
12/2/2002	Buchanan	102	Norovirus	person to person	nursing home
12/3/2002	Sussex	80	Norovirus	person to person	nursing home
12/5/2002	Montgomery	62	Norovirus	person to person	nursing home
12/9/2002	Lynchburg	47	Norovirus	person to person	assisted living
12/14/2002	Pulaski	138	Norovirus	person to person	nursing home
12/20/2002	Lynchburg	61	Norovirus	person to person	nursing home
12/22/2002	Virginia Beach	64	Norovirus	person to person	assisted living
12/26/2002	Bedford	24	Norovirus	person to person	nursing home
12/26/2002	Henrico	69	Norovirus	person to person	nursing home
12/28/2002	Loudoun	105	Norovirus	person to person	nursing home
12/31/2002	Virginia Beach	52	Norovirus	person to person	nursing home
12/31/2002	Alleghany	31	Norovirus	person to person	hospital
12/31/2002	Smyth	90	Norovirus	person to person	nursing home
12/31/2002	Mathews	67	Norovirus	person to person	convalescent center

Table 10. Other Outbreaks Confirmed in Virginia, 2002

Onset date	Locality	Number of Cases	Etiologic agent	Vehicle	Place Where Outbreak Occurred
2/15/2002	Chesterfield	16	<i>Shigella sonnei</i>	person to person	kindergarten class
4/4/2002	Lynchburg	123	Norovirus	person to person	college
4/4/2002	Lynchburg	123	Norovirus	person to person	college
4/9/2002	Williamsburg	27	Norovirus	possible person to person	bus trip
4/17/2002	Virginia Beach	9	unknown	unknown	little league team
4/28/2002	Tazewell	3	<i>Salmonella newport</i>	person to person	child care center
5/29/2003	Williamsburg	8	unknown	possible person to person	pre-K class field trip
6/3/2002	Piedmont HD	45	<i>Shigella sonnei</i>	person to person	district wide outbreak
8/10/2002	Prince William	67	unknown	possible person to person	happy hour social
7/17/2002	Dinwiddie	5	MRSA	possible person to person	correctional facility
8/16/2002	Hanover	5	MRSA	possible person to person	juvenile correctional facility
8/23/2002	Loudoun	2	<i>Plasmodium vivax</i>	arthropod borne	community acquired
9/11/2002	Newport News	8	<i>Shigella sonnei</i>	probable person to person	child care center
9/23/2002	Faifax	32	Norovirus	person to person	child care center
10/3/2002	Petersburg	14	<i>Shigella sonnei</i>	probable person to person	child care center
12/12/2002	Norfolk	12	<i>Shigella sonnei</i>	probable person to person	child care center
12/27/2002	Hopewell	5	Norovirus	unknown	private group

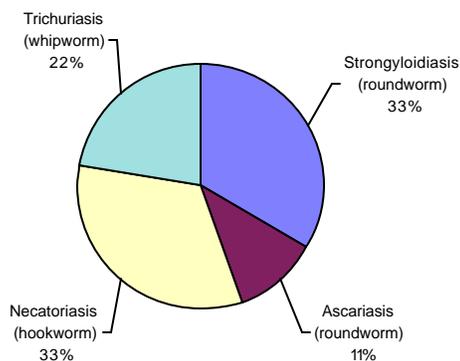
rash illness of unknown cause among pre-kindergarten children on a school field trip, and an outbreak of unknown etiology among a little league team, which was characterized by diarrhea, nausea, and abdominal cramps.

There was also an outbreak of malaria reported from the northern region. Two people were infected with *Plasmodium vivax* from infected mosquitoes (a third case of domestically acquired *P.vivax* was diagnosed in 2002, but not reported until 2003).

Parasites, Intestinal

In addition to amebiasis, cryptosporidiosis, cyclosporiasis, and giardiasis, selected reports of other parasitic intestinal diseases are recorded. In 2002, nine laboratory confirmed cases of other intestinal parasites were recorded: one case of ascariasis (roundworm), two cases of trichuriasis (whipworm), three cases of necatoriasis (hookworm), and three cases of strongyloidiasis (Figure 35). Three cases each had onset dates in the first and second quarters, two cases had onset dates in the third quarter and one in the fourth. The 20-29 year age group accounted for the highest number of cases (4 cases, 44%). Four cases (44%) were in blacks and two (22%) were in whites. Race was not reported for 2 (22%) cases. Three cases (33%) were in females compared to six (66%) in males.

Figure 35. Other Intestinal Parasites, Virginia, 2002
(Represents nine cases of parasitic infection)

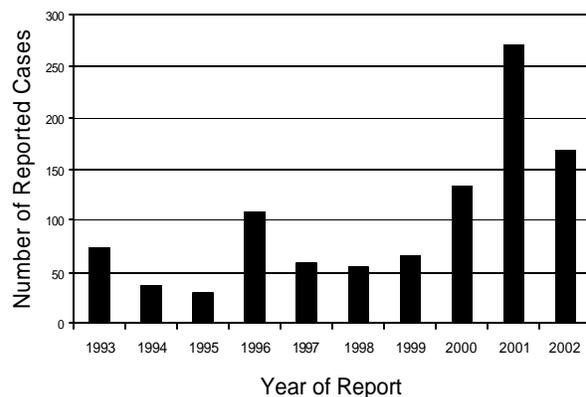


The central health planning region had the highest number of cases (3). The other regions had two cases each, except the northern region, which reported none.

