Reportable Infectious Diseases in Maine

2004 Summary

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Foreword

This is the eleventh consecutive annual report on infectious diseases in Maine published by the Division of Disease Control, Bureau of Health. It is intended to provide an overview of communicable diseases of public health importance in Maine.

This report would not be possible without the continued support of our healthcare and public health partners throughout the state. They have expended considerable time assisting the Bureau of Health with infectious diseases that impact Maine residents. Their active and critical role in the infectious disease surveillance cycle translates into statewide policies and programs that protect our residents from infectious disease through health promotion, disease prevention, and early detection, containment, and treatment.

We encourage our partners' continued support and vigilance in our efforts to protect the people of Maine through timely, complete, and accurate infectious disease reporting. The better we are able to prevent and control disease now, the better positioned we will be to respond to emerging infectious disease threats in the future.

For more information on what, when, and how to report infectious disease, please see *Appendix A (Notifiable Conditions List)* of this report, visit our website at www.mainepublichealth.gov, or call 1-800-821-5821.

We hope you find this report useful as we all work to protect and promote the health of Maine's residents.

Sally-Lou Patterson
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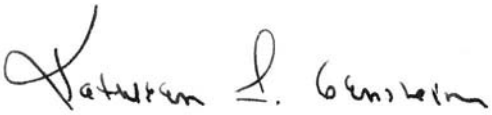

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INTRODUCTION

Overview of Public Health Surveillance

The responsibility of governments to control and prevent disease in the population dates back hundreds of years. Government responsibility was exercised during the epidemics of plague, syphilis, and smallpox in the Middle Ages to identify possible sources of disease, to quarantine infectious cases, and to prevent further spread of infection. Illness was monitored, regulations were enacted to prevent pollution of streets and public water supplies, and instructions were made for appropriate methods of burial and food handling.

Infectious disease surveillance in the United States began soon after the colonies were established. In 1741 Rhode Island passed legislation requiring tavern keepers to report contagious disease among their patrons. Two years later, Rhode Island enacted legislation requiring the reporting of smallpox, yellow fever, and cholera.

National disease surveillance began in 1850, when mortality statistics were first published by the federal government based on the decennial census. The legal requirement to collect national morbidity data in the United States was initiated in 1878, when Congress authorized the US Public Health Service to collect reports of the occurrence of quarantineable diseases including cholera, plague, smallpox, and yellow fever.

Today, a total of 61 infectious diseases are nationally reportable; 68 are reportable in Maine. The list of reportable infectious diseases changes periodically. Diseases may be added to the list as new pathogens emerge or when a previously recognized pathogen becomes more important. Also, some diseases may be deleted from the list as their incidence or importance declines. While modern advances in sanitation, personal hygiene and immunizations serve to provide greater control and prevention of some diseases, other infectious diseases continue to thrive and still other yet to be identified infectious disease entities are constantly emerging.

The Bureau of Health works with healthcare providers and laboratorians to gather infectious disease information, analyze it, and provide reports in a timely manner.

Surveillance data are useful for identifying situations that require immediate public health action, such as disease outbreaks; identifying emerging diseases, including identifying populations at higher risk of infection; monitoring trends in the burden of disease; guiding the planning, implementation and evaluation of disease prevention and treatment programs; and forming public policy, including the allocation of heath care resources.

The public health "patient" is the community, and information about that community can be useful to the clinician providing care to the individual. Partnership between public health professionals and health care providers is critical to assure accurate, representative and timely information for all.

Basic Information about Disease Reporting in Maine

Who - Health Care Providers, medical laboratories, health care facilities, administrators, health officers and veterinarians are required to report notifiable diseases to the Maine Bureau of Health**.**

When - Diseases that are possible indicators of bioterrorism and thirteen other diseases requiring specific and prompt public health response are to be reported immediately. The remainder of notifiable conditions are to be reported within 48 hours of recognition or strong suspicion of disease.

How - Disease reports may be made by telephone or fax to the Bureau of Health 24 hours a day, 7 days a week. The reporting numbers are toll free: telephone 1-800-821-5821 and fax 1-800-293-7534. An epidemiologist is on call 24 hours a day, 7 days a week to respond to public health emergencies. Disease reports may also be mailed to the Division of Disease Control, 286 Water Street, 8th Floor, Key Plaza, 11 State House Station, Augusta, Maine 04333-0011.

Where - Up to date information regarding infectious disease incidence in Maine is available at http://www.maine.gov/dhhs/boh/ddc/indexnew.htm

What - Infectious disease and notifiable conditions reportable in Maine are listed on the Bureau of Health website, along with the Rules for the Control of Notifiable Conditions.

Purpose of Report

The annual report of infectious diseases fulfills multiple functions. First, it allows public health officials to quantify the magnitude of certain problems. For example, surveillance data indicate the spread of West Nile Virus within Maine. Second, the report allows us to evaluate the effectiveness of our prevention measures. For example, the incidence of vaccine preventable diseases provides evidence about the effectiveness of the state's immunization program. Third, data in the report allow us to detect changes in health care practice. For example, is hepatitis B vaccine and immune globulin being given at birth to children born to women who are chronic carriers? Fourth, the report helps us plan for future events. For example, data on HIV and AIDS help to establish the need for treatment resources, including antiviral medications for the indigent. Finally, the report serves as an historical document of public health surveillance data providing information on the descriptive epidemiology of reportable infectious diseases in Maine.

2004 Infectious Disease Surveillance Highlights

Bioterrorist agents – Except for one case of botulism, none of the potential agents of bioterrorism were reported in Maine during the past year.

Enteric diseases - Campylobacteriosis and giardiasis were the two most commonly reported enteric infections in Maine in 2004. Multiple outbreaks of gastrointestinal disease were reported during the year although an etiologic agent was not identified in many cases.

Respiratory diseases - Although the overall number of TB cases remained stable, the percentage of cases among foreign-born persons continued to increase. Forty-five percent of cases of TB in Maine were among the foreign-born in 2004. Activities for influenza surveillance were enhanced to better prepare for a possible pandemic.

Sexually transmitted infections - Chlamydia remained the most commonly reported infectious disease in Maine with 2,120 cases in 2004. Forty-six new cases of HIV were also reported.

Vaccine preventable disease - Pertussis continued to be the most commonly reported vaccine preventable disease in Maine with 196 cases in 2004. In contrast, most other vaccine preventable diseases were at historically low levels. For example, no cases of measles have been reported in the state in over five years.

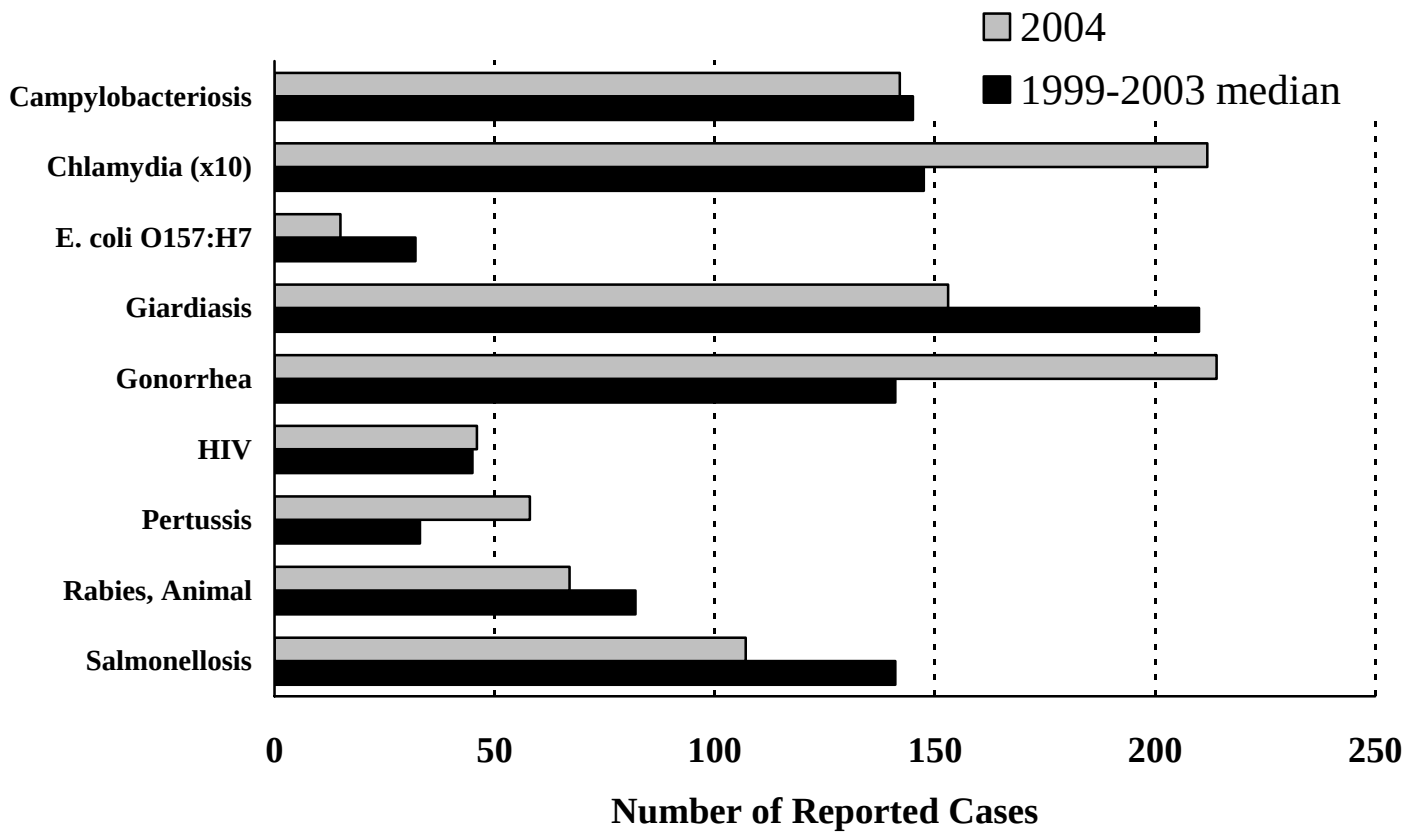
Vectorborne diseases - Surveillance for West Nile Virus has identified infected birds, but human cases have yet to be reported in Maine. Lyme disease continued to be the most commonly reported vectorborne disease with 225 cases in 2004.

Zoonotic diseases - The epizootic of rabies in wildlife continued with 68 animals from five different wildlife species (skunk, raccoon, bat, fox, and woodchuck) identified as rabid in 2004. The only domestic animal found to be rabid was a cat.

Selected Reportable Diseases by Year -- Maine, 2000-2004

Disease	2000	2001	2002	2003	2004
AIDS	44	45	27	38	56
BABESIOSIS	0	1	2	3	5
BOTULISM, FOODBORNE	0	0	2	0	1
CAMPYLOBACTERIOSIS	149	124	140	147	142
CHLAMYDIA	1474	1346	1801	2040	2120
CRYPTOSPORIDIOSIS	20	20	12	20	22
CYCLOSPORIASIS	0	0	0	0	1
EHRLICHIOSIS	1	1	1	1	1
ESCHERICHIA COLI 0157:H7	32	29	39	11	16
ESCHERICHIA COLI SHIGATOXIN	0	2	0	4	2
GIARDIASIS	238	197	213	185	151
GONORRHEA	90	141	142	231	214
HANTAVIRUS (PULMONARY)	0	0	0	0	0
H. INFLUENZAE (HIB-INVASIVE)	2	2	2	6	15
HEMOLYTIC UREMIC SYNDROME	0	1	3	0	2
HEPATITIS A	23	11	9	16	17
HEPATITIS B (ACUTE)	6	7	14	6	12
HIV INFECTION	51	40	39	55	46
LEGIONELLOSIS	2	8	6	2	1
LISTERIOSIS	2	2	5	7	8
LYME DISEASE	71	108	219	175	225
MALARIA	7	7	5	6	7
MEASLES	0	0	0	0	0
MENINGOCOCCAL DISEASE	10	8	7	13	12
MUMPS	0	0	0	0	0
PERTUSSIS	51	23	21	91	196
POWASSAN, ENCEPHALITIS	0	0	0	0	1
PSITTACOSIS	0	0	0	0	1
RABIES (ANIMAL)	139	85	67	82	69
RUBELLA	0	0	0	0	0
SALMONELLOSIS	127	168	147	132	110
SHIGELLOSIS	11	6	10	7	13
STREPTOCOCCAL (GpA-INVASIVE)	12	12	20	30	15
STREPTOCOCCAL (GpB-INVASIVE)	13	18	27	12	30
STREP PNEUMO (DR-INVASIVE)	0	0	0	0	4
SYPHILIS (EARLY)	1	4	3	15	2
TUBERCULOSIS	24	20	23	24	20
TOXIC SHOCK SYNDROME	2	0	1	1	1
VARICELLA	1271	146	792	1012	363
VIBRIO SPECIES	0	1	4	3	4
YERSINIOSIS	3	2	0	0	0

Selected Reportable Diseases – Maine, 2004 and Five-Year Median



VACCINE-PREVENTABLE DISEASES

Influenza

Influenza is a viral illness that typically occurs during the winter months. Uncomplicated influenza is characterized by the abrupt onset of fever, myalgia (e.g., muscle aches), headache, malaise, non-productive cough, sore throat, and rhinitis (e.g., runny nose). In some person, influenza can exacerbate underlying medical conditions or lead to secondary bacterial or primary viral pneumonia. Influenza viruses cause disease among all age groups with the highest rates of infection occurring in children and the highest rates of serious influenza related complications and death among the elderly, very young children, and persons of all ages with underlying medical conditions. Influenza-like illness (ILI) is a term used to describe illness that presents with the typical signs and symptoms of influenza, but that has not been confirmed as influenza by laboratory test. ILI is defined as fever greater than or equal to 100'F (37.8'C) and cough and/or sore throat, in the absence of a known cause other than influenza.

The purpose of influenza surveillance is to inform influenza prevention and control policy by tracking the onset of influenza and influenza-like illness in Maine and determining trends in influenza subtype circulation. During the 2004-2005 influenza season, the Maine Bureau of Health conducted influenza surveillance in collaboration with multiple public and private agencies. More than 110 health care providers, laboratories, and government agencies were engaged during the 33-week reporting period from October 4, 2004 to May 21, 2005, submitting over 1,600 reports of influenza and influenza-like illness. Influenza surveillance information is summarized by key surveillance indicators: 1) weekly characterization of statewide influenza activity by the state epidemiologist; 2) outpatient influenza-like illness; 3) sentinel school absenteeism surveillance; 4) laboratory report of culture-positive influenza; 5) outbreaks of influenza; 6) hospital inpatient surveillance for respiratory illness (admitted from the emergency department); 7) select city vital records for influenza and pneumonia mortality data; and 8) individual case reports of influenza-associated pediatric deaths.

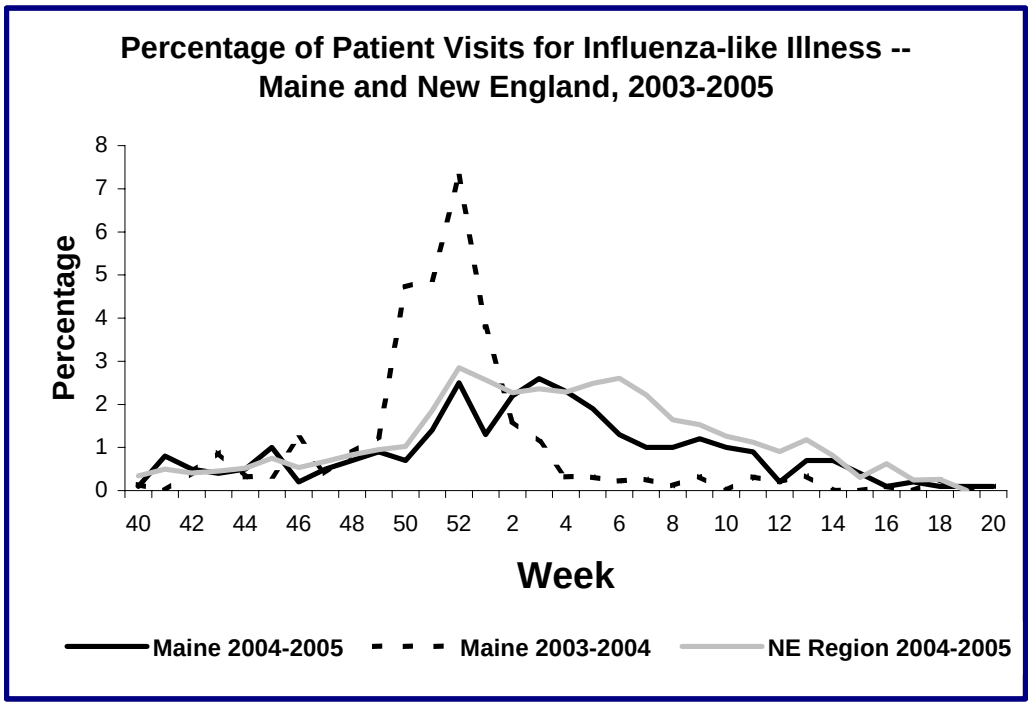
Sentinel Site Surveillance

Outpatient influenza-like illness (ILI)

Outpatient ILI data were collected through the U.S. Influenza Sentinel Provider Surveillance Network, a collaborative effort between the federal Centers for Disease Control and Prevention (CDC), the Maine Bureau of Health, and local health care providers. During the 2004-2005 season, 21 Maine providers were enrolled, representing 15 counties and three metropolitan statistical areas. Participating providers reported the total numbers of patients seen in their practices and the number of those patients with ILI by age group on a weekly basis, which were used to calculate the percent of patient visits attributable to ILI.

Maine sentinel providers reported 116,297 patient-visits during the season; 1,157 (1.0%) of which were for ILI. During week 40 (October 4-9, 2004), 0.1% patient-visits were for ILI. Outpatient ILI visits gradually increased, and peaked during week 3 (January 16-22, 2005) when sentinel providers reported 2.6% patient-visits as ILI-related. A steady

decline followed mid-January activity; ILI patient-visits decreased to less than 0.5% during the remainder of the season.

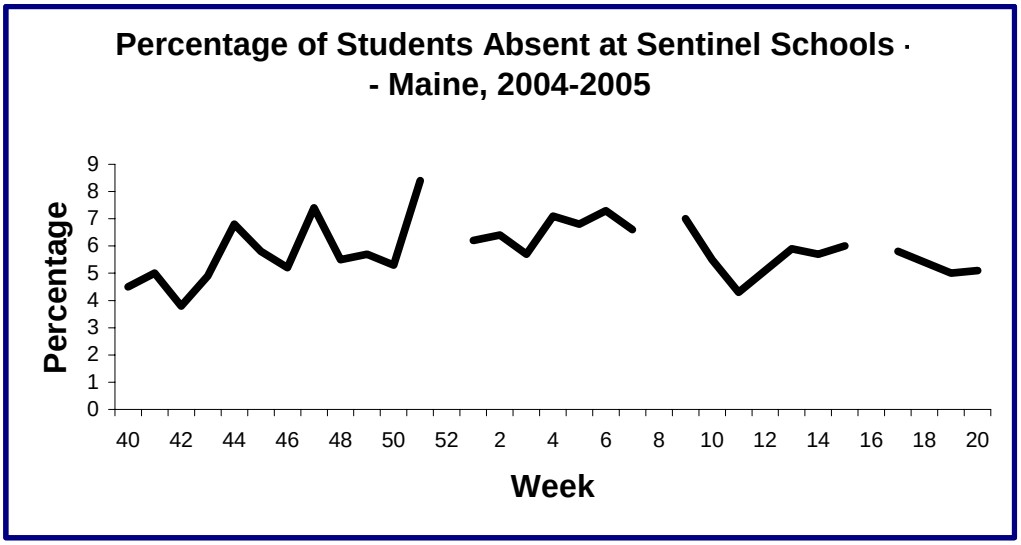


NE region includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

School Absenteeism

Local school districts and the Maine Department of Education collaborated with the Bureau of Health in collecting student absentee data. During the 2004-2005 season, 46 schools, representing 12 school districts, reported weekly the percent of enrolled students absent from school each day. A total of 1,127 reports were received from participating sentinel schools during the 2004-2005 influenza season. Additionally, the Bureau of Health requested that all Maine schools report student absenteeism that exceeded 15% of their student population.

Sentinel schools reported an average daily absentee rate of 5.3% this season. During week 40, an average of 4.5% student were absent. The absentee rate peaked during week 51 (December 19-25, 2004) at 8.4%, and gradually decreased, ending the season at 5.1% during week 20 (May 15-21, 2005). Also during the 2004-2005 season, 12 reports of absenteeism rates >15% were received from Maine schools. Of these, six (50%) were determined, through investigation, to be outbreaks of influenza-like illness; these outbreaks were in schools located in four regions of the state (Southern [2]; Mid-Coast [2]; Western [1]; and Central [1]).