Pertussis

In 2002, 168 cases of pertussis were reported. This is higher than the average of 117.2 cases per year over the preceding five years, but a 38% decrease from the 272 cases reported in 2001 (Figure 36). Pertussis has been one of the most frequently reported childhood vaccine-preventable diseases in Virginia in recent years. Cases occurred throughout the year, but peaked during the first quarter when 64 (38%) cases had onset of symptoms.

Figure 36. Pertussis: Ten Year Trend, Virginia, 1993-2002

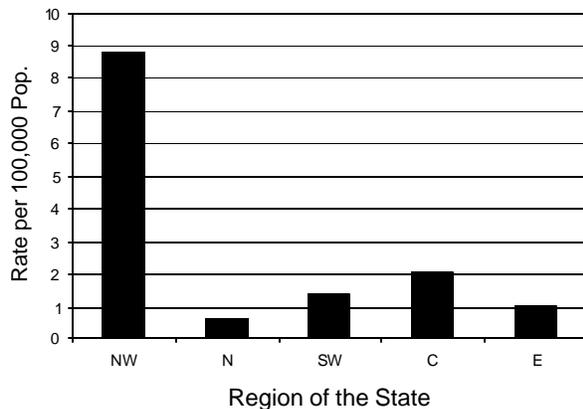


Statewide, infants had the highest incidence rate of 51.3 cases per 100,000 population, followed by the 10-19 year age group with a rate of 6.2 per 100,000. Incidence rates in the other age groups were equal to or less than 3.0 per 100,000.

Eighty-two percent of pertussis cases (138) occurred in whites; the incidence rate for whites was higher than the incidence rate for blacks (2.6 cases per 100,000 vs. 1.4 per 100,000 respectively). Males and females had the same rate of pertussis (2.3 cases per 100,000 population).

The majority of cases and highest incidence rate was reported from the northwest health planning region (94 cases, 8.8 per 100,000), followed by the central region (26 cases, 2.1 per 100,000) (Figure 37). One death due to pertussis was reported in 2002 in a female less than 1 year of age. An outbreak of 15 cases of pertussis occurred in the northwest region of the state during 2002. (A second outbreak involving 39 people was reported in 2002 but occurred in 2001).

Figure 37. Pertussis: Rate by Region, Virginia, 2002



Plague

No cases of plague have been reported in Virginia since the nineteenth century.

Poliomyelitis

The last reported case of poliomyelitis in Virginia occurred in 1978.

Psittacosis

Psittacosis is reported rarely in Virginia. No cases were reported in 2002. One case was reported in 1998.

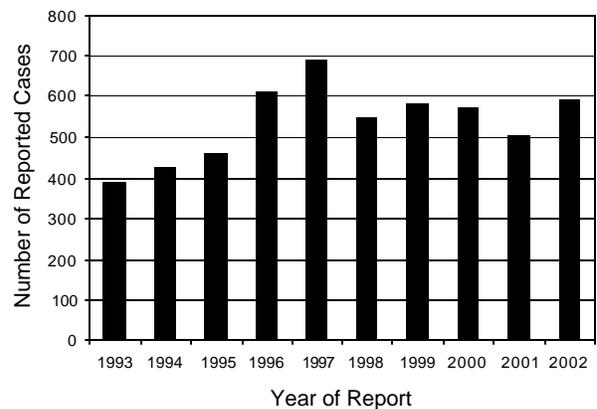
Q Fever

No cases were reported in 2002. One case of Q fever was reported in 1999.

Rabies in Animals

The number of animals confirmed with rabies increased from 502 in 2001 to 592 in 2002 (Figure 38).

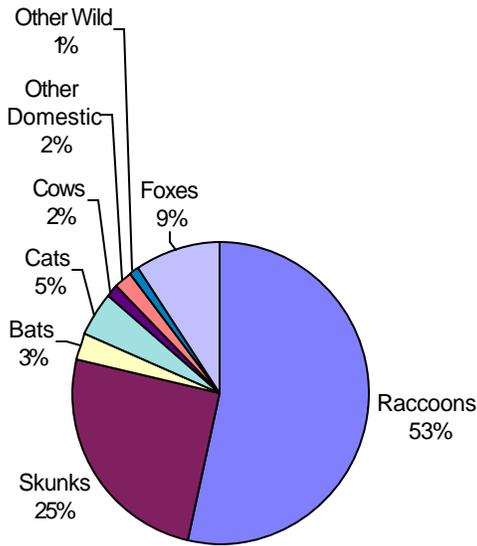
Figure 38. Rabies in Animals: Ten Year Trend, Virginia, 1993-2002



Fairfax County (including the cities of Fairfax and Falls Church) reported the most cases (80 cases, 14%). Loudoun had the second highest number of cases (25 cases, 4%). The remaining localities contributed 3% or fewer cases each to the total number of rabid animals.

For the twentieth consecutive year, raccoons were the most commonly reported species reported with rabies, accounting for 318 cases or 54% of the total number of animals reported. Skunks were the second most frequently reported species, accounting for 147 (25%) cases (Figure 39). The other wildlife reported with rabies was 56 foxes, 17 bats, five bobcats, and two groundhogs.

Figure 39. Species of Animals Positive for Rabies, Virginia, 2002
(592 animals tested positive for rabies)

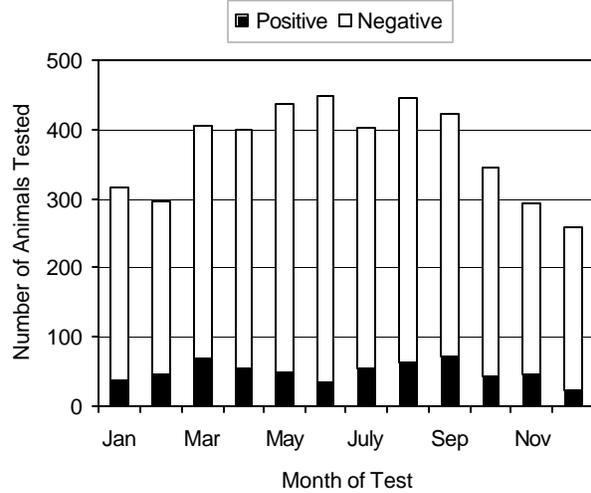


Cats were the most commonly reported domestic animal with rabies. Twenty-seven rabid cats were reported, followed by nine cows, four dogs, three horses, one rabbit, two sheep, and one goat.

Animals Tested

The number of animals tested declined from 4,070 in 2001 to 3,873 in 2002. Cats were the most commonly tested domestic animal, and accounted for 26% of all animals tested. Raccoons accounted for 20% of all animals tested, followed by dogs (15%), bats (11%), opossums (6%), skunks (5%), and foxes, squirrels and groundhogs (3% or lower). Overall, 15% of all animals tested were positive for rabies, but positivity rates differed by type of animal. Skunks accounted for 5% of all animals tested; however, 70% of those tested were positive. While only nine bobcats were tested, five (56%) were positive. Thirty-six percent of tested foxes were positive for rabies. Figure 40 compares the total number of animals tested with the number positive, by month.

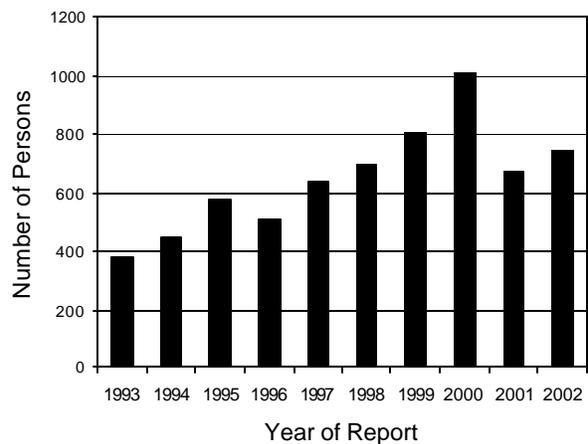
Figure 40. Animal Rabies Tests by Month and Test Result, Virginia, 2002



Human Exposure

During 2002, 749 persons were reported to have received post-exposure prophylaxis, a 12% increase from the 670 persons reported in 2001 (Figure 41). In addition, 566 persons received pre-exposure prophylaxis compared to 389 in 2001 and 662 in 2000.

Figure 41. Rabies Post-Exposure Prophylaxis Received, Virginia, 1993-2002



Human exposure was reported for 12 rabid animal species. The ratio of human exposures to the number of rabid animals by species is as follows: 5/17 rabid bats, 4/5 rabid bobcats, 23/27 rabid cats, 7/9 rabid cows, 2/4 rabid dogs, 11/56 rabid foxes, 0/2 rabid groundhogs, 3/3 rabid horses, 36/318 rabid raccoons, 14/47 rabid skunks, 1/1 rabid goat, 1/1 rabid rabbit, and 2/2 rabid sheep.

Rabies in Humans

No cases of rabies in humans were reported in Virginia in 2002. In 1998, the first case of human rabies in Virginia in 45 years was reported.

Rocky Mountain Spotted Fever

The 43 cases of Rocky Mountain spotted fever reported in 2002 represent only an 8% increase from the 40 cases reported in 2001, but a 100% increase over the annual average of 21 cases in the preceding five years. Figure 42 shows the ten-year trend in the number of reported cases in Virginia. Onset of cases occurred throughout the year with a peak in June as shown in Figure 43.