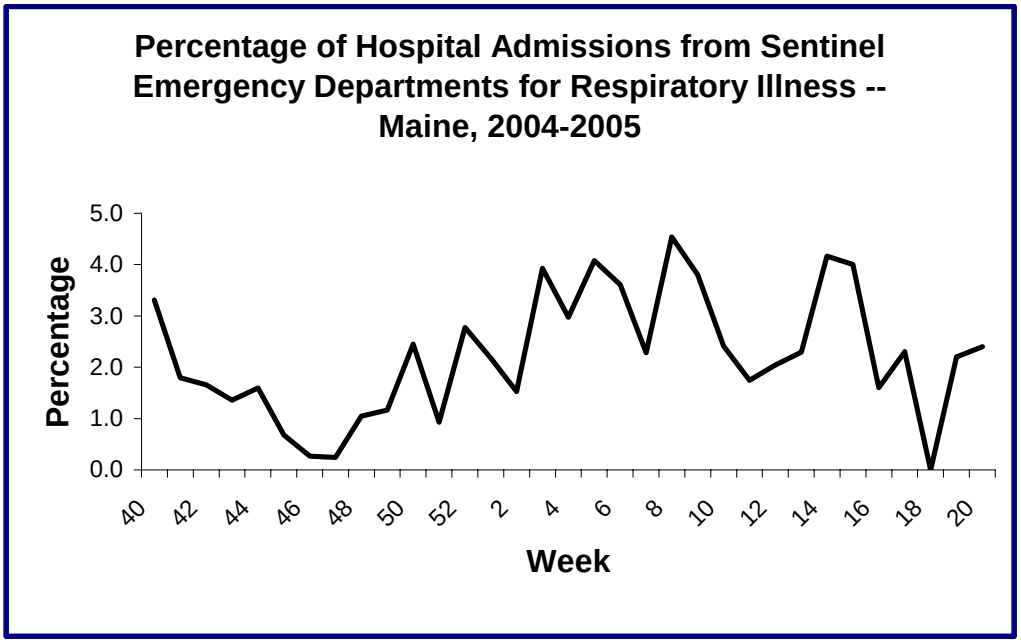


Severe Disease Surveillance

Hospital inpatient

Surveillance for hospital admissions for respiratory illness was established through the collaboration of the Bureau of Health and three regional hospitals. Respiratory illness was defined based on each hospital's data collection system, and included influenza-like illness and other conditions that may present like influenza. On a weekly basis, the regional hospitals reported the total number of patients admitted to the hospital's emergency department and the number of those patients with respiratory illness. From these data, the percent of emergency department admissions for respiratory illness was calculated. A total of 91 reports were received from three regional hospitals during the 2004-2005 influenza season.

During the season, 316 (2.3%) of 13,983 hospital admissions from sentinel emergency departments (ED) were due to respiratory illness. During week 40 (October 4-9, 2004), 0.1% of hospital admissions from sentinel emergency departments were due to respiratory illness. ED admissions for respiratory illness peaked during week 8 (February 20-26, 2005) when participating hospitals reported 4.5% of ED admissions as respiratory illness-related. During week 20 (May 15-21, 2005), 2.4% of hospital admissions from sentinel emergency departments (ED) were due to respiratory illness.



Laboratory Reporting

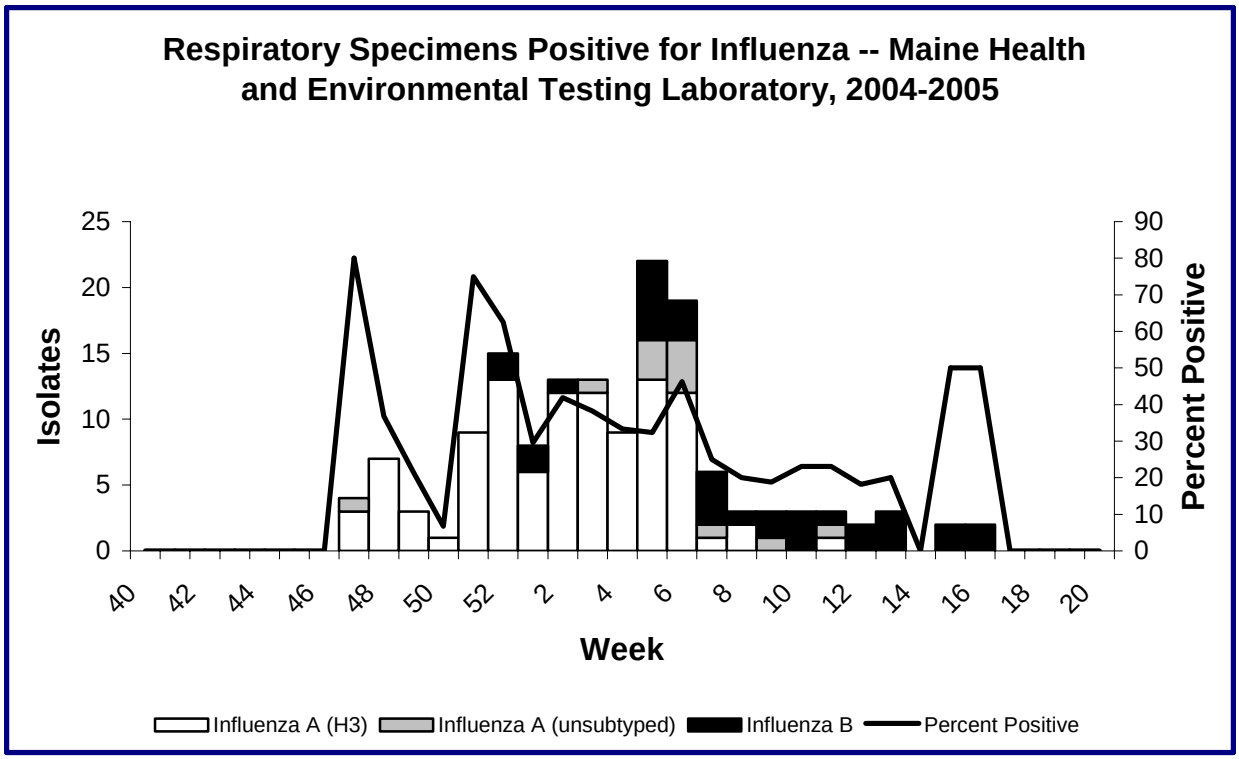
The Maine Health and Environmental Testing Laboratory (HETL) worked collaboratively with hospitals and private laboratories around the state to perform respiratory virus testing and influenza isolate subtyping during the 2004-2005 influenza season. Each week, HETL reported the number of specimens received for respiratory virus testing and the number of isolates of influenza A (H1), A (H3), A (not subtyped), and influenza B. These data were used to calculate the percent of specimens received that were positive for influenza, and the proportion for each subtype.

Two reference laboratories in Maine participated in surveillance activities by reporting the total number of isolates of influenza A, influenza B, or influenza A/B. Other viral respiratory infections were also identified through the testing performed by these reference laboratories.

During 2004-2005 influenza season, 150 (32.0%) of 469 respiratory specimens submitted for viral testing were confirmed as influenza by HETL; 104 (69.3%) of 150 were characterized as influenza A (H3), 12 (8.0%) were influenza A not subtyped, and 34 (22.7%) were influenza B. On November 22, 2004 (Week 47), the first influenza-positive specimen was collected, and on April 21, 2005 (Week 16), the last influenza-positive specimen was collected. Culture-positive influenza was identified in all Maine counties, except Hancock, Piscataquis, Sagadahoc, Washington and Waldo counties. Specimens submitted to HETL were forwarded to CDC for additional characterization, and results indicated that the influenza A virus strains that circulated in Maine this season (A/Korea/770/2002 and A/Wyoming/03/2003) matched well with the strains contained in the 2004-2005 vaccine formula (A/Fujian/411/2002).

Also during the 2004-2005 influenza season, reference laboratories in Maine reported 393 respiratory viral specimens culture-confirmed as influenza; 325 (82.7%) were

confirmed as influenza A and 68 (17.3%) were confirmed as influenza B. Reference laboratories reported 144 specimens identified as respiratory syncytial virus (RSV), 51 specimens as parainfluenza-1, 20 specimens as parainfluenza-2, 11 specimens as parainfluenza-3, and 29 specimens as adenovirus.



Outbreaks

During the 2004-2005 season, there were a total of 36 outbreaks of influenza-like illness in long-term care facilities. The first outbreak, in a Mid-Coast long-term care facility, was reported on November 28, 2004 (week 48), and resulted in high attack rates among residents and staff (Note: Residents had received influenza vaccine just 6 days prior to the beginning of the outbreak). The last outbreak, also in a Mid-Coast facility, was reported on March 21, 2005 (week 12). The attack rate in long-term care facilities reporting ILI outbreaks ranged from 0.8% to 78.1% among residents, and 0% to 91.7% among staff. The vaccination rate ranged from 55.0% to 100% among residents, and 7.1% to 100% among staff. A total of 45 hospitalizations and five deaths were associated with these outbreaks.

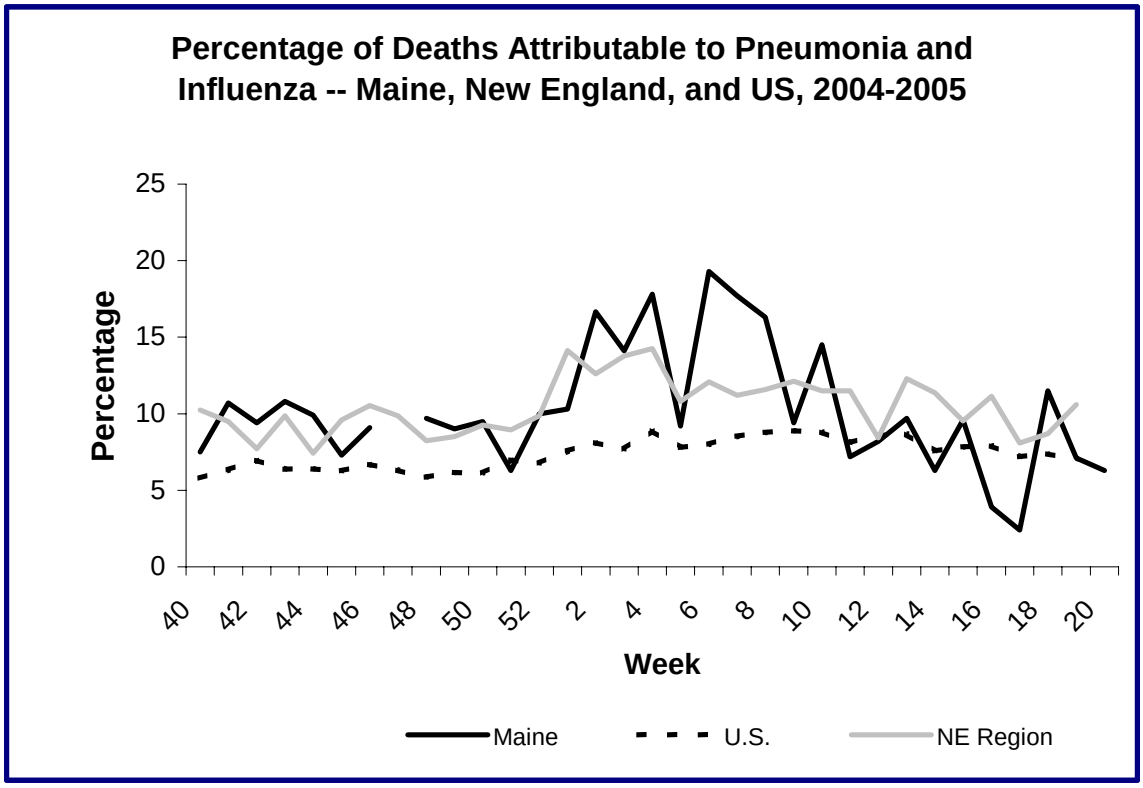
A total of three outbreaks of influenza-like illness in acute care facilities were reported during the season; these outbreaks were in hospitals located in three regions of the state (Western [1]; Eastern [1]; and Northern [1]).

Mortality Surveillance

Death Certificates

The vital statistics offices of three Maine cities, Portland, Lewiston and Bangor, reported the percentage of death certificates for which pneumonia and influenza were mentioned as the primary or secondary cause of death. It is important to note that a death record reported to a vital records office in a specific city was indicative of the place of death and not necessarily the place of residence of the deceased.

During 2004-2005 influenza season, 210 (10.3%) of 2040 deaths reported by three city vital records offices were attributable to pneumonia and influenza. During week 40 (October 4-9, 2004), 7.5% of deaths reported were attributable to pneumonia and influenza. Deaths attributable to pneumonia and influenza peaked during week 6 (February 6-12, 2005) when 19.3% of deaths were pneumonia and influenza-related. During week 20 (May 15-21, 2005), 6.3% of deaths reported were attributable to pneumonia and influenza.



NE Region includes the following reporting areas: Boston, MA; Bridgeport, CT; Cambridge, MA; Fall River, MA; Hartford, CT; Lowell, MA; Lynn, MA; New Bedford, MA; New Haven, CT; Providence, RI; Somerville, MA; Springfield, MA; Waterbury, CT; and Worcester, MA.

Pediatric Fatalities

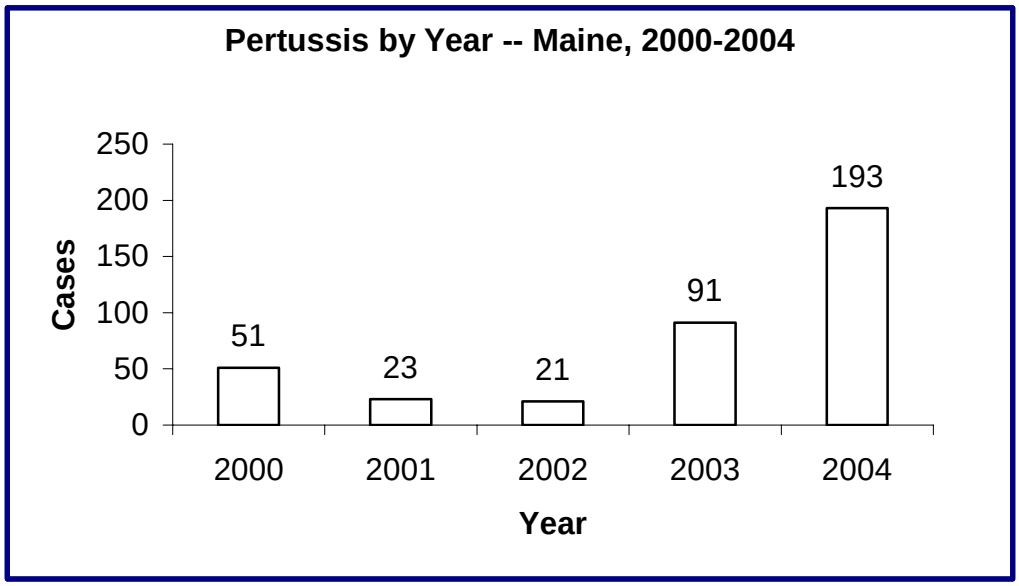
Health care providers and the Office of the Maine Medical Examiner report deaths associated with laboratory-confirmed influenza in persons aged 18 years or younger. The Bureau of Health, in turn, reports pediatric influenza fatalities to the Centers for Disease Control and Prevention. Two influenza-associated pediatric deaths were reported in Maine during the 2004-2005 influenza season.

During week 51 (December 19-25, 2004), a previously healthy adolescent from the Mid-Coast region died of bacterial pneumonia and other complications associated with influenza A infection. The patient had an onset of an influenza-like illness on December 19, 2004 and had a positive influenza A antigen test when admitted to the hospital with pneumonia and progressive ventilatory failure on December 24, 2004. Sputum culture revealed methicillin-resistant *Staphylococcus aureus* (MRSA).

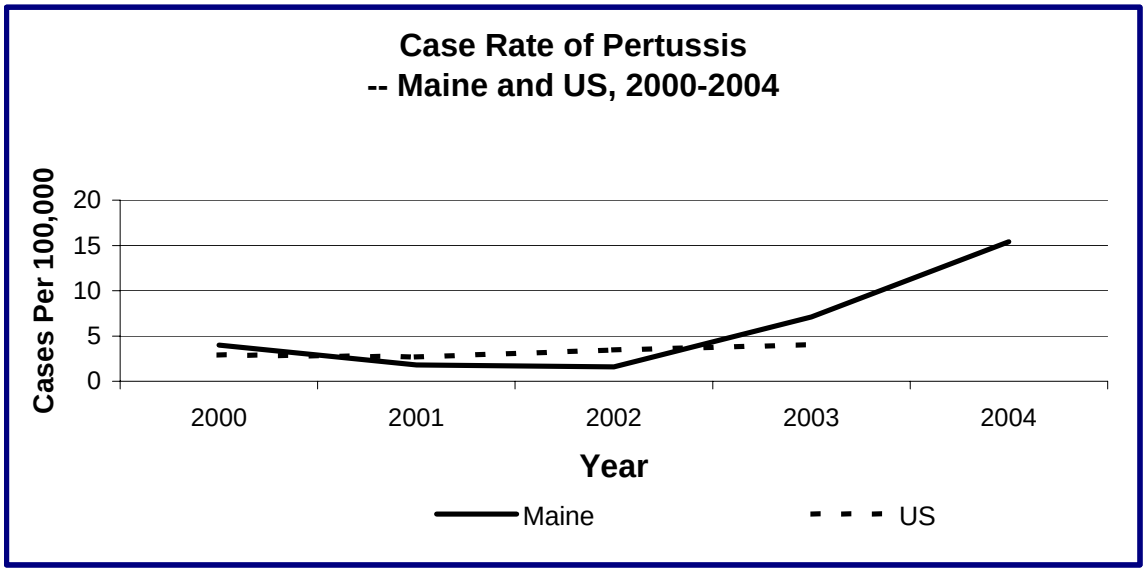
During week 11 (March 13-19, 2005), a second influenza-associated pediatric death was reported in a previously healthy child from the Eastern region of Maine. Influenza A infection was confirmed by direct fluorescent antibody (DFA) and culture.

Pertussis

Pertussis (whooping cough) is an acute bacterial infection of the respiratory tract caused by *Bordetella pertussis*. The disease used to be one of the most common diseases among children and was associated with a high mortality rate prior to vaccine licensure. Disease incidence has declined in the US since the vaccine became widely available in the 1940's. However, since the 1980's, disease incidence has increased gradually. Maine saw its largest increase in reported cases in 2004.



All cases were confirmed as pertussis by the CDC case definition. Among these cases, 114 were culture positive, 35 were PCR positive, 22 had a positive serology, and 20 cases were epidemiologically connected to at least one known laboratory positive case.



Geographically, the cases were reported from 15 of the 16 counties in the State. Most of the cases were reported from York, Penobscot, and Aroostook Counties. Sagadahoc County had no cases reported.

Pertussis by County – Maine, 2004		
County	**Cases Per 100,000**	**Cases**
Androscoggin	9.6	10
Aroostook	35.2	26
Cumberland	7.2	19
Franklin	6.8	2
Hancock	15.4	8
Kennebec	4.3	5
Knox	2.5	1
Lincoln	14.8	5
Oxford	9.1	5
Penobscot	18.6	27
Piscataquis	23.2	4
Sagadahoc	0	0
Somerset	13.8	7
Waldo	5.5	2
Washington	14.7	5
York	35.3	66
State of Maine	15.1	193

The age range of cases was from 2 months to 81 years old, with a median of 15 years. Infants less than one year accounted for 7% of the cases, children 1-7 years old 21% of the cases, children 8-12 years old 13% of the cases, youths 13-19 years old 28% of the cases, and adults over 19 years old 31% of the cases. Of the 193 cases, 96 (50%) were in males and 97 (50%) were in females. Cases were reported throughout the year with the peak in August (36 cases).

A new vaccine containing a pertussis booster, in combination with tetanus and diphtheria, was approved for use in adolescents in 2005. This vaccine should help prevent pertussis in adolescents with waning immunity.

Varicella

Varicella (chickenpox) is a common, acute, highly infectious disease caused by varicella zoster. Even though varicella is usually a mild childhood disease and most children recover without difficulty, varicella can result in serious complications. State law requires all students enrolled in school to be vaccinated with varicella vaccine by 2007. The implementation of the law was phased in over several years starting with mandatory immunization of kindergarten and first grade students in 2003-2004.

During the 2003-2004 school year, 390 cases of varicella were reported in Maine. School nurses reported 339 varicella cases among school children and two cases in teachers. The remaining 49 cases were from day care centers, clinics, a city health department, and hospitals. No deaths from varicella were reported.

Of the 339 cases involving school children, 301 were reported by grade. Among these, 79 (26%) were in kindergarten or first grade, 119 (40%) were in second or third grades, 60 (20%) were in fourth or fifth grades, 38 (13%) were in sixth to eighth grades, and 5 (2%) were in ninth to twelfth grades.