Figure 42. Rocky Mountain Spotted Fever: Ten Year Trend, Virginia, 1993-2002

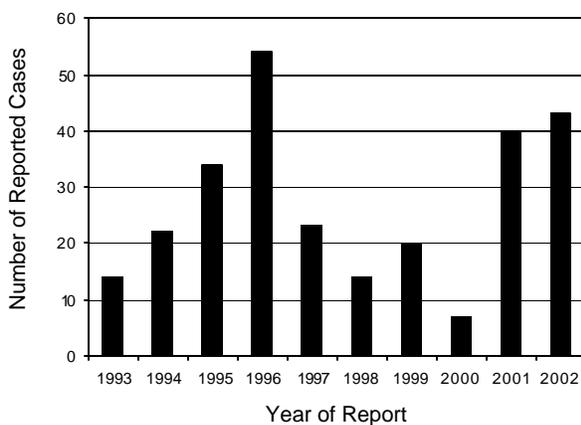
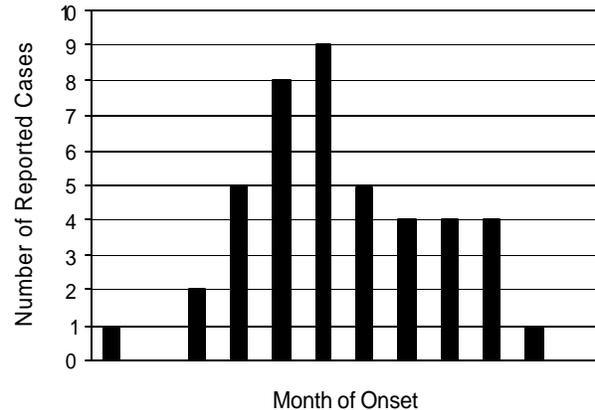


Figure 43. Rocky Mountain Spotted Fever: Month of Onset, Virginia, 2002



Infants had the highest incidence rate (2 cases, 2.1 per 100,000), followed by children aged 1-9 years (10 cases, 1.1 per 100,000). Adults aged 50 and older had the highest number of cases (13, 0.7 per 100,000 population).

The white population had a higher incidence rate than blacks (40 cases, 0.8 per 100,000 vs. 2 cases, 0.1 per 100,000, respectively). One case was reported as race unknown. Males and females had similar incidence rates (0.7 per 100,000 and 0.5 per 100,000, respectively).

By region, the incidence rate was highest in the central health planning region (1.6 per 100,000), followed by 0.9 per 100,000 in the northwest region. The other health planning regions had incidence rates between 0.1 and 0.4 per 100,000.

A rash was reported in 13 (30%) cases. Seven (16%) persons had a known tick bite. One death due to Rocky Mountain spotted fever was reported in 2002.

Rubella

No cases of rubella were reported in 2002. One case was reported in 1998.

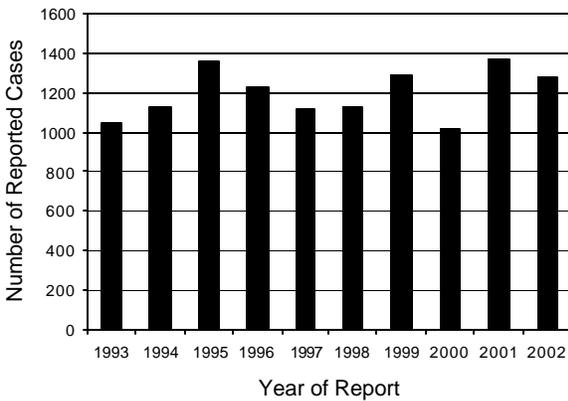
Congenital Rubella Syndrome

There were no cases of congenital rubella syndrome reported in 2002.

Salmonellosis

Salmonellosis continues to be the most frequently reported enteric pathogen in Virginia. There were an average of 1,186 cases per year over the preceding five years. In 2002, 1,277 *Salmonella* infections were reported compared to 1,368 in 2001 (Figure 44). The most commonly reported serotypes were *S. typhimurium* (320 cases), *S. enteritidis* (212 cases), *S. newport* (154 cases), and *S. hiedelburg* (53 cases). These four serotypes accounted for 58% of the 63 different serotypes reported in 2002. The serotype was unspecified in 282 cases (Table 11).

Figure 44. Salmonellosis: Ten Year Trend, Virginia, 1993-2002

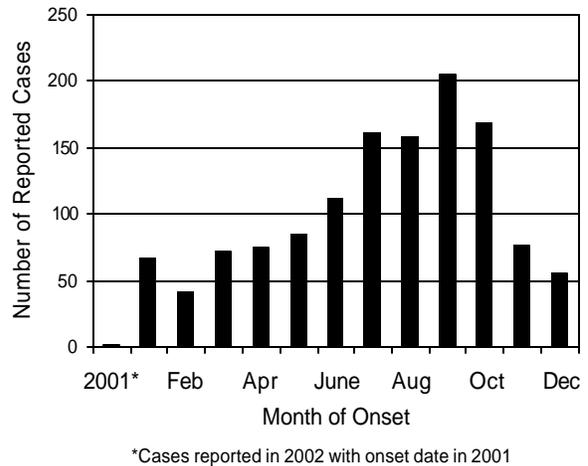


Regionally, the highest incidence rate was in the central health planning region (21.6 cases per 100,000 population), followed by the northwest health planning region (18.8 per 100,000). The lowest rate was in the eastern health planning region (14.6 cases per 100,000 population). The incidence of *Salmonella* infections peaked during the third quarter when 41% of the cases occurred (Figure 45).

Table 11. Number and Percent of *Salmonella* Infections by Species, Virginia, 2002

Species Causing Infection	Number of Cases	Percent of Cases
<i>S. typhimurium</i>	320	25.05
<i>S. enteritidis</i>	212	16.60
<i>S. newport</i>	154	12.06
<i>S. heidelberg</i>	53	4.15
<i>S. javiana</i>	40	3.13
<i>S. braenderup</i>	21	1.64
<i>S. saint paul</i>	18	1.41
<i>S. java</i>	11	0.86
<i>S. bareilly</i>	8	0.63
<i>S. infantis</i>	5	0.39
<i>S. berta</i>	3	0.23
Unspecified	282	22.08
All others	393	30.77
TOTAL	1,277	100.00

Figure 45. Salmonellosis: Month of Onset, Virginia, 2002



Infants had the highest rate of *Salmonella* infection (112.0 cases per 100,000 population),

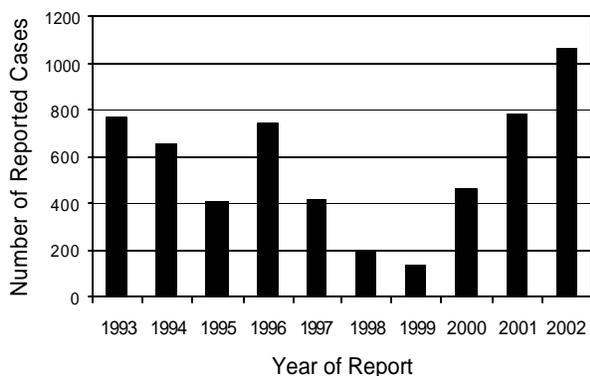
followed by children aged 1-9 years (37.0 per 100,000). Whites and blacks had similar rates of infection (11.4 per 100,000 and 11.3 per 100,000, respectively). The rate of *Salmonella* infection was similar for males (17.1 per 100,000) and females (17.2 per 100,000).

Four *Salmonella* outbreaks were reported in 2002. Two foodborne outbreaks and one person to person outbreak at a childcare facility were due to *S. newport*. One foodborne outbreak was associated with a fundraising dinner and turkey was identified as the vehicle of infection. The other outbreak had an unknown source and mode of transmission. One foodborne outbreak of *S. enteritidis* was associated with a restaurant. The salad was the probable mode of transmission in this outbreak. (See Foodborne Outbreak Section for more information.)

Shigellosis

The number of reported cases of shigellosis increased 35% from 2001 to 2002. The 1,061 cases reported in 2002 was almost three times the average of 399 per year during the preceding five years (Figure 46). Ninety-five cases of shigellosis involved outbreaks in four childcare centers in the eastern region and one community outbreak in one district in the central health planning region. Although the spread of this disease can occur through contamination of food and water, the predominant mode of transmission

Figure 46. Shigellosis: Ten Year Trend, Virginia, 1993-2002

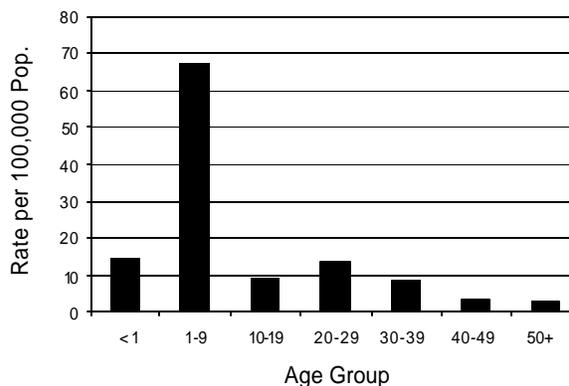


is by direct contact with an infected person. Personal hygiene (i.e., hand washing) remains the most effective method of prevention.

Twenty-eight percent of *Shigella* infections occurred during the first quarter of the reporting year. Ninety percent (953) of the infections reported were caused by *S. sonnei*, 33 infections were due to *S. flexneri*, 5 to *S. boydii*, and 1 to *S. dysenteriae*. The species was not identified for 69 infections.

Children aged 1-9 years had the highest incidence rate (67.3 cases per 100,000 population), followed by infants (14.7 per 100,000). The other age groups had incidence rates between 2.6 and 14.1 per 100,000 (Figure 47). Race was recorded as unknown for 357 (34%) cases. When race was reported, incidence among blacks was 26.1 cases per 100,000 population compared to 5.7 among whites. Females had a higher rate (16.0 per 100,000) than males (12.4 per 100,000).

Figure 47. Shigellosis: Rate by Age Group, Virginia, 2002



The eastern and central health planning regions had the highest incidence rates (30.1 per 100,000 and 29.1 per 100,000 population, respectively), while rates were significantly lower in the northern (5.1 per 100,000), northwest (4.1 per 100,000) and southwest (2.4 per 100,000) regions.