Cases of varicella declined from 712 in 2002-2003 to 390 in 2003-2004. Most of the reduction was among kindergarten and first grade students. A higher proportion of cases was reported among older school children.

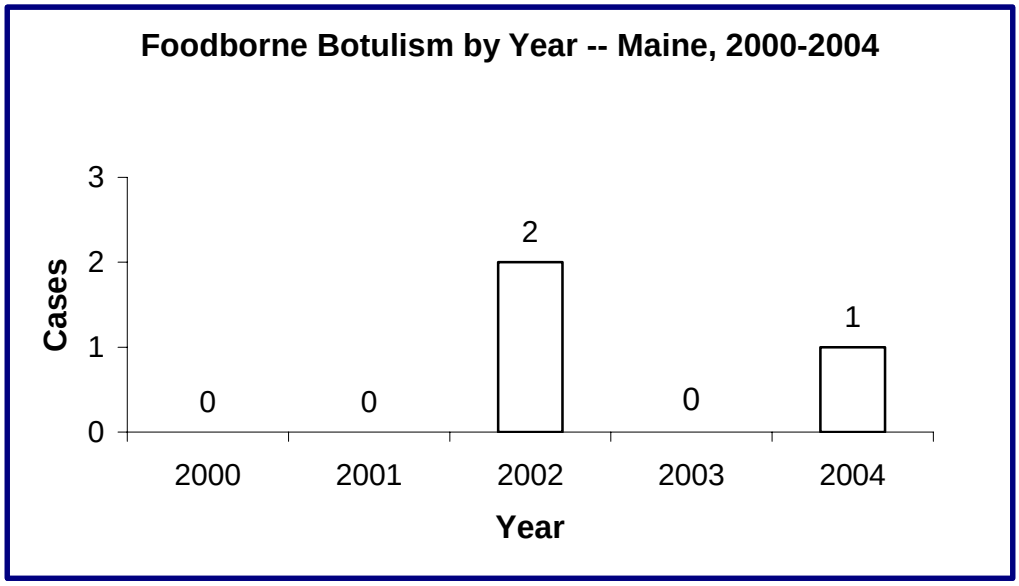
This first year of data after implementation of the varicella vaccination requirement showed that the vaccine was effective in reducing disease among young school children. Ongoing varicella disease surveillance will provide additional information in the coming years.

ENTERIC DISEASES

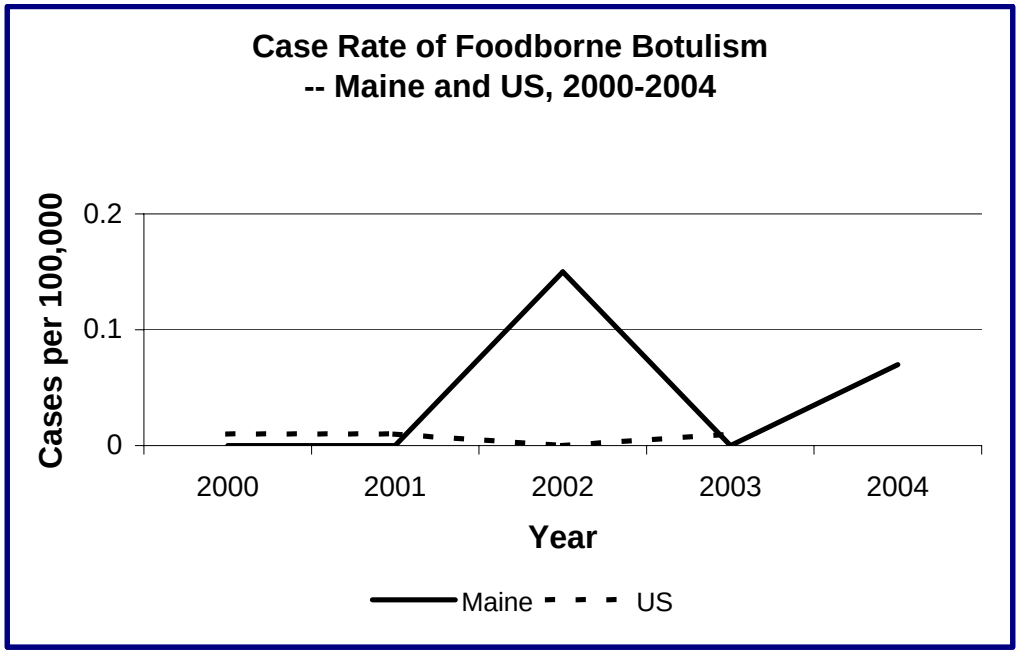
Botulism, Foodborne

Botulism, a rare neuroparalytic illness, is caused by exposure to toxins produced by the bacterium *Clostridium botulinum.* It is classified into three forms: foodborne, wound and intestinal. Foodborne botulism is characterized by cranial nerve impairment and descending paralysis and is often associated with difficulty in vision and swallowing. Illness results from the ingestion of preformed toxin present in contaminated food. Testing of human and food specimens is conducted at the CDC.

In Maine, one case of foodborne botulism was reported in October 2004. The case, reported at Maine Medical Center, was a white, non-Hispanic 64-year old female from Cumberland County.



The case rate in 2004 for Maine was 0.07 while the national rate (2003) was 0.01.



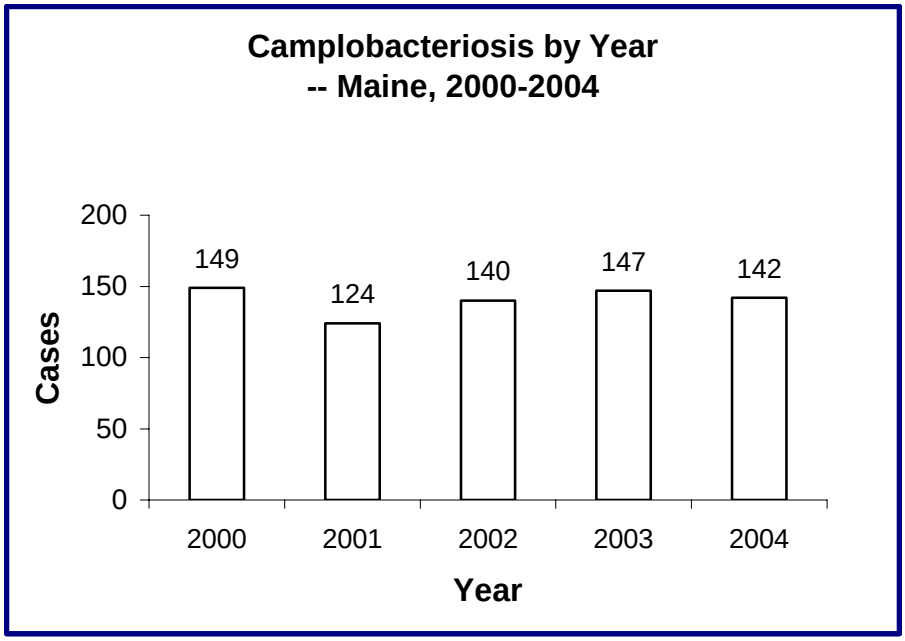
One case of foodborne botulism requires an intensive investigation of all suspect foods for testing. All suspect foods are disposed of in an effort to prevent further cases from occurring. All close contacts are interviewed to determine common exposures and potential for illness. A definitive cause could not be determined in the 2004 case.

Though rare, foodborne botulism continues to occur in Maine and the United States. The most common cause of this illness is due to home canning of vegetables and fruits. On-going education regarding proper home canning and other food preservation techniques is the most effective public health intervention.

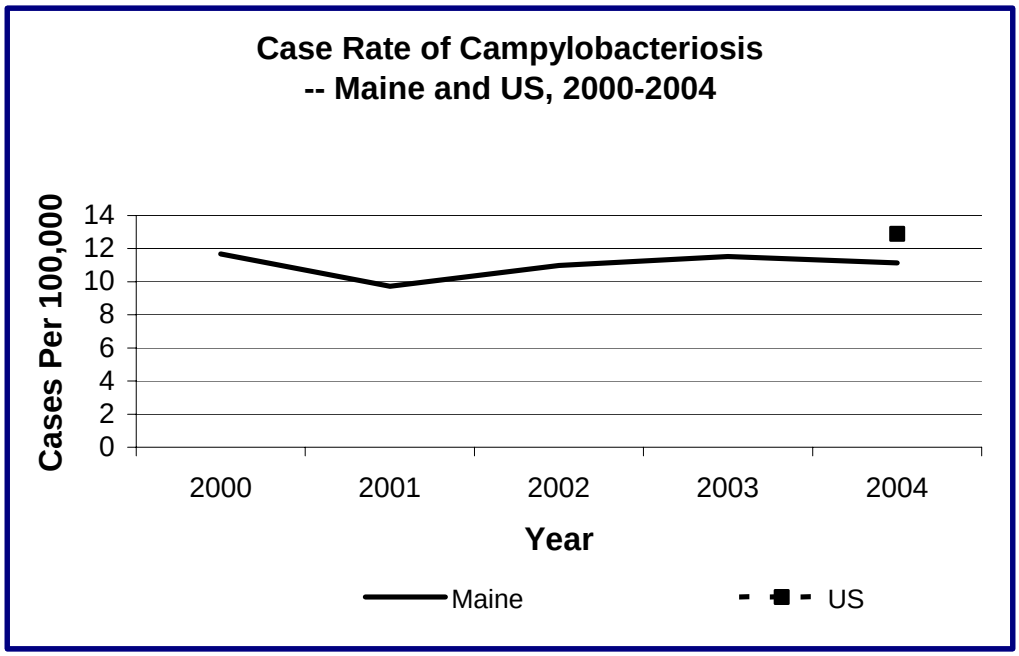
Campylobacteriosis

Campylobacteriosis, one of the most commonly reported gastrointestinal illnesses in the United States and Maine, is an acute zoonotic bacterial enteric disease, most often caused by *Campylobacter jejuni*. It is characterized by diarrhea, abdominal pain, malaise, fever, nausea and vomiting. Although prolonged illness and relapses may occur in adults, the illness typically lasts 2-5 days. The infection is most often associated with handling raw poultry or eating raw or undercooked meat. It is also possible to become ill after ingesting untreated water or unpasteurized milk and juices.

In Maine, there were 142 cases of campylobacteriosis reported in 2004. This is comparable to the number of reports received each year since 2000.



The 5-year mean of reported campylobacteriosis cases in Maine was 140.4. The case rate in 2004 for Maine was 11.1 per 100,000 while the United States rate (2004, FoodNet*) was 12.9.



* US Case Rate for campylobacteriosis is from the Foodborne Diseases Active Surveillance Network based on surveillance in 10 states

Campylobacteriosis was reported in all but one of the sixteen Maine counties. York County accounted for the largest number of cases with 29. Penobscot, Cumberland, Somerset and Kennebec County all reported over 10 cases. Somerset County had the highest case rate in Maine for campylobacteriosis.

Campylobacteriosis by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	6.7	7
Aroostook	6.8	5
Cumberland	7.9	21
Franklin	13.6	4
Hancock	11.6	6
Kennebec	10.2	12
Knox	7.6	3
Lincoln	14.9	5
Oxford	3.7	2
Penobscot	15.2	22
Piscataquis	0	0
Sagadahoc	14.2	5
Somerset	25.5	13
Waldo	13.8	5
Washington	8.8	3
York	15.5	29
State of Maine	11.1	142

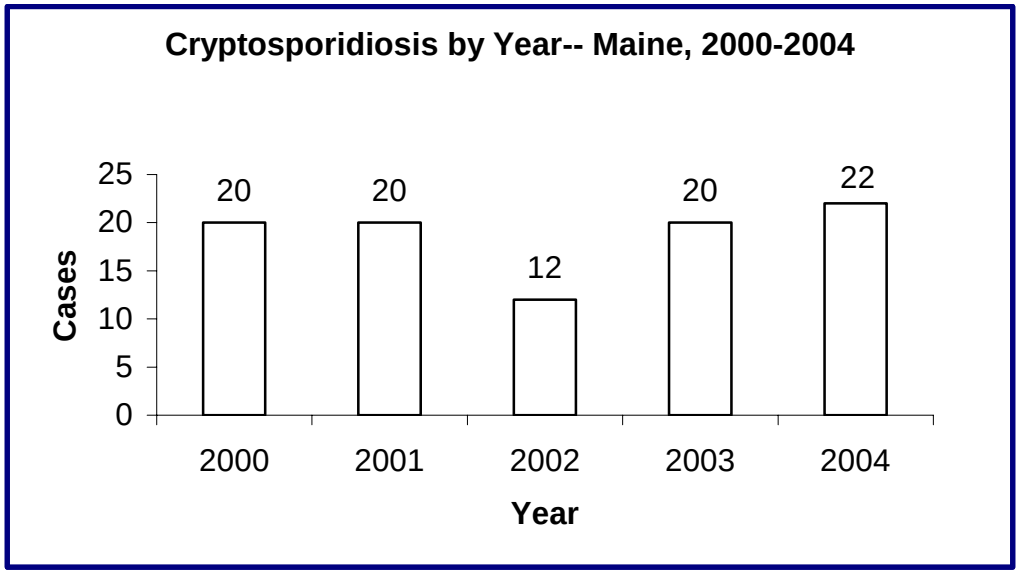
The age range of cases with campylobacteriosis was 3 months to 88 years; one case did not have an age identified. The mean age was 44. Infants under the age of 1 year accounted for 6% of cases, children 2-9 years old 9%, youths 10-19 years old 10%, adults 20-39 years old 26%, adults 40-64 years old 36%, and adults over 65 accounted for 13% of cases. Fifty-one percent (n=72) of persons with campylobacteriosis were female and 49% (n=69) were male. One case did not have a gender identified. The number of reports increased from June through August.

Education regarding the proper cooking of poultry and other meat and the need to avoid drinking untreated water and unpasteurized milk or juice may decrease the incidence of campylobacteriosis.

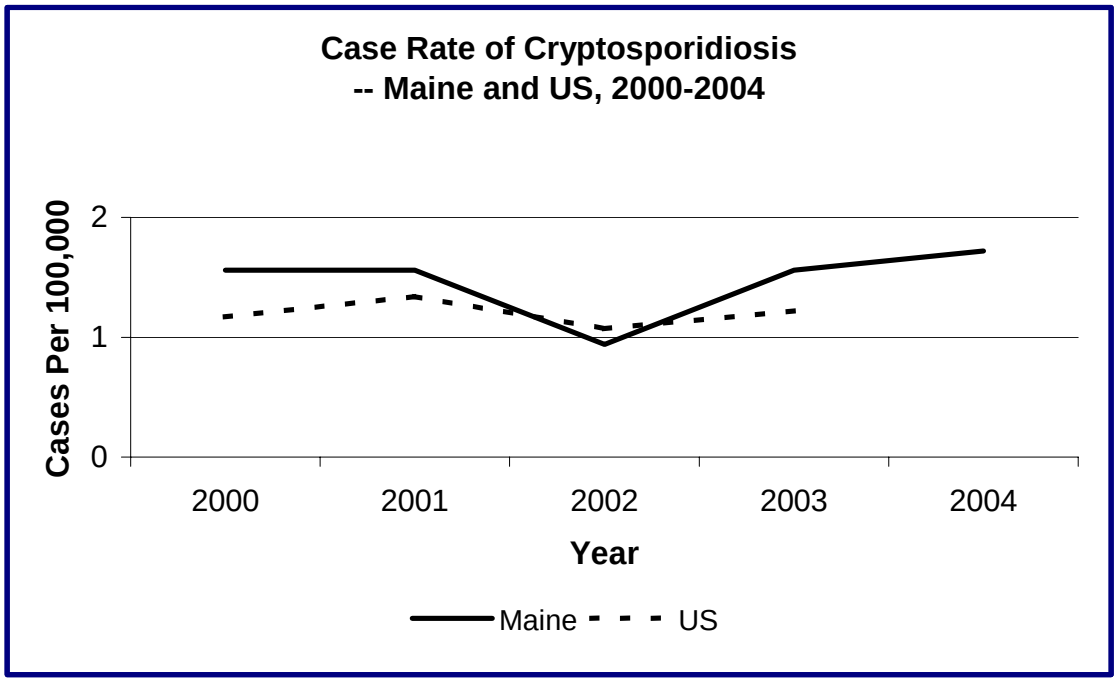
Cryptosporidiosis

Cryptosporidiosis is a parasitic infection caused by *Cryptosporidium parvum.* The infection is transmitted by fecal-oral contact including person-person, animal-person, foodborne or waterborne transmission. The incubation period is an average of 7 days, though may be as long as 12 days.

There were 22 cases of cryptosporidiosis reported in Maine 2004. This is consistent with the counts received at the Bureau of Health since 2000.



The 5-year mean of reported cryptosporidiosis cases in Maine was 18.8. The case rate in 2004 for Maine was 1.7 per 100,000 while the United States case rate (2003) was 1.2.



Penobscot County had the largest number of cases with six. Piscataquis County reported four cases. Four counties reported two cases (Androscoggin, Kennebec, Sagadahoc and Waldo Counties) and four counties reported one case (Aroostook, Cumberland, Hancock and York Counties). The county with the highest case rate was Piscataquis County.

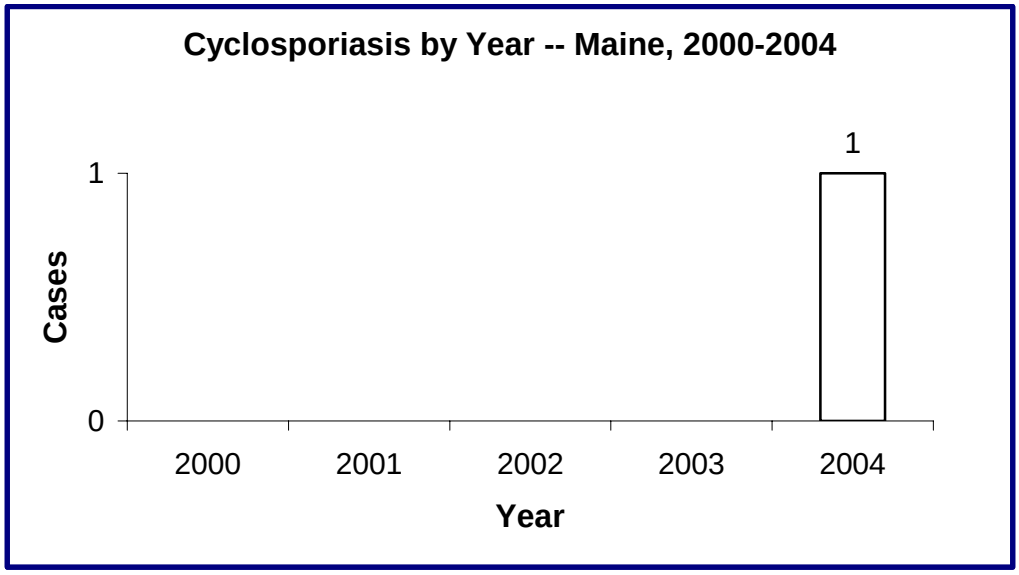
Cryptosporidiosis by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	1.9	2
Aroostook	1.4	1
Cumberland	0.4	1
Franklin	0	0
Hancock	1.9	1
Kennebec	1.7	2
Knox	0	0
Lincoln	0	0
Oxford	0	0
Penobscot	4.1	6
Piscataquis	23.2	4
Sagadahoc	5.7	2
Somerset	0	0
Waldo	5.5	2
Washington	0	0
York	0.5	1
State of Maine	1.7	22

The age range for cases of cryptosporidiosis was 1 to 85 years. The mean age was 22. Infants less than one year made up 14% of cases, children 2-9 years 35% of cases, youths 10-19 years 5% of cases, adults 20-39 years 32% of cases, adults 40-64 years 5% of cases, and adults over 65 years 9% of cases. Females accounted for 73% (n=16) of the cases. There was no seasonal trend for this disease. The highest number of cases occurred in January (4) and June (4) with the remaining cases distributed evenly throughout the year.