Streptococcal Disease, Group A, Invasive

In 1999, invasive Group A streptococcal disease became a reportable condition. Eighty-two cases were reported in 2002, compared to an average of 34 cases per year since 1999. The central health planning region reported 26 cases and had the highest incidence rate (2.1 per 100,000 population), followed by 19 cases (1.8 per 100,000) in the northwest region, and 22 cases (1.7 per 100,000) in the southwest region. Thirteen cases (0.7 per 100,000) were reported in the eastern region and two cases (0.1 per 100,000) in the northern region.

Most infections (49%) occurred in the first quarter of the year. The 50 year and older age group accounted for 65% (53) of cases and had the highest incidence rate (2.7 per 100,000). Infants had the second highest incidence rate (2.1 per 100,000 population), followed by the 40-49 year age group (0.9 per 100,000). The incidence rate for blacks was slightly higher than in whites (1.5 per 100,000 vs. 1.0 per 100,000). Males and females had similar rates of disease (1.1 per 100,000 and 1.2 per 100,000, respectively).

The organism was isolated from blood (63 cases), wounds (13 cases), tissue (3 cases), pleural fluid (1 case), bone (1 case), and peritoneal fluid (1 case). Four deaths occurred in 2002 due to this infection, for a case fatality rate of 5%.

Streptococcus pneumoniae, Invasive

In 2001 *Streptococcus pneumoniae*, invasive disease became reportable in children less than 5 years of age. *S. pneumoniae* is a gram-positive bacteria that can cause serious disease, and is the leading cause of bacterial

meningitis in children less than 5 years of age in the United States. The first pneumococcal conjugate vaccine became available in 2000.

There were 20 cases of *S. pneumoniae* reported in Virginia during 2002. The most cases occurred in the eastern health planning region (11 cases), while the other regions reported between one and three cases each. The 1-4 year age group accounted for 60% (12) of the cases and infants accounted for 40% (8). There was one reported death in the 1-4 year age group.

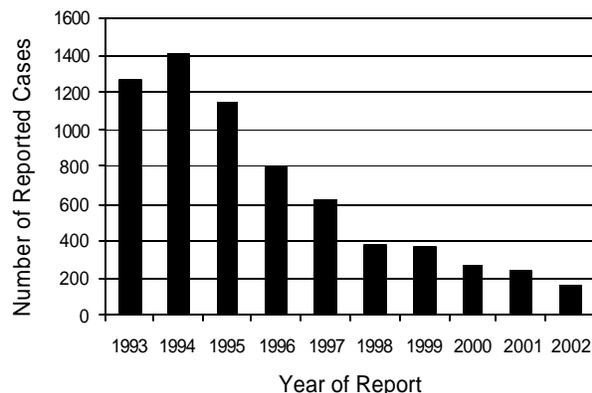
A similar number of cases were reported for whites and blacks (eight and nine, respectively) and 13 cases (65%) were reported in males. The majority of cases (70%) occurred during the third and fourth quarters.

Syphilis

Early Syphilis

Early syphilis includes the primary, secondary and early latent stages of syphilis. The number of cases of early syphilis reported decreased 30%, from 235 cases in 2001 to 165 cases in 2002 (Figure 48). This is the lowest annual number of reported cases on record and continues a downward trend that began in 1995.

Figure 48. Early Syphilis: Ten Year Trend, Virginia, 1993-2002

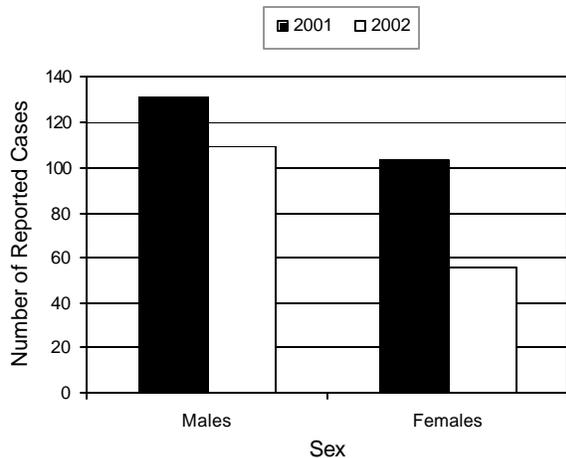


The 20-29 year age group had the highest incidence rate (4.7 cases per 100,000 population), followed by the 30-39 age group (3.9 per 100,000) and the 40-49 year age group (3.7 per 100,000).

The largest proportion of cases were reported in blacks (114 cases, 8.0 per 100,000), resulting in an incidence rate almost 12 times higher than the rate for whites (0.7 per 100,000) and three times higher than the rate for the other race category (2.7 per 100,000).