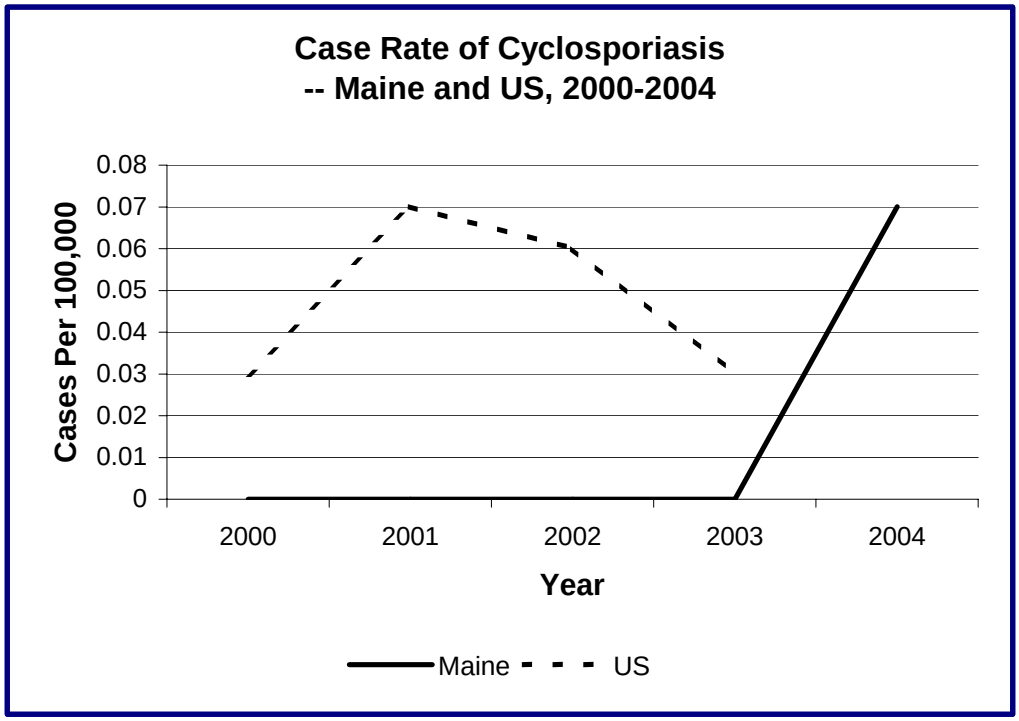
Cyclosporiasis

Cyclosporiasis is caused by a protozoan, *Cyclospora cayetanensis.* Illness is characterized by watery diarrhea, nausea, abdominal cramps and weight loss. Transmission is through contamination of drinking water, fresh fruits or vegetables.

In September 2004, one case of cyclosporiasis was reported in a 63-year old male from Cumberland County.

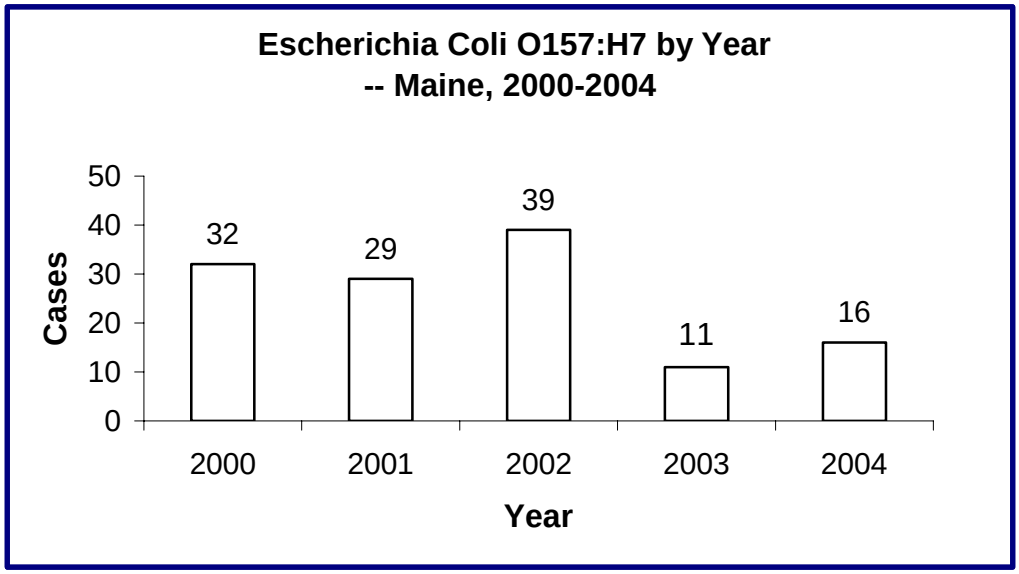


The case rate in 2004 for Maine was 0.07 per 100,000; the United States case rate (2003) was 0.03.

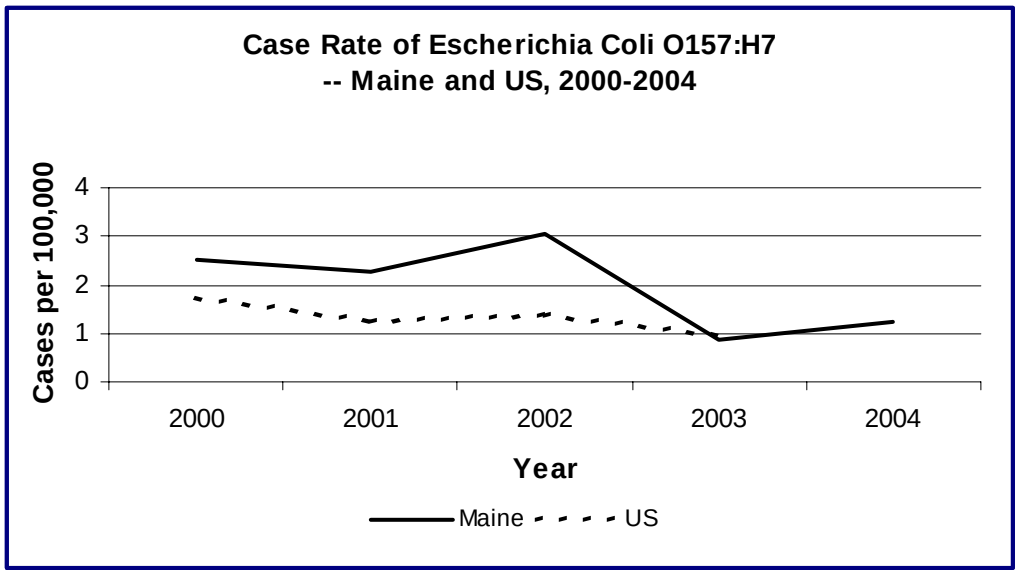


Escherichia coli 0157:H7

Escherichia coli O157:H7 is the most common strain of enterohemorrhagic *Escherichia coli* in Maine with 16 cases reported in 2004. Nationally, this strain has been associated with undercooked ground beef, unpasteurized juice and milk, and produce. Direct person-to-person transmission may occur from close contact in families and day care centers.



The 5-year mean of reported E. coli 0157:H7 cases in Maine was 25.4. The case rate in 2004 for Maine was 1.3 per 100,000 while the United States rate (2003) was 0.9.

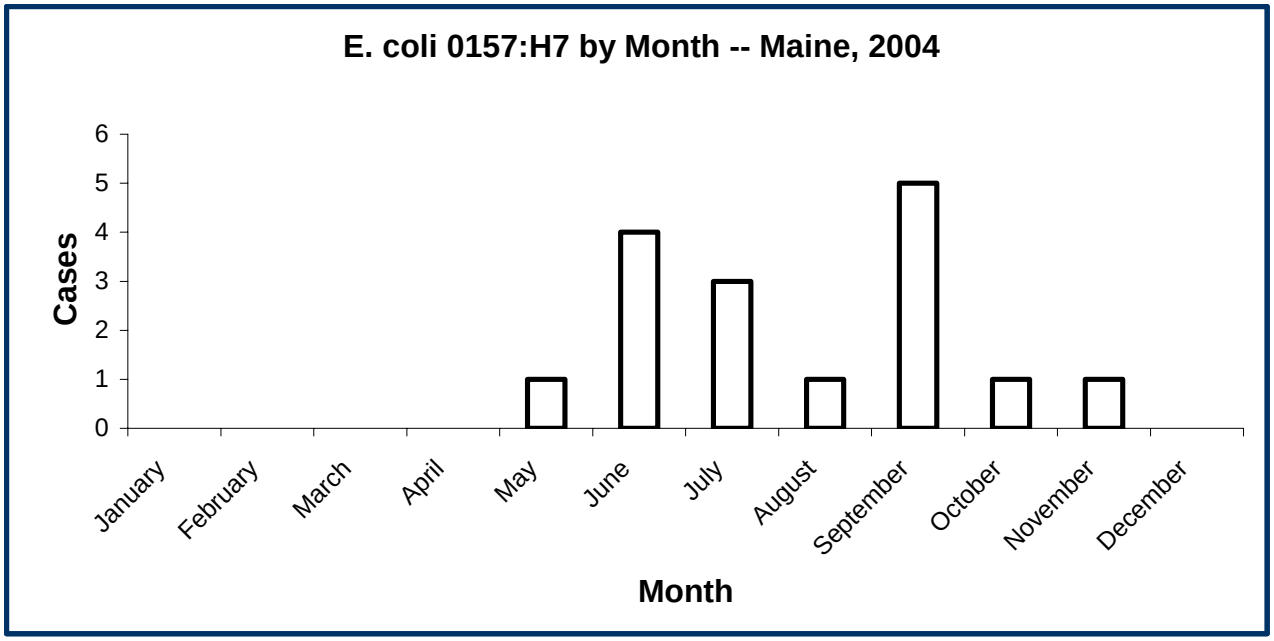


Cumberland County accounted for the largest number of cases with four. York County reported three cases. Knox, Penobscot and Somerset County each reported two cases.

One case of *E. coli* 0157:H7 was reported from each of three counties (Piscataquis, Waldo and Washington). The county with the highest case rate was Piscataquis County.

E. coli O157:H7 by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	0	0
Aroostook	0	0
Cumberland	1.5	4
Franklin	0	0
Hancock	0	0
Kennebec	0	0
Knox	5.0	2
Lincoln	0	0
Oxford	0	0
Penobscot	1.4	2
Piscataquis	5.8	1
Sagadahoc	0	0
Somerset	3.9	2
Waldo	2.8	1
Washington	2.9	1
York	1.6	3
State of Maine	1.3	16

The age range was from 1 to 90 years. The mean age was 27 years. Sixty-two percent (n=10) were under the age of 20. Thirty-one percent (n=5) were over the age of 40. The ratio of male to female cases was 1 to 1. All of the cases occurred during the period from May through November.

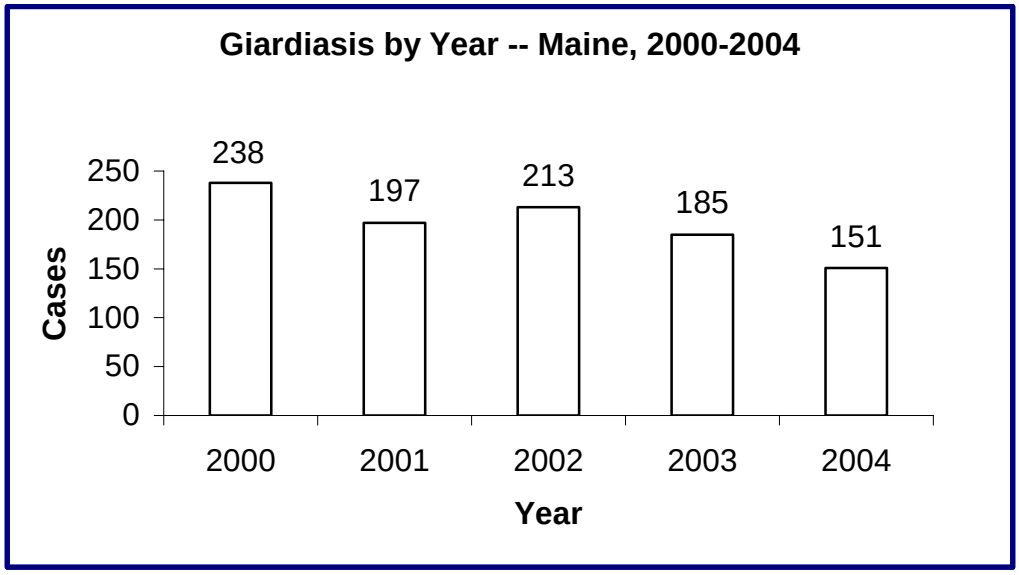


All cases of *E. coli* O157:H7 are immediately investigated to determine a common source of infection. Pulse Field Gel Electrophoresis was used to as a tool to determine common molecular patterns among cases. If matching patterns were identified an investigation was extended to further determine epidemiological links that could lead to a common exposure.

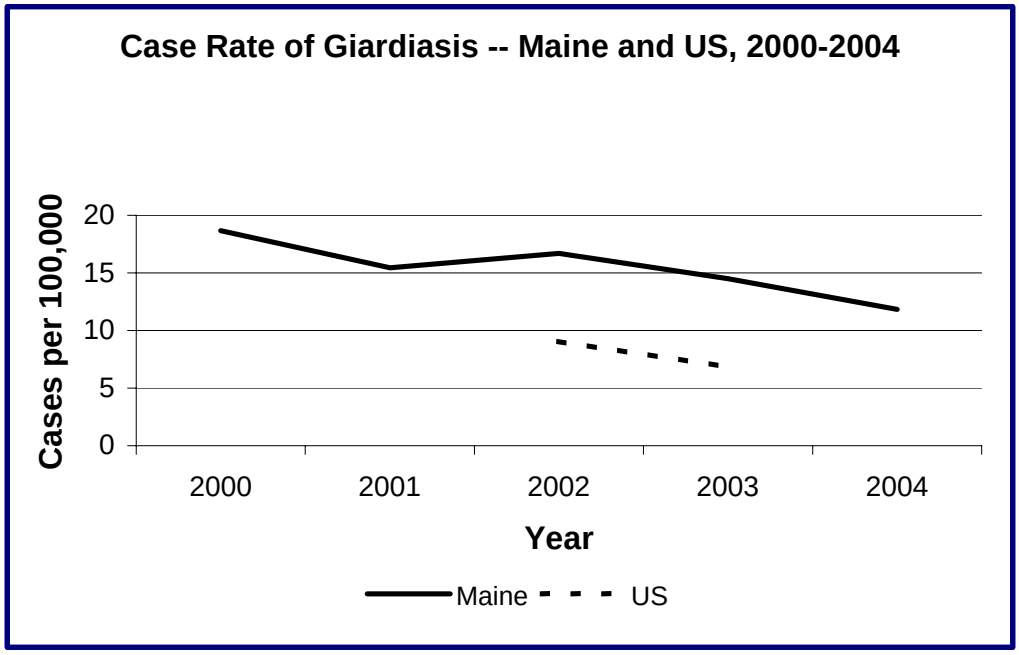
Giardiasis

Giardiasis is caused by a protozoan, G*iardia lamblia.* The illness is most often associated with drinking unfiltered water.

One hundred fifty-one cases of giardiasis were reported in Maine during 2004. The number of cases reported to the Bureau of Health has been decreasing since 2000.



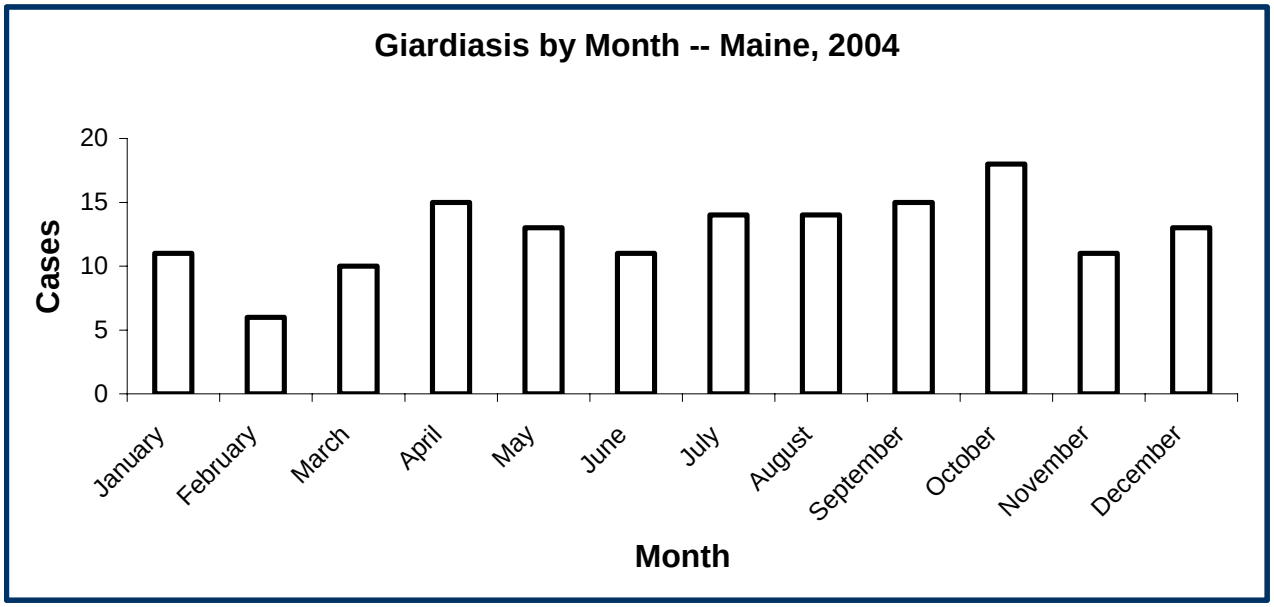
The 5-year mean of reported giardiasis cases in Maine was 197.6. The case rate in 2004 for Maine was 11.8 per 100,000 while the United States rate (2003) was 6.8.



Fifteen counties reported at least two cases of giardiasis. Cumberland County had the greatest number with 31. Somerset County had the highest case rate.

Giardiasis by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	5.8	6
Aroostook	8.1	6
Cumberland	11.7	31
Franklin	6.8	2
Hancock	19.3	10
Kennebec	22.2	26
Knox	7.6	3
Lincoln	8.9	3
Oxford	20.1	11
Penobscot	6.9	10
Piscataquis	23.2	4
Sagadahoc	8.5	3
Somerset	27.5	14
Waldo	0	0
Washington	14.7	5
York	7.5	14
State of Maine	11.9	151

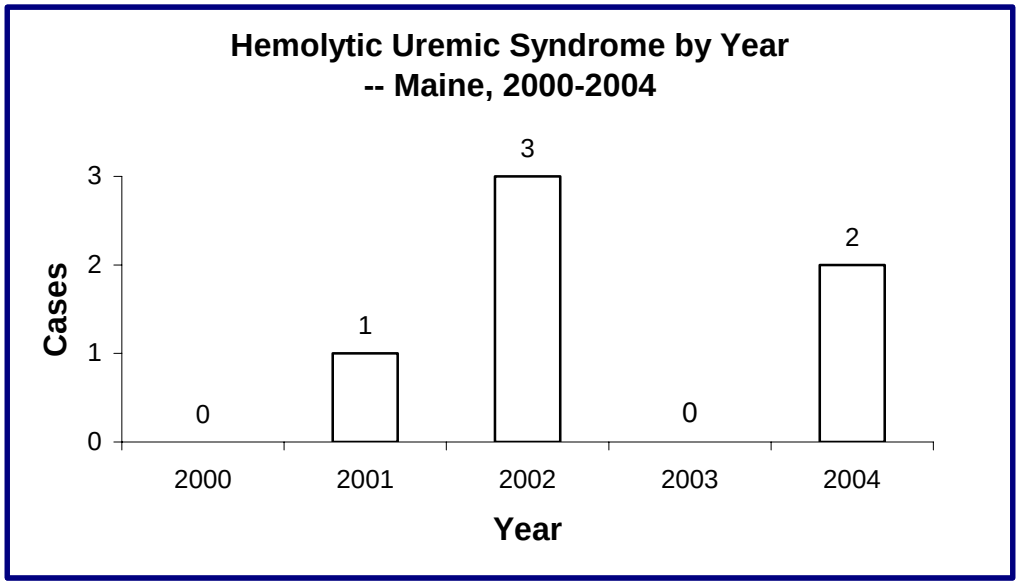
The age range of giardiasis cases was from 8 months to 85 years; one case had no age identified. The mean age was 42. Infants less than one year made up 5% of the cases, children 2-9 years 18% of cases, youths 10-19 years 11% of cases, adults 20-39 years 19% of cases, adults 40-64 years 36% of cases, and adults over 65 years 11% of cases. Fifty-four percent (n=83) of cases were male and 46% (n=71) were female. In one case, the gender was not identified. Giardiasis was distributed evenly throughout the year.



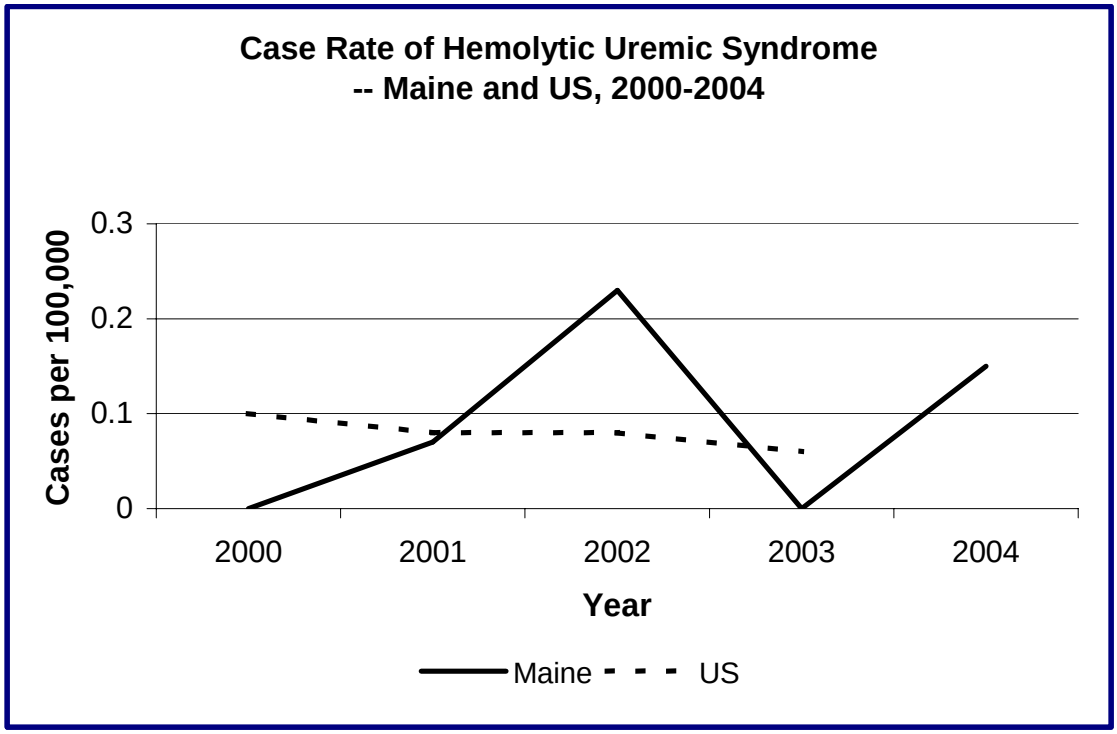
Hemolytic Uremic Syndrome (HUS)

The Hemolytic Uremic Syndrome reported in Maine is post-diarrhea, most often associated with an enterohemorrhagic *E. coli.*

Two cases of HUS were reported in 2004. The two females were from Androscoggin and Somerset counties. The mean age was 23 years.



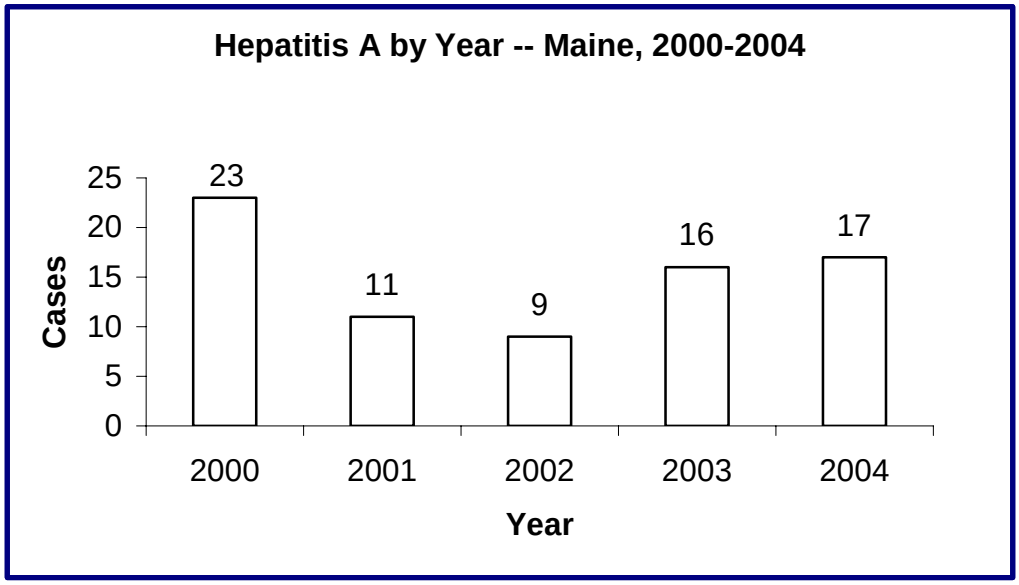
The case rate in 2004 for Maine was 0.2 per 100,000 while the United States rate (2003) was 0.06. The 5-year mean of reported HUS cases in Maine was 1.2.



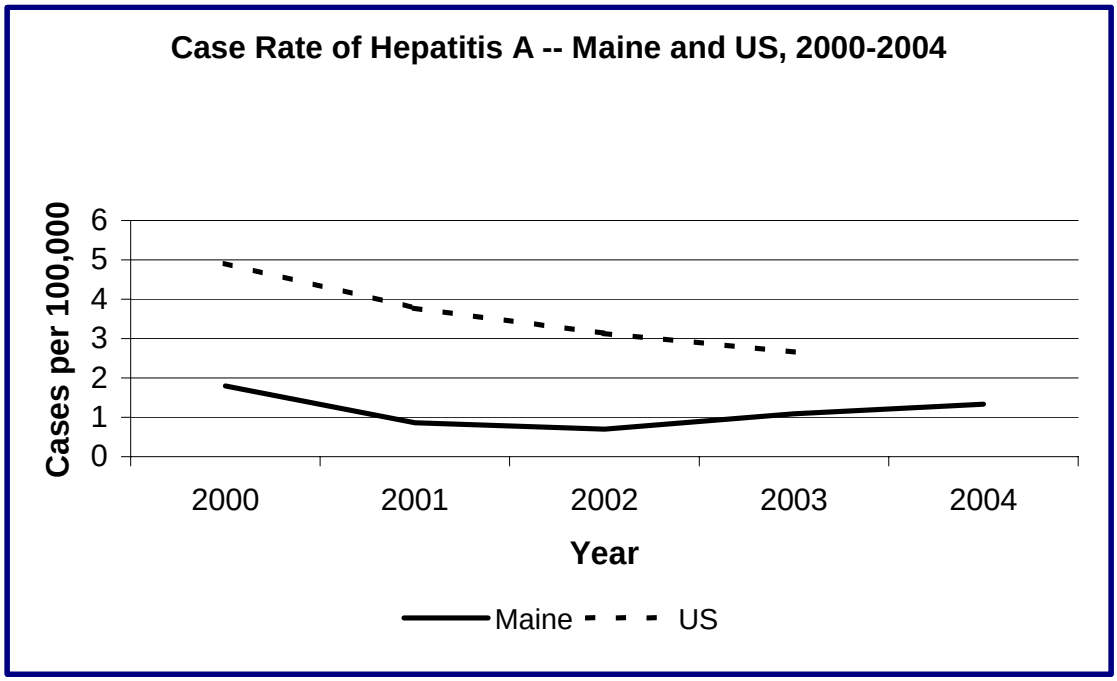
Control of HUS depends on the prompt suspicion and diagnosis of an enterohemorrhagic pathogen so prevention measures may be implemented as soon as possible.

Hepatitis A

Hepatitis A is transmitted person-to-person by the fecal-oral route. Though children may often be asymptomatic, adults show a variety of symptoms including fever, anorexia, diarrhea and jaundice. During 2004, 17 cases of hepatitis A were reported in Maine.



The 5-year mean of reported hepatitis A cases in Maine was 15.2. The case rate in 2004 for Maine was 1.3 per 100,000 while the national case rate (2003) was 2.7.



York County had the largest number of reported cases with eight. Androscoggin and Cumberland County reported three and two cases, respectively. Four counties each reported one case: Hancock, Kennebec, Penobscot and Somerset. York County had the highest case rate.

Hepatitis A by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	2.9	3
Aroostook	0	0
Cumberland	0.8	2
Franklin	0	0
Hancock	1.9	1
Kennebec	0.9	1
Knox	0	0
Lincoln	0	0
Oxford	0	0
Penobscot	0.7	1
Piscataquis	0	0
Sagadahoc	0	0
Somerset	2.0	1
Waldo	0	0
Washington	0	0
York	4.3	8
State of Maine	1.3	17

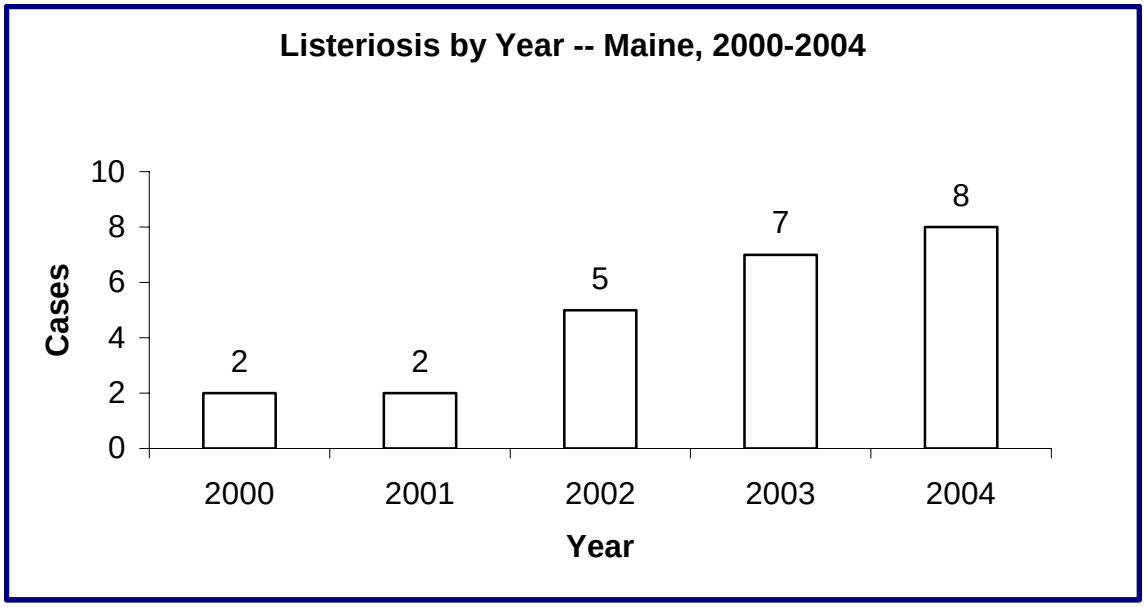
The age range of hepatitis A was from 1 to 95 years. Infants under 1 year accounted for 12% of cases, children 2-9 years 6% of cases, adults 20-39 years 29% of cases, adults 40-64 years 35% of cases, and adults over 65 years 18% of cases. There were no cases in youth age 10-19 years. Sixty-five percent (n=11) of cases were female.

Each case of hepatitis A is immediately investigated. Household and close contacts are referred for prophylactic immune globulin. In 50% of cases it is not possible to determine the source of infection. Further control measures may be implemented if a case is involved in a high-risk occupation such as food handling, day care or health care.

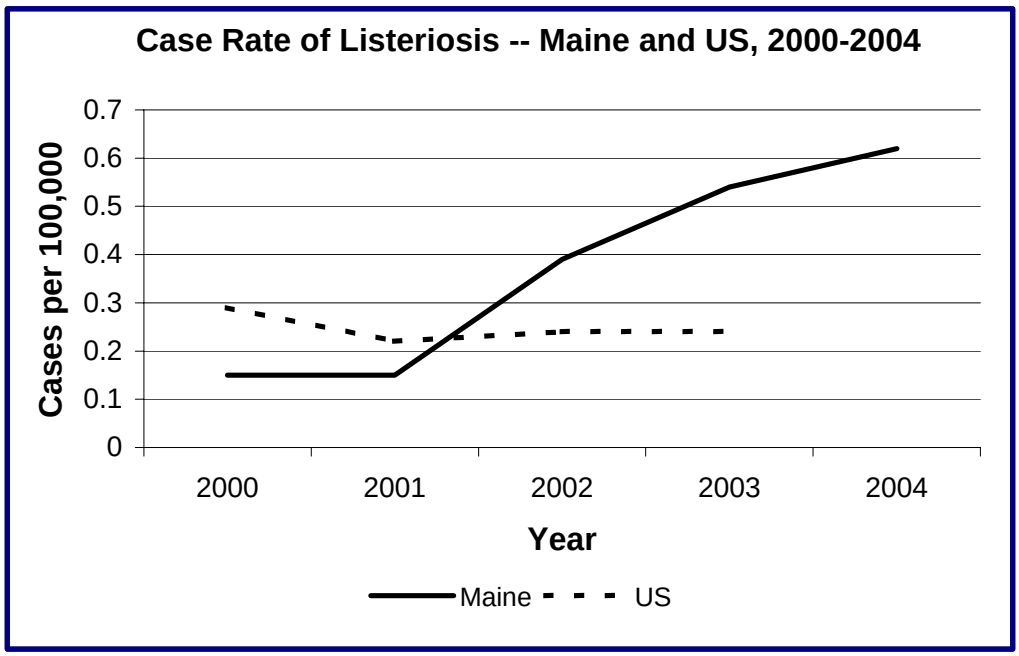
Listeriosis

Listeriosis is a bacterial disease caused by *Listeria monocytogenes.* It has been most frequently linked to ready-to-eat meats, soft cheeses, and raw milk. Pregnant women are most at risk as the infection can be passed on to the fetus.

During 2004, there were eight cases of listeriosis reported in Maine. The number of reported cases of listeriosis has been gradually increasing since 2000.



The 5-year mean of reported listeriosis cases in Maine was 4.8. The case rate in 2004 for Maine was 0.6 per 100,000 while the national case rate (2003) was 0.2.



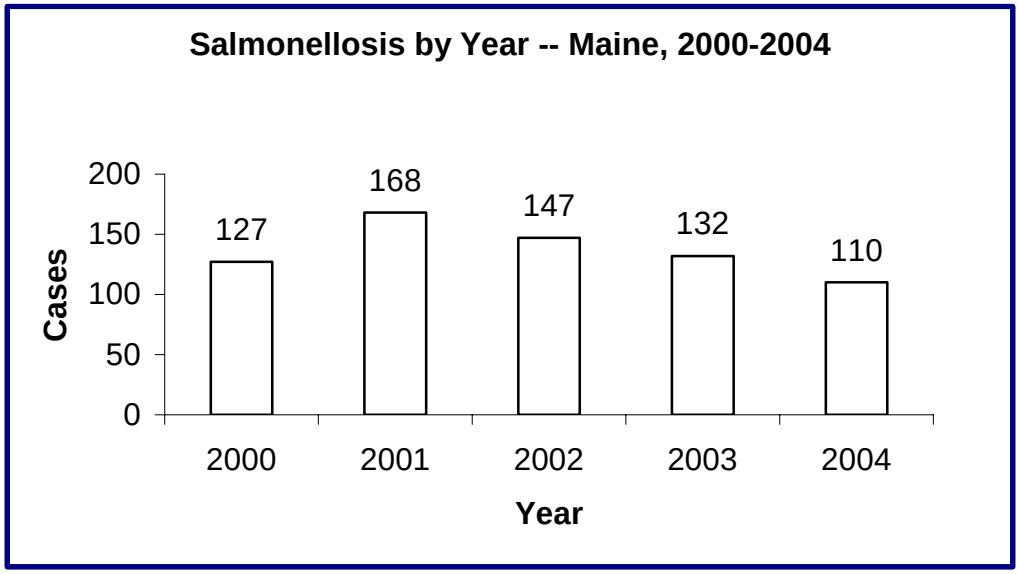
Thirty-eight percent (n=3) of the cases were from Lincoln County. Knox County reported two cases. Androscoggin, Cumberland and Sagadahoc each reported one case. The county with the highest case rate was Lincoln.

Listeriosis by County -- Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	1.0	1
Aroostook	0	0
Cumberland	0.4	1
Franklin	0	0
Hancock	0	0
Kennebec	0	0
Knox	5.0	2
Lincoln	8.9	3
Oxford	0	0
Penobscot	0	0
Piscataquis	0	0
Sagadahoc	2.8	1
Somerset	0	0
Waldo	0	0
Washington	0	0
York	0	0
State of Maine	0.6	8

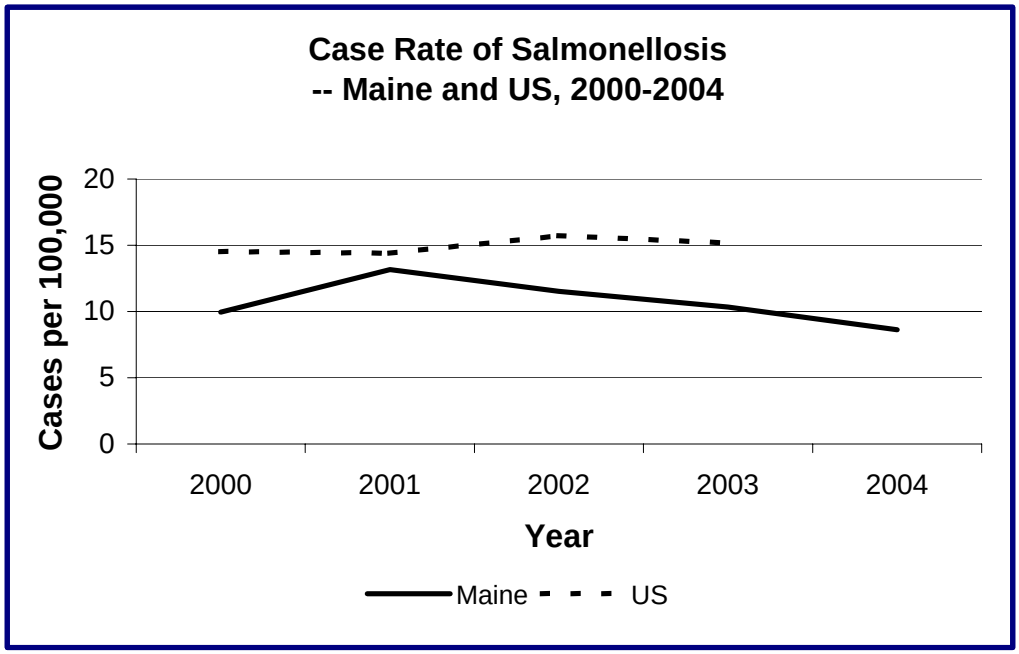
The age range of cases was from 18 days to 83 years. Eighty-eight percent (n=7) were over the age of 50. The mean age was 64. Sixty-two percent (n=5) were male.

Salmonellosis

Salmonellosis is one of the more frequent enteric diseases reported in Maine. During 2004, 110 cases of salmonellosis were confirmed by the Bureau of Health. Since 2001, the number of reports has been gradually declining.



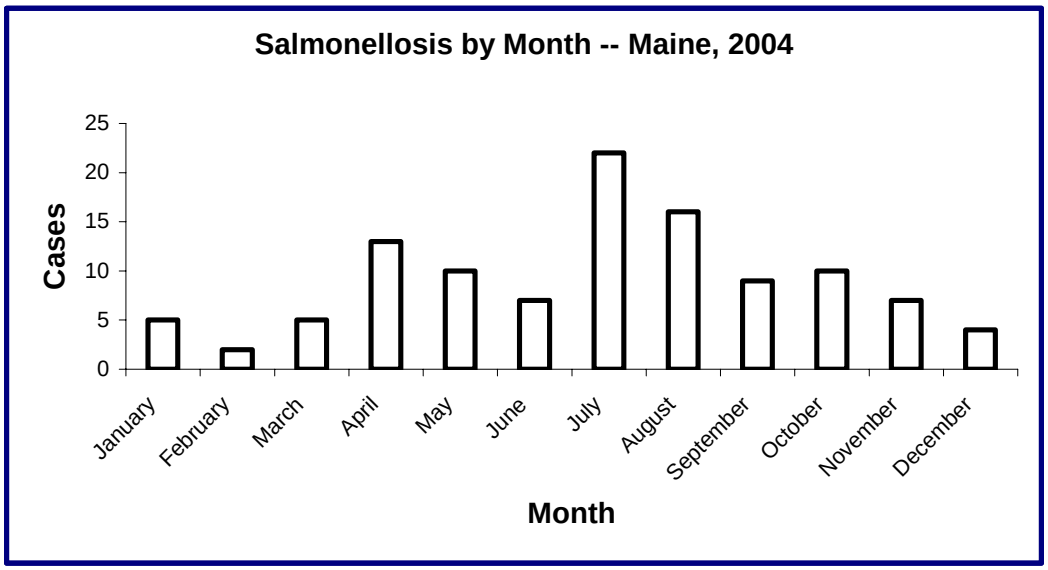
The 5-year mean of reported salmonellosis cases in Maine was 103.2. The case rate in 2004 for Maine was 8.6 per 100,000; the national case rate (2003) was 15.2.



Fifteen counties reported at least one case of salmonellosis. Cumberland County had the largest number of cases with 36. Oxford County had the highest case rate at 14.6.

Salmonellosis by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	5.8	6
Aroostook	4.1	3
Cumberland	13.6	36
Waldo	2.8	1
Hancock	1.9	1
Kennebec	6.0	7
Knox	7.6	3
Lincoln	8.9	3
Oxford	14.6	8
Penobscot	11.0	16
Piscataquis	5.8	1
Sagadahoc	0	0
Somerset	9.8	5
Waldo	2.8	1
Washington	5.9	2
York	7.0	13
State of Maine	8.6	110

The age range of salmonellosis cases in Maine was 5 months to 85 years. Infants under the age of one accounted for 15% of cases, children age 2-9 years 15% of cases, youths 10-19 years 15% of cases, adults 20-39 years 25% of cases, adults 40-64 years 28% of cases, and adults over 65 years 9% of cases. The average age was 31. Fifty-three percent (n=58) of cases were female.