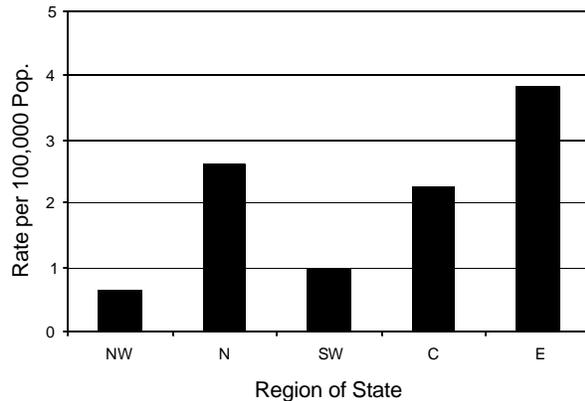
A decrease of cases was seen among both males and females from 2001 to 2002 (Figure 49). The 2002 incidence rate per 100,000 population was 3.0 for males and 1.5 for females.

Figure 49. Early Syphilis: Number of Cases by Sex, Virginia, 2001-2002



The eastern health planning region had the highest rate (67 cases, 3.8 per 100,000), followed by the northern region (50 cases, 2.6 per 100,000) (Figure 50).

Figure 50. Early Syphilis: Rate by Region, Virginia, 2002



Congenital Syphilis

In 2002, one case of congenital syphilis was reported. This case represented a decrease from the five cases reported in 2001. Due to the nine-month gestation period, there is usually a lag between an increase or decrease in early syphilis and a corresponding change in congenital syphilis. Thus, the decrease in early syphilis in females in 2002 should be associated with a continued decrease in congenital syphilis.

Tetanus

No cases of tetanus were reported in 2002. One case of tetanus was reported in Virginia in 1998.

Toxic Shock Syndrome

Five cases of toxic shock syndrome were reported in Virginia in 2002. The condition occurred in three females (0.1 cases per 100,000) and two males (0.6 cases per 100,000). Three cases (two females and one male) were positive for *Staphylococcus aureus* and two (one male and one female)

were positive for group A *Streptococcus*. Four cases occurred in the northwest health planning region and one case occurred in the central region. In 2001, two cases were reported.

Toxic Substance-Related Illnesses

During 2002, 485 cases of the following toxic substance related illnesses were reported to the health department: asbestosis (362 cases, 75%), arsenic (1 case, <1%), adult lead poisoning (109 cases, 22%), pneumoconiosis (4 cases, <1%), cadmium poisoning (2 cases, <1%), mesothelioma (1 case, <1%), methemoglobinemia (1 case, <1%), and mercury poisoning (5 cases, 5%). The remainder of this section will present further information on the cases of asbestosis.

Of the 362 persons reported with asbestosis, all but two were male. Cases ranged in age from 48 to 96 years (mean= 67 years). Race was not reported for 97% of the cases.

Cases were reported from four of the five health planning regions. The eastern region had 358 cases (99%) and an incidence of 20.4 cases per 100,000. The industries employing the most persons reported with asbestosis were shipbuilding (287 cases, 79%) and the military (52 cases, 14%).

Trichinosis

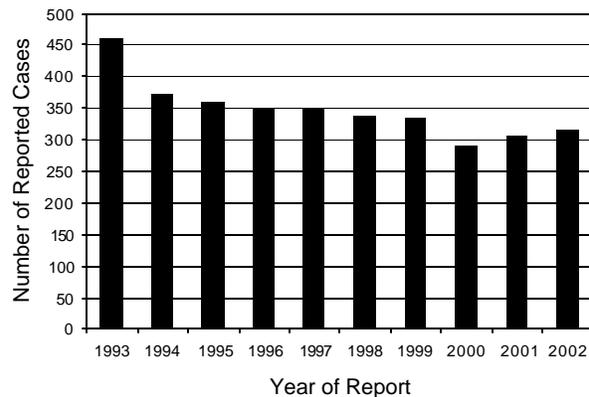
No cases of trichinosis were reported in Virginia in 2002. The last case was reported in 1993.

Tuberculosis

In 2002, 315 tuberculosis cases were

reported, an increase of 3% compared to the 306 cases reported in 2001. Despite the increase in 2001 and 2002, there has been a small, general decline in the annual number of reported cases over the past 10 years (Figure 51). The annual incidence rate for Virginia in 2002 was 4.3 cases per 100,000 population, compared to 5.2 cases per 100,000 population for the nation.