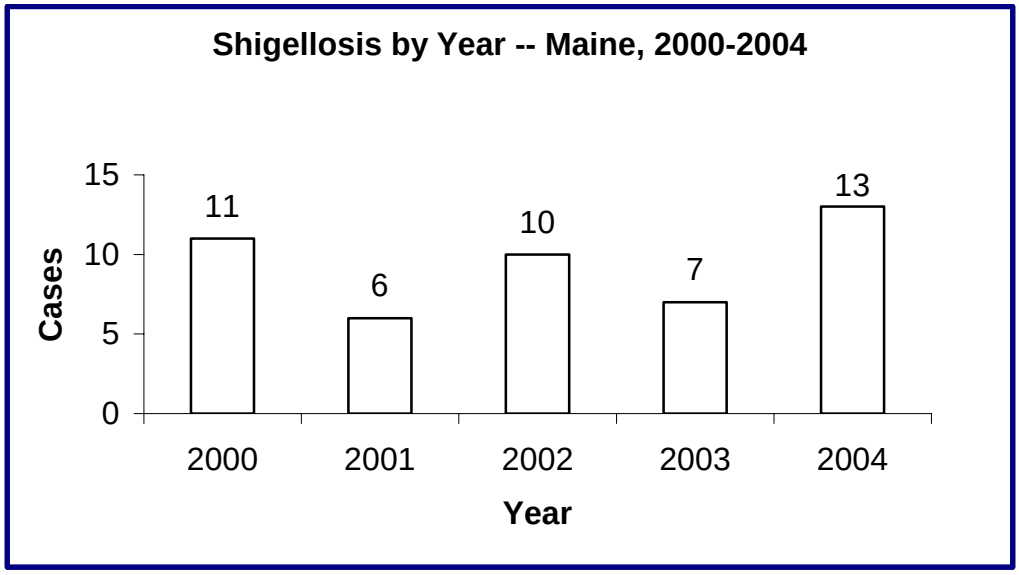
In July, there was a multi-state outbreak involving Massachusetts and New Hampshire that also involved individuals from Cumberland and Oxford Counties in Maine. Four residents of Maine became ill. The outbreak was due to *Salmonella hartford.* There were no deaths. The cause was not determined.

In July, the Bureau of Health participated in a second outbreak investigation with Massachusetts and New Hampshire. Five people from Cumberland, Penobscot and Knox Counties became ill. There were no deaths. The cause was not determined.

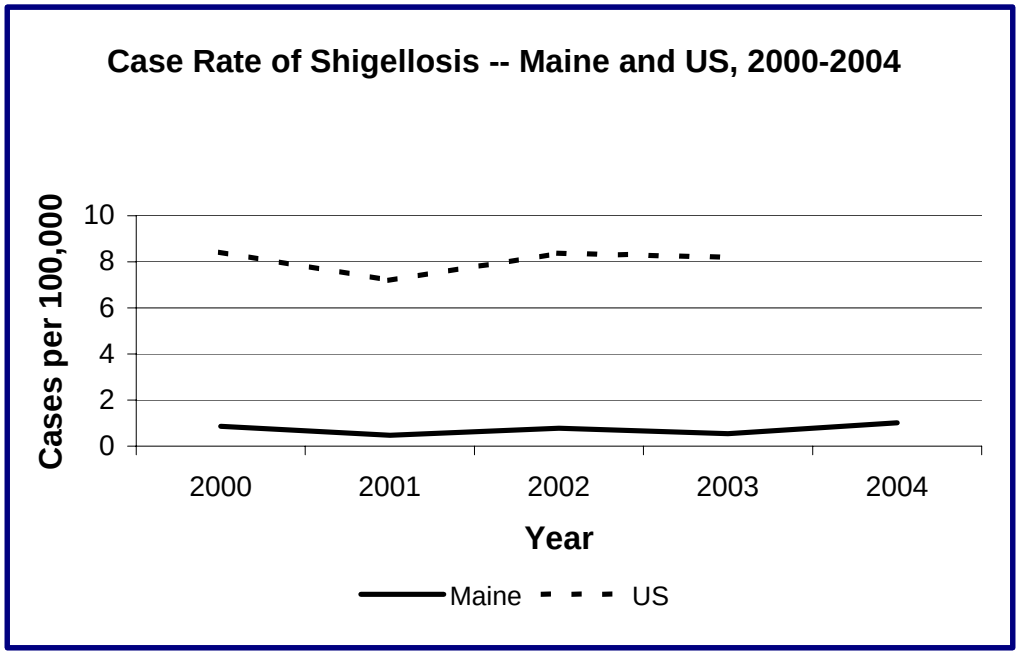
All cases of salmonellosis are investigated as to potential source of infection. Pulse Field Gel Electrophoresis is performed on all isolates to determine common molecular patterns and possible outbreaks not identified through case interviews. Such laboratory information supports ongoing epidemiologic investigations in establishing common sources of infection.

Shigellosis

Shigellosis is an uncommon bacterial pathogen in Maine, most often seen in individuals who have traveled outside of the country. There were 13 cases of shigellosis reported in Maine during 2004.



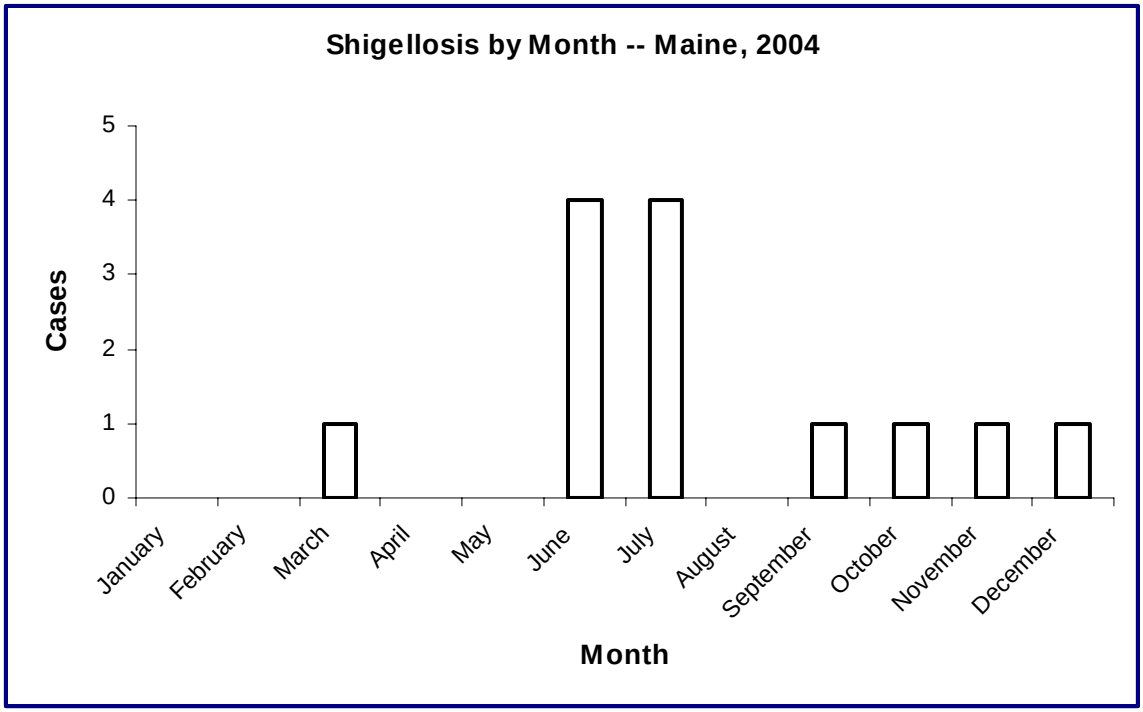
The 5-year mean of reported shigellosis cases in Maine was 7.2. The case rate in 2004 for Maine was 1.0 per 100,000 while the national case rate (2003) was 8.2.



Cumberland County had the largest number of cases with five. The county with the highest case rate was Androscoggin County.

Shigellosis by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	3.9	4
Aroostook	0	0
Cumberland	1.9	5
Franklin	0	0
Hancock	0	0
Kennebec	0.9	1
Knox	0	0
Lincoln	3.0	1
Oxford	1.8	1
Penobscot	0	0
Piscataquis	0	0
Sagadahoc	0	0
Somerset	2.0	1
Waldo	0	0
Washington	0	0
York	0	0
State of Maine	1.0	13

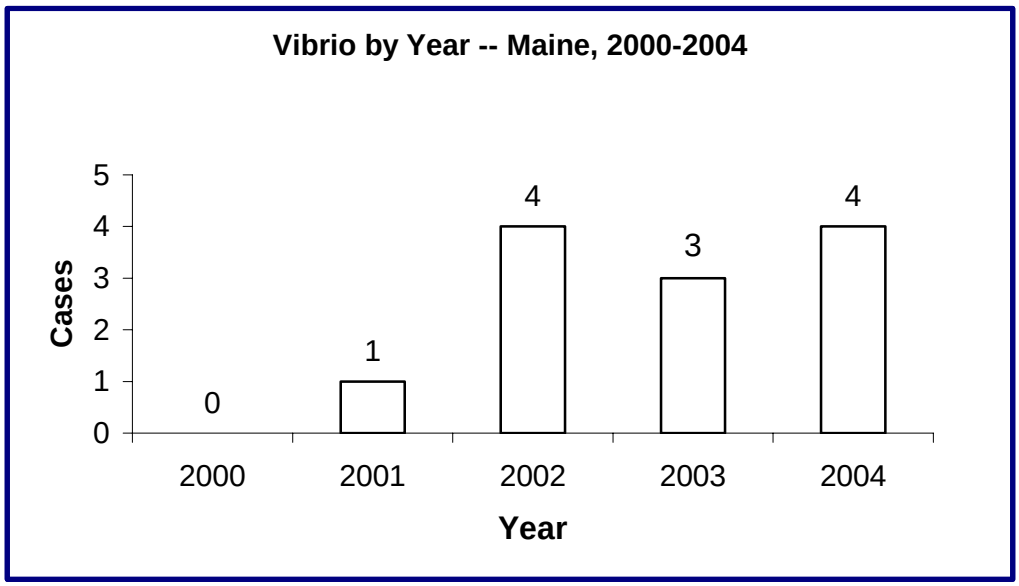
The age range of shigellosis cases was 2 to 55 years. The mean age was 24 years. Almost 50% (n=6) of the cases were under the age of 20. Males accounted for 69% (n=9) of cases. The majority of cases of shigellosis (62%) were reported in June and July.



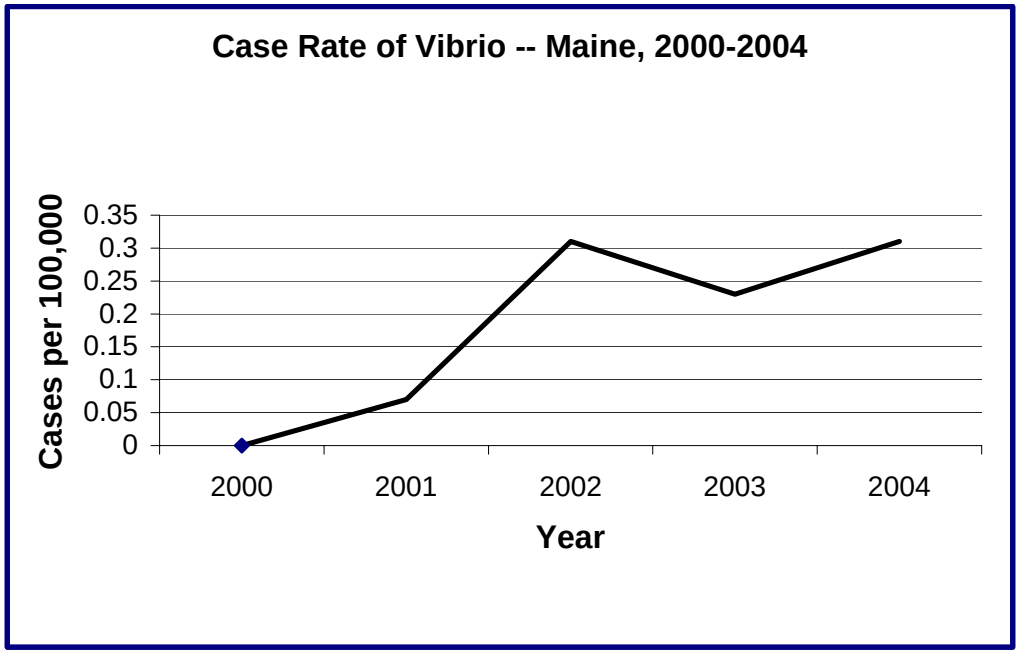
As with other enteric pathogens, all cases of shigellosis are investigated in conjunction with PFGE to determine outbreaks and potential sources for infection. Cases involved in child or patient care or food handling are restricted from work until cleared of the infection because of the low dose required for transmission.

Vibrio

Vibrio parahaemolyticus is the primary type of vibrio infection seen in Maine. It is characterized by watery diarrhea and abdominal cramps and most often associated with the ingestion of raw or undercooked seafood. During 2004, four cases of vibrio were reported in Maine.



The 5-year mean of reported vibrio cases in Maine was 2.4. The case rate in 2004 for Maine was 0.3 per 100,000 while the national case rate (2004, FoodNet) was 0.3.



Four counties (Cumberland, Hancock, Waldo and York County) each had one case of vibrio. The ages of the four cases ranged from 24 to 86 years. The mean age was 49. Half (n=2) of the cases were female; half were male. Cases of vibrio were reported during the late summer months of July, August and September. This coincides with the seasonality seen in previous years in Maine.

Infectious Disease Epidemiology works closely with the Division of Health Engineering and the Department of Marine Resources on each confirmed case of vibrio to determine if the source is a commercial seafood establishment that needs to be inspected.

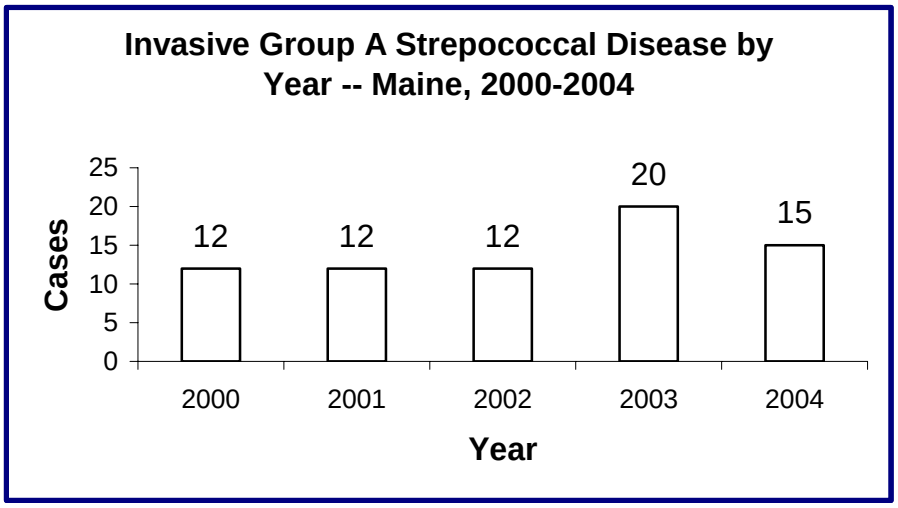
MENINGITIS AND SEPTICEMIA

Invasive Group A Streptococcal Disease

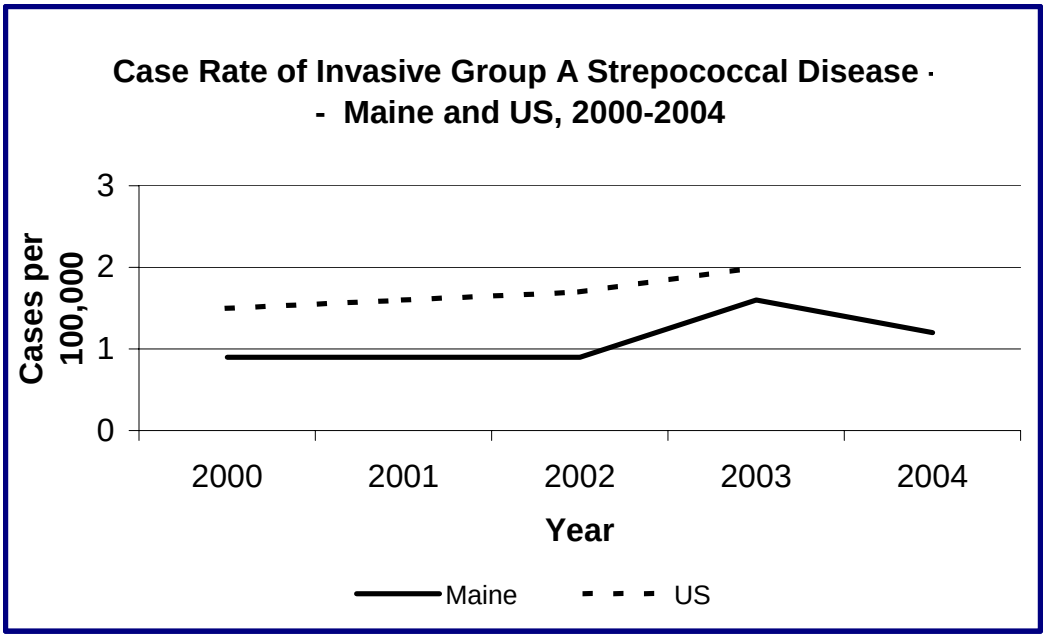
Group A *Streptococcus* is the most frequent bacterial cause of acute pharyngitis; it also gives rise to a variety of cutaneous and systemic infections. The disease is ordinarily spread by direct person-to-person contact, most likely via droplets of saliva or nasal secretions. Crowding such as occurs in schools or congregate living facilities, including military barracks, favors interpersonal spread of the organism. An increased incidence of streptococcal disease in northern latitudes during the colder months of the year has also been observed.

Few people who come into contact with Group A *Streptococcus* will develop invasive disease. While healthy people can also become ill with invasive Group A streptococcal disease, people with existing health conditions such as cancer, diabetes and kidney disease, and those who use medications such as steroids, are at higher risk of invasive disease.

In 2004, 15 cases of invasive Group A streptococcal disease were reported in Maine.



In the United States, 5,872 cases of invasive Group A streptococcal disease were reported in 2003, or 2.0 invasive Group A streptococcal disease cases per 100,000 population. In Maine, 1.2 invasive Group A streptococcal disease cases were reported per 100,000 population in 2004.



Invasive Group A streptococcal disease occurred in nine Maine counties, including Piscataquis, Somerset, Franklin, Androscoggin, Sagadahoc, Hancock, Cumberland, Kennebec, and Penobscot. Piscataquis County reported the highest rate of invasive Group A streptococcal disease.

Invasive Group A Streptococcal Disease by County – Maine, 2004		
County	**Cases Per 100,000**	**Cases**
Androscoggin	2.9	3
Aroostook	0	0
Cumberland	1.5	4
Franklin	3.4	1
Hancock	1.9	1
Kennebec	0.9	1
Knox	0	0
Lincoln	0	0
Oxford	0	0
Penobscot	0.7	1
Piscataquis	5.8	1
Sagadahoc	2.8	1
Somerset	3.9	2
Waldo	0	0
Washington	0	0
York	0	0
State of Maine	1.2	15

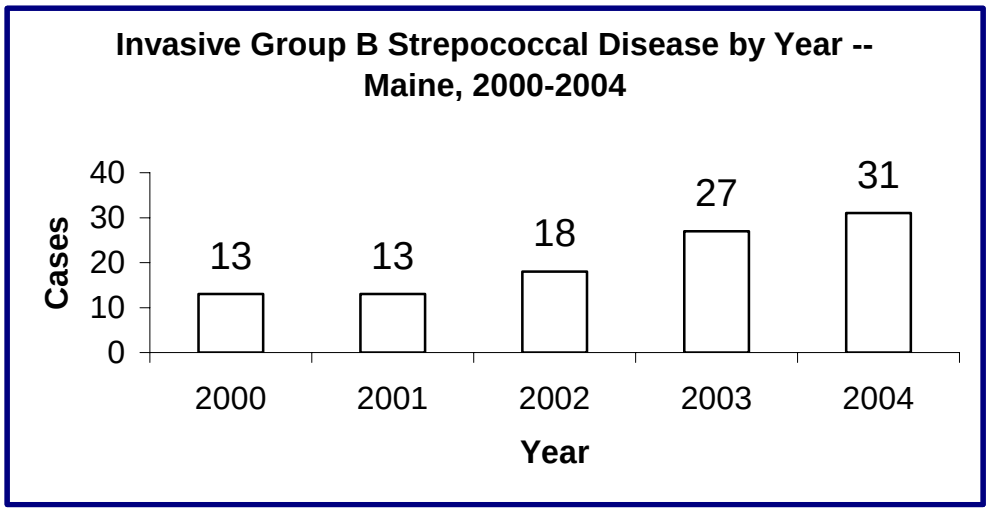
Of the 15 invasive Group A *Streptococcal* disease cases reported in 2004, the mean age was 54.5 years (range 3-80).

Invasive Group A streptococcal disease can be treated with many different antibiotics, sometimes requiring hospitalization and more intensive therapies. Early treatment can reduce the risk of morbidity and mortality. The spread of Group A streptococcal infections may be reduced by good hand washing, especially after coughing and sneezing, before preparing foods, and before eating.

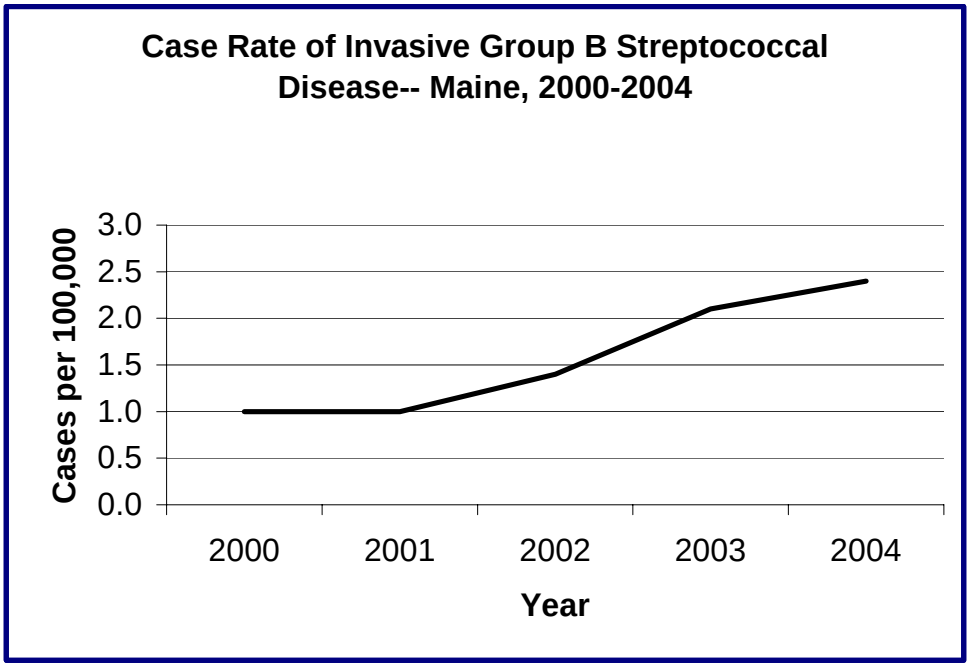
Invasive Group B Streptococcal Disease

Group B *Streptococcus* is a bacterium that causes illness in newborns, pregnant women, the elderly, and adults with other health conditions, such as diabetes or liver disease. Group B Streptococcal (GBS) disease is the most common cause of life threatening infections in newborns, often causing blood infections (sepsis) and infections of the fluid and lining surrounding the brain (meningitis). In pregnant women, GBS can cause bladder infections, womb infections (amnionitis and endometritis), and stillbirth. Among men and women who are not pregnant, the most common diseases caused by GBS are blood infections, skin and soft tissue infections, and pneumonia. Approximately 20% of men and nonpregnant women with GBS disease die of the disease. Asymptomatic carriage in gastrointestinal and genital tracts is common and intrapartum transmission via ascending spread from vaginal and/or gastrointestinal GBS colonization can result in infection. The mode of transmission of disease in nonpregnant adults and older children (>1 week) is unknown.

Invasive Group B Streptococcal disease in Maine has increased slightly since 2001. A total of 31 cases of invasive Group B Streptococcal disease were reported in Maine in 2004.



In the United States, approximately 19,000 cases of invasive Group B streptococcal disease occur annually (6.8 per 100,00 population). In 2004, 2.4 cases of invasive Group B streptococcal disease were reported in Maine per 100,000 population.



Invasive Group B streptococcal disease was reported in 11 Maine counties in 2004. Piscataquis and Cumberland counties had the highest rates of invasive group B streptococcal disease, with 5.8 and 5.3 per 100,000 respectively.

Invasive Group B Streptococcal Disease by County – Maine, 2004		
County	**Cases Per 100,000**	**Cases**
Androscoggin	1.9	2
Aroostook	2.7	2
Cumberland	5.3	14
Franklin	0	0
Hancock	0	0
Kennebec	0	0
Knox	0	0
Lincoln	0	0
Oxford	3.7	2
Penobscot	0.7	1
Piscataquis	5.8	1
Sagadahoc	2.8	1
Somerset	2.0	1
Waldo	2.8	1
Washington	2.9	1
York	2.7	5
State of Maine	2.4	31

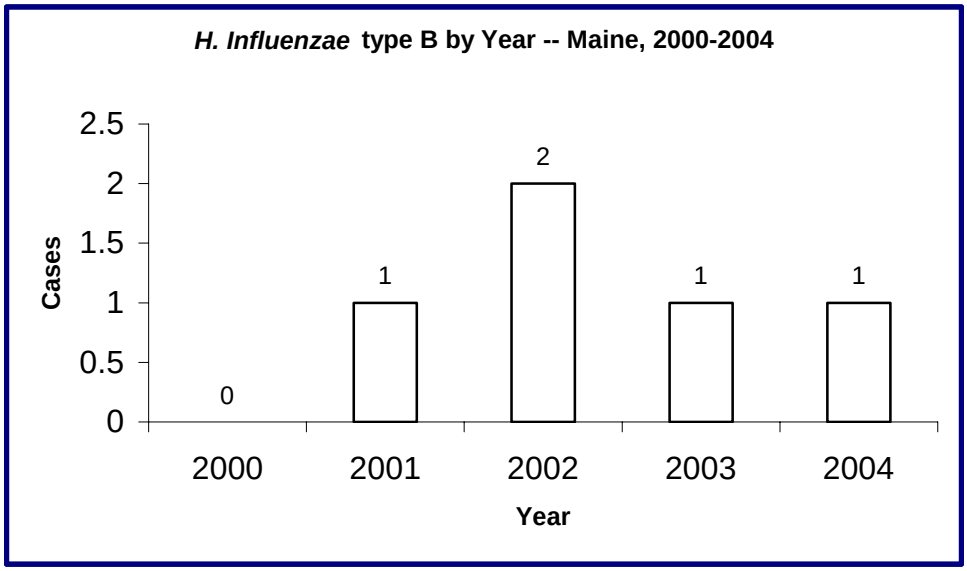
Targeting prevention efforts for invasive group B streptococcal disease in adults is difficult, considering the mode of disease transmission among nonpregnant adults is

unknown. However, there are opportunities for public health officials to interface with community groups on education and prevention issues, to further prevent infection among infants and pregnant women, and to quickly identify infection among other adults.

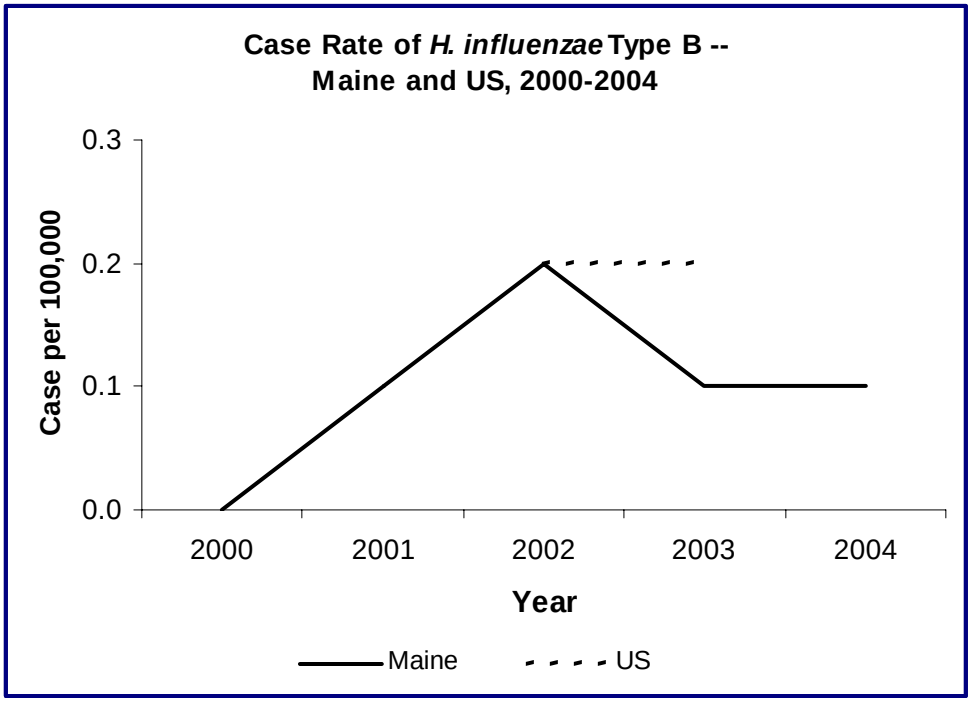
Haemophilus Influenzae Type B

Before the introduction of effective vaccines in 1990, *H. influenzae* type b (Hib) was the leading cause of bacterial meningitis and invasive bacterial disease among children <5 years of age. The most common forms of *H. influenzae* invasive disease are meningitis, epiglottitis, pneumonia, arthritis, and cellulitis. Asymptomatic human carriers are the only known reservoir for *H. influenza*e, and transmission is presumed to occur by respiratory droplet spread. Generally, the incidence of *H. influenzae* tends to peak in September-December and March-May, though the reason for this pattern is not known.

In 2004, one case of *H. influenzae* type b was reported in Maine in a 67-year-old male. The number of *H. influenzae* type b cases reported since 2000 has varied little, with no cases in 2000, one case each in 2001, 2003 and 2004, and two cases in 2002.



The statewide incidence of *H. influenzae* type b in 2004 was 0.1 per 100,000 population. The 2003 U.S. incidence of *H. influenzae* type b was 0.2 per 100,000 population (Note: United States case rates of *H. influenzae* type b were unavailable for 2000, 2001, and 2004.)

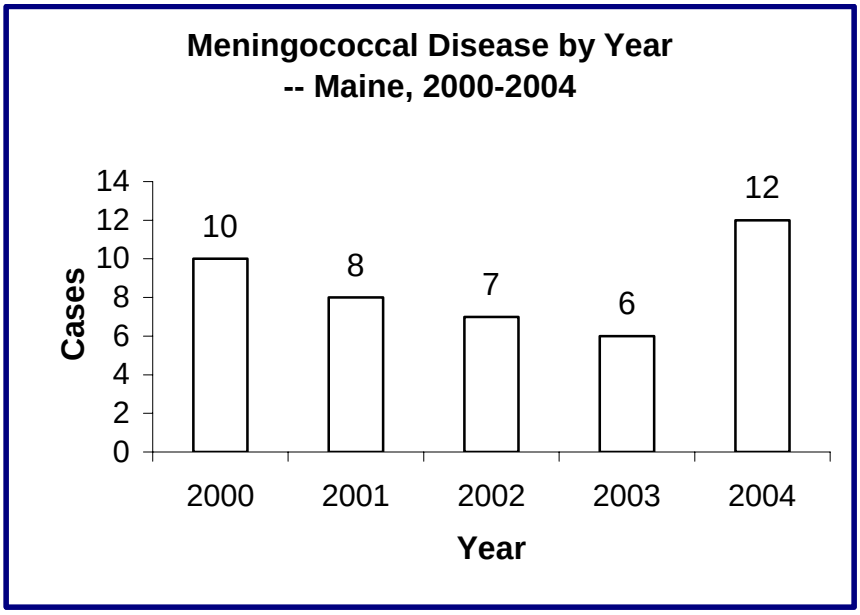


Meningococcal Disease

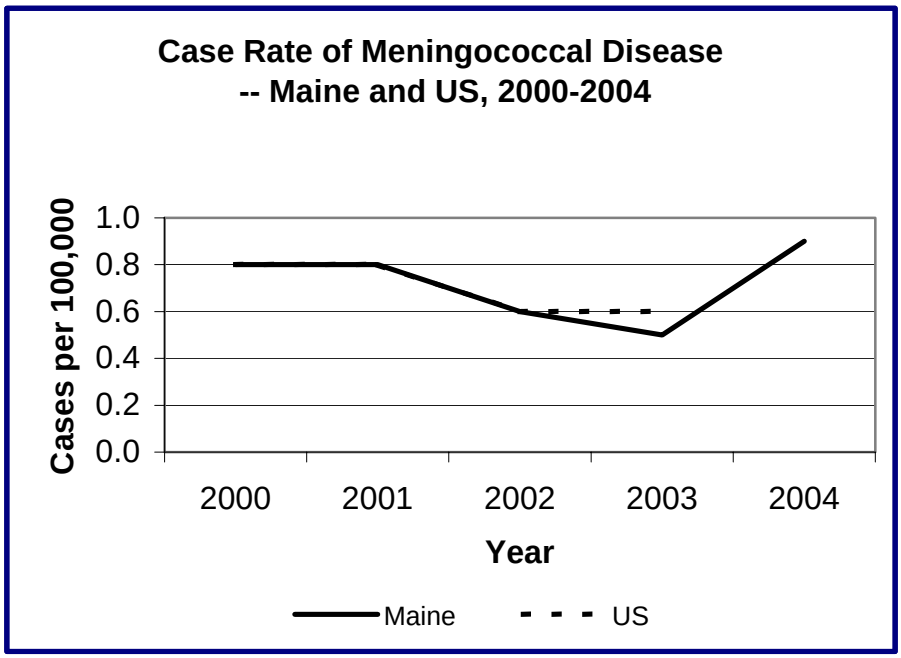
Meningococcal disease occurs from an infection with *Neisseria meningitidis*, a gram-negative bacterium. Meningococcal disease can result in meningitis, an inflammation of the tissue surrounding the brain and spinal cord, or meningococcemia, an infection of the blood. There are multiple serogroups of *Neisseria meningitides*; serogroup A, B and C organisms account for at least 90% of cases.

Symptoms of meningococcal disease include fever, headache, and stiff neck, in cases with meningitis infection, and sepsis and rash in meningococcemia. The incubation period is commonly 3-4 days, but onset of illness can occur from 2 to 10 days after exposure. Transmission of meningococcal disease generally occurs through direct contact with respiratory secretions from the nose or throat of an infected person. Up to 15% of cases are fatal. Of patients who recover, 10-15% have permanent hearing loss, mental retardation, loss of limbs, or other sequelae.

In Maine, 12 cases of meningococcal disease were reported in 2004.



In the United States, 1,756 cases of meningococcal disease were reported in 2003, or 0.6 meningococcal disease cases per 100,000 population. In Maine, 0.9 meningococcal disease cases were reported per 100,000 population in 2004.



Meningococcal disease case reports were geographically dispersed across Maine. In 2004, cases were reported in six Maine counties. Piscataquis County reported the highest case rate, with 11.6 meningococcal infections per 100,000 population.

Meningococcal Disease by County – Maine, 2004		
County	**Cases Per 100,000**	**Cases**
Androscoggin	0	0
Aroostook	1.9	2
Cumberland	0.8	2
Franklin	0	0
Hancock	0	0
Kennebec	0.8	1
Knox	2.8	1
Lincoln	0	0
Oxford	0	0
Penobscot	0	0
Piscataquis	11.6	2
Sagadahoc	0	0
Somerset	0	0
Waldo	0	0
Washington	0	0
York	2.1	4
State of Maine	0.9	12

In 2004, the median age of persons with meningococcal infections was 18.5 years (range: <1 month to 93 years). As has been observed nationwide, meningococcal disease is being found increasingly among adolescents and young adults in Maine.

Suspected cases of meningococcal disease should be immediately reported to the Bureau of Health, so that infection can be prevented among close contacts. There is a vaccine that protects against four strains of *N. meningitides* (A, C, W-135, and Y). Some persons at higher risk for meningococcal disease, including college freshman, especially those living in dormitories, and persons traveling to countries where meningococcal meningitis is endemic, can greatly reduce their risk for infection by receiving the vaccine.

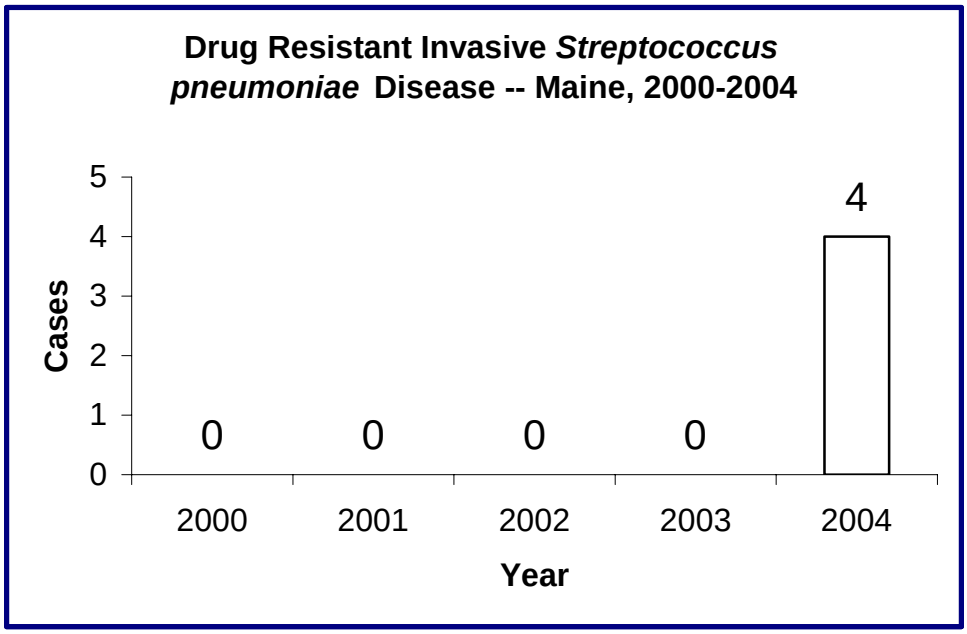
Invasive *Streptococcus pneumoniae*, Drug Resistant

Streptococcus pneumoniae, also called pneumococcus, is a gram-positive bacteria that typically occur in pairs. Some pneumococci are encapsulated, resulting in a more pathogenic organism. Pneumococci are classified by serotype, and 90 serotypes have been identified, though only a few produce the majority of invasive pneumococcal infections. Seven serotypes (6A, 6B, 9V, 14, 19A, 19F, and 23F) account for most of drug resistant (resistant to one or more commonly used antibiotics) *Streptococcus pneumoniae*.

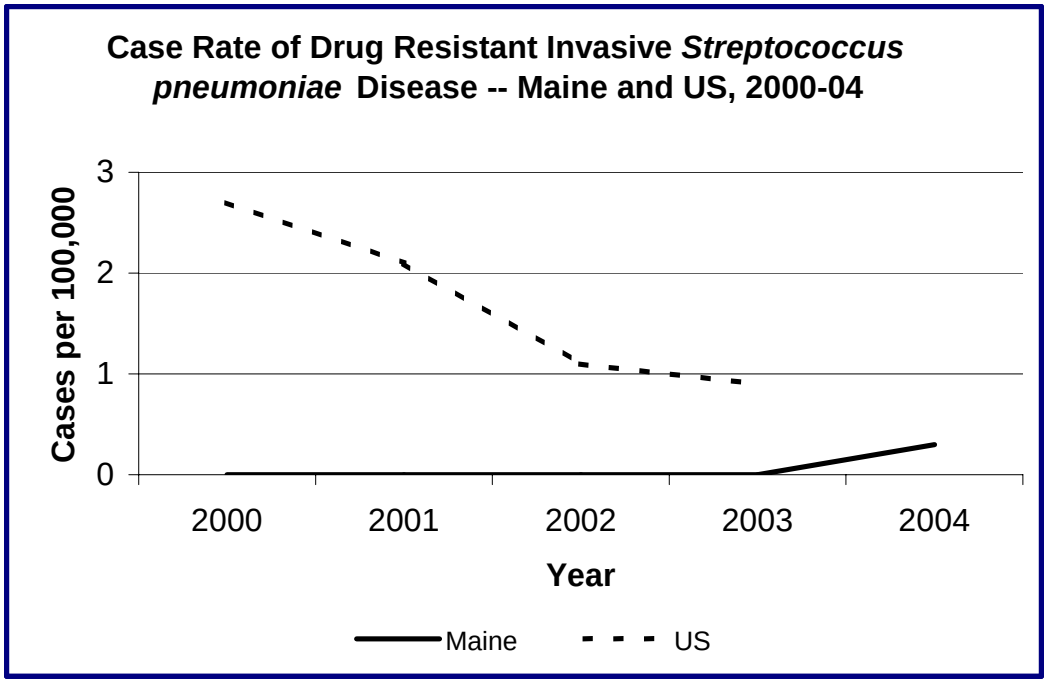
Pneumococcal pneumonia is the most common clinical presentation of pneumococcal disease among adults. Infection is typically spread through person-to-person transmission, primarily through droplets. The incubation period is short, typically 1 to 3 days, and symptoms generally include an abrupt onset of fever and shaking chills, productive cough, pleuritic chest pains, shortness of breath, rapid breathing, and poor

oxygenation. Until 2000, S*treptococcus pneumoniae* infection caused 60,000 cases of invasive disease annually, 40% of which were drug resistant. The incidence of drug resistant *Streptococcus pneumoniae* has decreased since the introduction of the pneumococcal conjugate vaccine for children in 2000.