Figure 51. Tuberculosis: Ten Year Trend, Virginia, 1993-2002

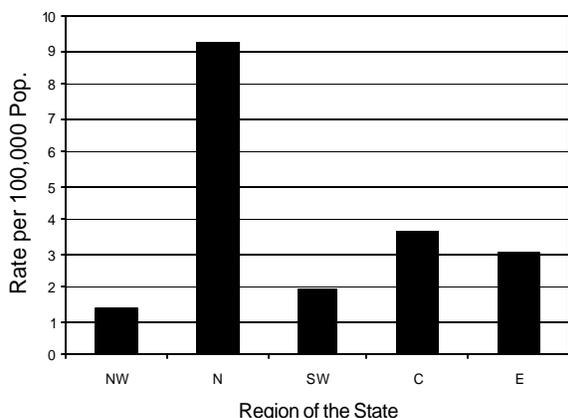


Cases of tuberculosis occurred in all age groups. Three cases were reported among infants and nine cases occurred in children in the 1-9 year age group. The highest incidence rate was in persons age 50 years and older (124 cases, 6.3 per 100,000). The 20-29 year age group had the same number of cases but a slightly higher incidence rate than the 30-39 year age group (59 cases, 5.9 per 100,000 vs. 59 cases, 5.0 per 100,000 population, respectively). Persons in the other race category had the highest incidence rate (95 cases, 16.2 per 100,000), followed by blacks (89 cases, 6.2 per 100,000), and whites (131 cases, 2.5 per 100,000). Males had a higher incidence than females (5.0 per 100,000 vs. 3.7 per 100,000, respectively).

The northern health planning region reported the highest number of cases and the

highest incidence rate (177 cases, 9.2 per 100,000), followed by the central (45 cases, 3.6 per 100,000) and eastern regions (53 cases, 3.0 per 100,000), as shown in Figure 52. Persons born in countries outside the United States accounted for the majority (60%) of cases. Foreign-born persons made up 87% of the cases in the northern health planning region, 40% in the northwest region, 28% in the eastern region, 27% in the central region, and 8% in the southwest region.

Figure 52. Tuberculosis: Rate by Region, Virginia, 2002



Of the 299 laboratory confirmed cases, 264 (88%) had drug susceptibility testing performed. Of those, 22 (8%) were resistant to at least one anti-tuberculosis medication. Among ten cases resistant to more than one drug, four were classified as multi-drug resistant TB (resistant to INH and rifampin).

Seventy-one percent of persons reported with tuberculosis were offered HIV testing; results were available for 174 persons, of whom 13 were HIV positive.

Utilization of directly observed therapy (DOT) in Virginia increased again in 2002. In 1992, only 10% of Virginia's TB cases were on DOT. In 2002, 75% percent of all TB cases starting therapy were placed on DOT.

The goal for completion of therapy within 12 months is 90%. After allowing for drug-

resistant disease and those who moved or died during their course of therapy, Virginia was still not able to achieve this goal. For cases reported during 2002, 88% finished within 12 months. Twenty-four patients died during the treatment period.

Tularemia

One case of tularemia was reported in the eastern region in 2002. The case was a male less than 10 years of age who was exposed to wood ticks. Disease onset was in the second quarter. There were no reported cases of tularemia in 2001.

Typhoid Fever

Eight cases of typhoid fever (*Salmonella typhi*) were reported in 2002 compared to 15 in 2001. Five of the eight cases reported recent travel; three traveled to India, one to Pakistan, and one to Mexico. None of the cases was related to an outbreak; however, two cases that had not traveled outside of the United States had exposure to known cases within 30 days of illness.

The cases ranged in age from 2 to 64 (mean= 19 years). Males and females had similar incidence rates (0.2 per 100,000 and 0.1 per 100,000, respectively). Race was unknown for five out of the eight cases.

Five cases were reported from the northern health planning region and one case was reported from each of the northwest, central and eastern regions. The southwest health planning region reported no cases.

Typhus

The last reported case of typhus in Virginia occurred in 1993.

Vibrio Infection

Twenty cases of vibriosis were reported in 2002. *Vibrio parahaemolyticus* was the cause of nine infections, *V. vulnificus* caused three infections, and *Vibrio* serotype was unspecified for eight infections.

All cases except three occurred between the second and fourth quarters (April-December). Persons with *Vibrio* infection ranged in age from 6 to 71 years. The white and black population had similar incidence rates (0.3 cases per 100,000 and 0.2 cases per 100,000, respectively). Race was recorded as unknown for three cases. Males had a slightly higher incidence rate (0.4 cases per 100,000) than females (0.2 cases per 100,000).

The eastern health planning region reported ten cases, and the other regions each reported between two and four cases. Three deaths due to this infection were reported in 2002. Two of the deaths were due to *V. vulnificus*; one case had a wound infection and the other had exposure to raw oysters. The third death was due to a nontoxogenic *V. cholera* non-01 wound infection from possible water exposure. All of these individuals had a reported history of cirrhosis.

Cholera

No cases of cholera (*V. cholera* 01 or *V. cholera* 0139) were reported in Virginia in 2002. The last case was reported in 1994.

Waterborne Outbreaks

No waterborne outbreaks were reported in 2002. One possible waterborne outbreak due to campylobacteriosis was reported in 2000.

Yersiniosis

Although not officially reportable in Virginia, eight reports of yersiniosis were received in 2002. Species was reported as *Y. enterocolitica* for six cases, *Y. frederiksenii* for one case, and *Y. intermedia* for one case. Cases occurred in the first, third and fourth quarters of the year.

The cases ranged in age from two months to 69 years. The incidence rate was the same for females and males (0.1 case per 100,000), and the black and white population had similar rates (0.2 cases per 100,000 and 0.1 case per 100,000, respectively). Race was not specified for two cases. Cases were reported from the southwest, central and eastern health planning regions.