In Maine, four cases of drug resistant invasive S*treptococcus pneumoniae* were reported in 2004.



In the United States, 0.9 cases per 100,000 of drug resistant invasive *Streptococcus pneumoniae* disease were reported in 2003. In Maine, 0.3 cases per 100,000 of drug resistant invasive S*treptococcus pneumoniae* disease were reported in 2004.



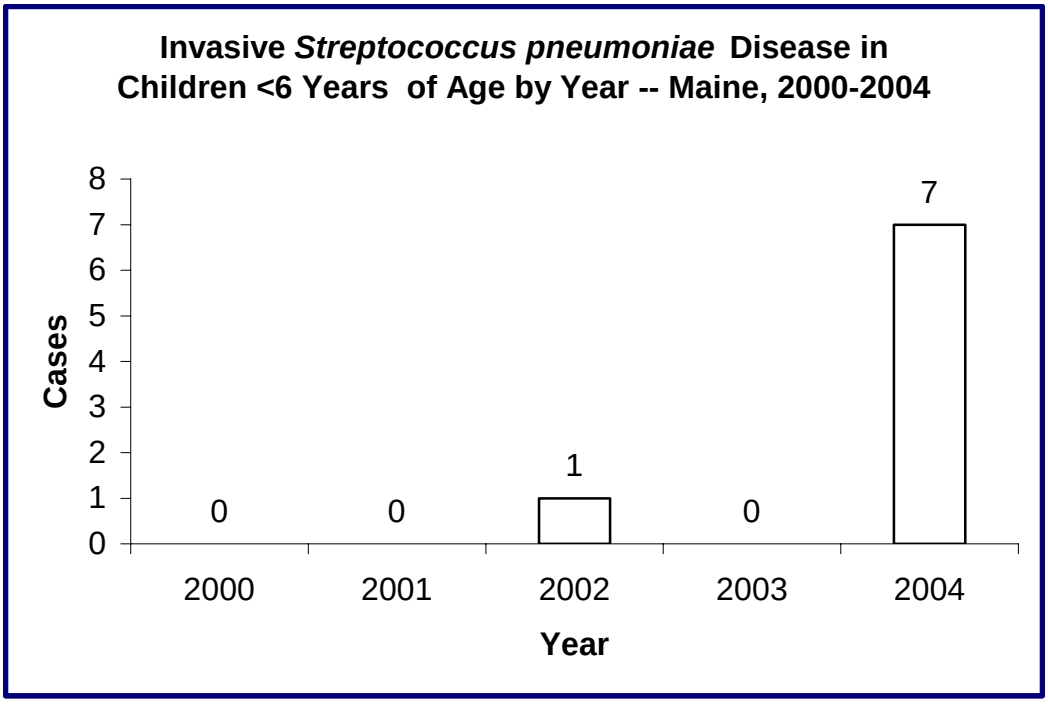
Widespread overuse of antibiotics and the spread of resistant strains of *Streptococcus pneumoniae* have contributed to increasing resistance. More prudent use of antibiotics and wider use of the pneumococcal vaccine are needed to reduce drug resistance.

Invasive *Streptococcus pneumoniae* Disease in Children <6 Years

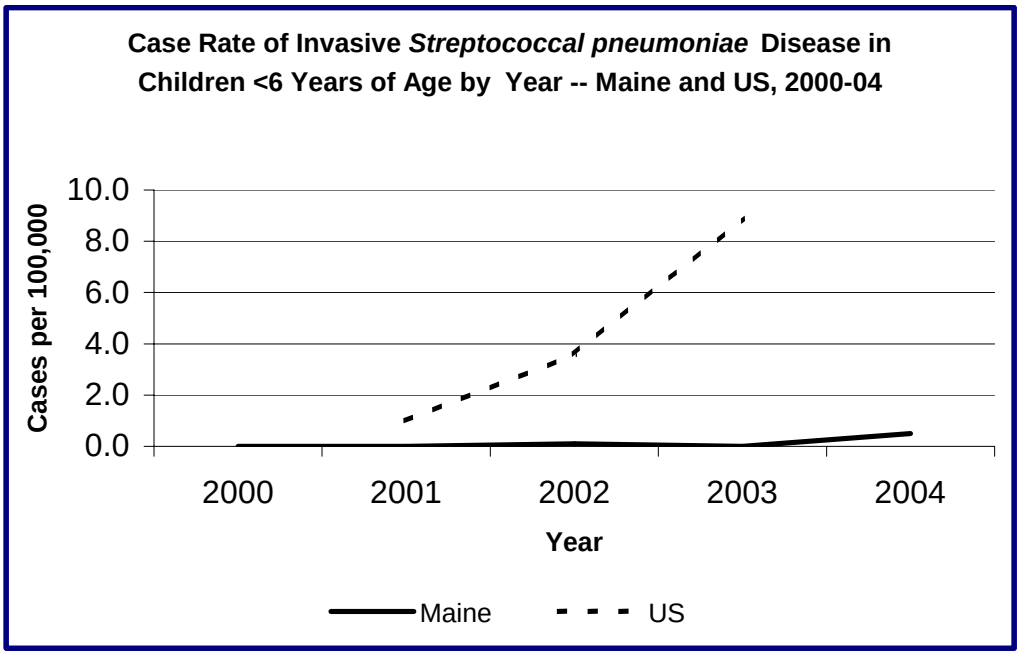
Streptococcus pneumoniae, also called pneumococcus, is a gram-positive bacteria that typically occur in pairs, called diplococci. Some pneumococci are encapsulated, resulting in a more pathogenic organism. Pneumococci are classified by serotype, and 90 serotypes have been identified, though only a few produce the majority of pneumococcal infections. In the United States, the seven most common serotypes isolated from blood or cerebral spinal fluid of children less than 6 years of age account for 80% of infections.

Pneumococcal bacteremia without a known site of infection is the most common invasive clinical presentation among children. An estimated 17,000 cases of invasive disease occur each year in the United States, of which 13,000 are bacteremia without known site of infection and about 700 are meningitis. An estimated 200 children die every year as a result of invasive pneumococcal disease nationwide.

In Maine, seven cases of invasive pneumococcal disease in children less than 6 years of age were reported in 2004.



In the United States, 8.9 invasive *Streptococcus pneumoniae* disease cases among children less than 6 years of age were reported per 100,000 population in 2003. In Maine, 0.5 invasive S*treptococcus pneumoniae* disease cases among children less than 6 years of age were reported per 100,000 population in 2004.



Invasive *Streptococcus pneumoniae* disease among children less than 6 years of age was reported in five Maine counties.

Invasive *Streptococcal pneumoniae* Disease in Children <6 Years of Age by County – Maine, 2004		
County	**Cases Per 100,000**	**Cases**
Androscoggin	1.0	1
Aroostook	0	0
Cumberland	1.1	3
Franklin	3.4	1
Hancock	0	0
Kennebec	0.9	1
Knox	0	0
Lincoln	0	0
Oxford	0	0
Penobscot	0	0
Piscataquis	0	0
Sagadahoc	2.8	1
Somerset	0	0
Waldo	0	0
Washington	0	0
York	0	0
State of Maine	0.5	7

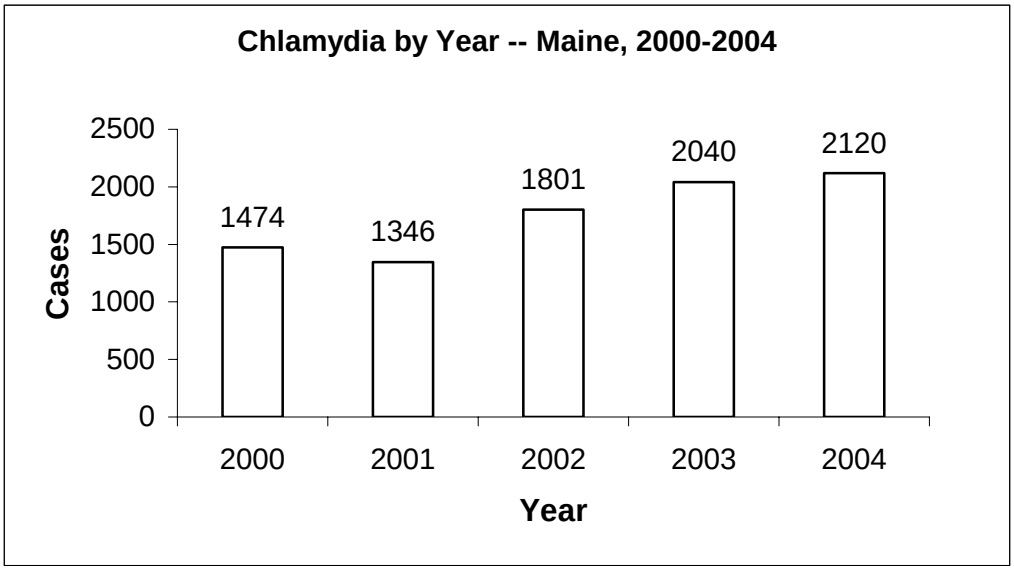
The majority of cases of invasive S*treptococcus pneumoniae* disease in children less than 6 years of age occurred among children less than one year of age.

All children less than 24 months of age and children age 24-59 months with high risk medical conditions should be routinely vaccinated with pneumococcal conjugate vaccine (PCV7). The primary series, initiated in infancy, consists of three doses routinely given at two, four, and six months of age. The fourth booster dose is recommended at 12-15 months of age. After four doses of PCV7 vaccine, virtually all healthy infants develop antibodies to all seven serotypes contained in the vaccine.

SEXUALLY TRANSMITTED AND BLOOD BORNE DISEASES

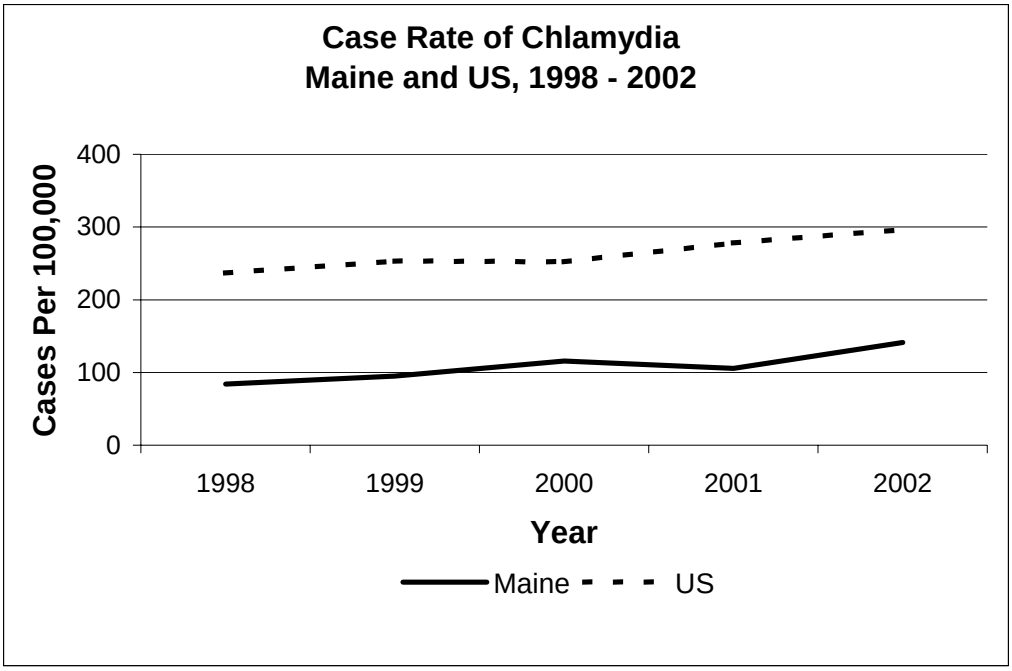
Chlamydia

Chlamydia is a common sexually transmitted disease (STD) caused by the bacterium, *Chlamydia trachomatis*, which can damage a woman's reproductive organs. Even though symptoms of chlamydia are usually mild or absent, serious complications that cause irreversible damage, including infertility, can occur silently before a woman ever recognizes a problem. Chlamydia also can cause discharge from the penis of an infected man.

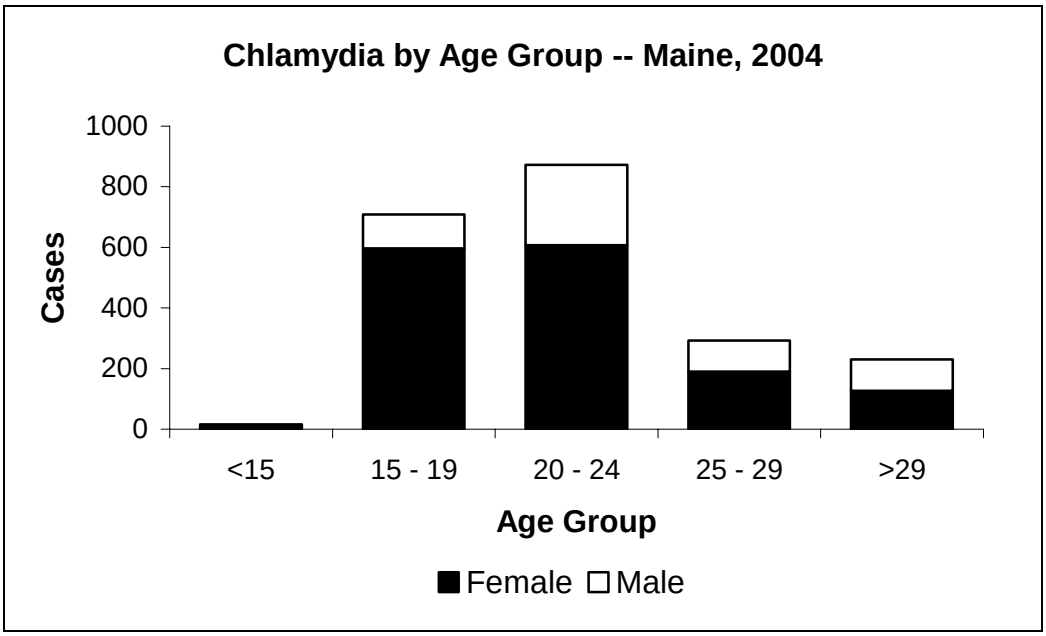


Chlamydia is the most-frequently reported STD in the state. During 2004, 2,120 cases were reported. Apart from a slight decline in 2001, the number of diagnoses increased each year between 1996 and 2004. The number of 2004 reports represents an increase of 4% over the 2003 total.

Case rates for chlamydia have risen both in Maine and nationally. In Maine, the rate has risen from 84.2 cases per 100,000 in 1998 to 141.3 cases in 2002. Nationally, the rate rose from 236.7 cases per 100,000 in 1998 to 296.5 in 2002.



People 24 years old and under are disproportionately affected by this disease, accounting for three-quarters of all 2004 cases. Females were diagnosed with chlamydia much more often than males, comprising 73% of all reports. This does not mean greater numbers of women are infected with chlamydia; women are tested for the disease more frequently than men, and may be more likely to exhibit symptoms of the disease.

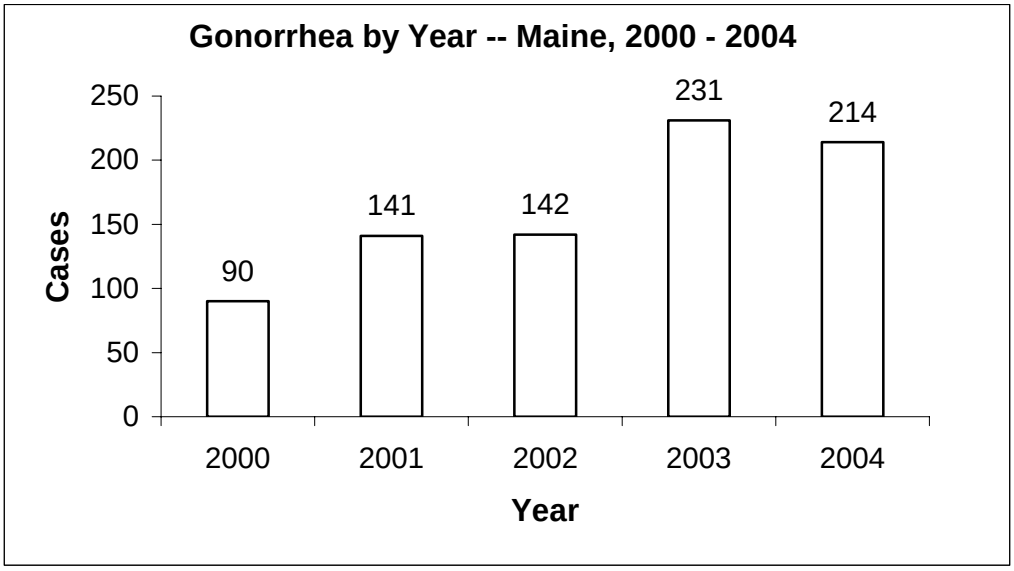


Androscoggin, Cumberland and Penobscot counties have chlamydia rates that are higher than the statewide rate.

Chlamydia by County – Maine, 2004		
County	**Case Rates**	**Cases**
Androscoggin	281.3	292
Aroostook	152.8	113
Cumberland	206.3	548
Franklin	135.7	40
Hancock	142.9	74
Kennebec	137.5	161
Knox	98.4	39
Lincoln	101.1	34
Oxford	164.4	90
Penobscot	187.7	272
Piscataquis	121.8	21
Sagadahoc	159.0	56
Somerset	110.0	56
Waldo	93.7	34
Washington	147.3	50
York	128.5	240
State of Maine	166.3	2120

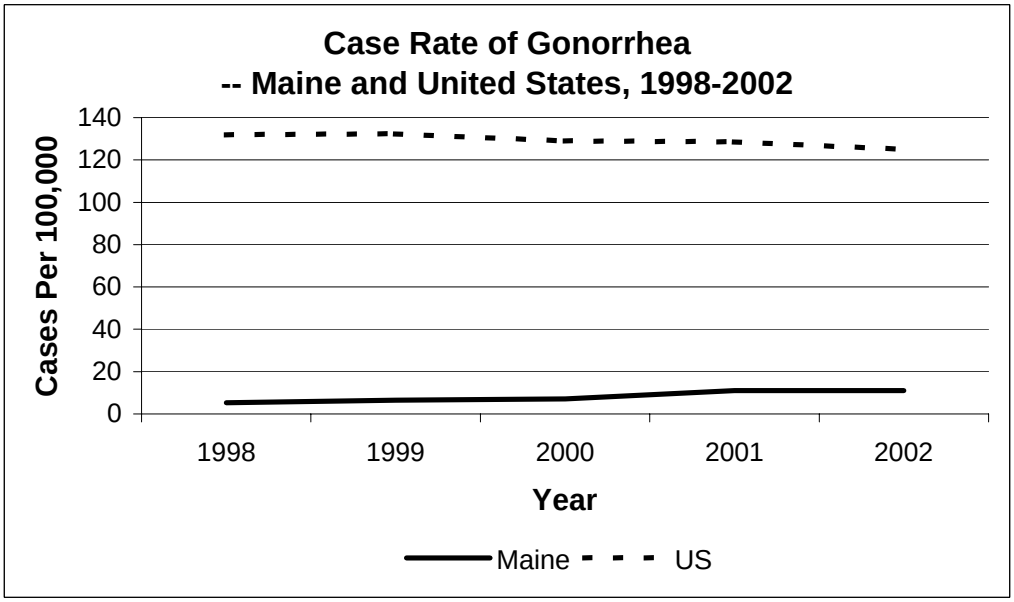
Gonorrhea

In women, gonorrhea is a common cause of pelvic inflammatory disease. In men, gonorrhea can cause epididymitis, a painful condition of the testicles that can lead to infertility if left untreated. Gonorrhea can also spread to the blood or joints. This condition can be life threatening. In addition, people with gonorrhea can more easily contract HIV, the virus that causes AIDS. HIV-infected people with gonorrhea are more likely to transmit HIV to someone else.

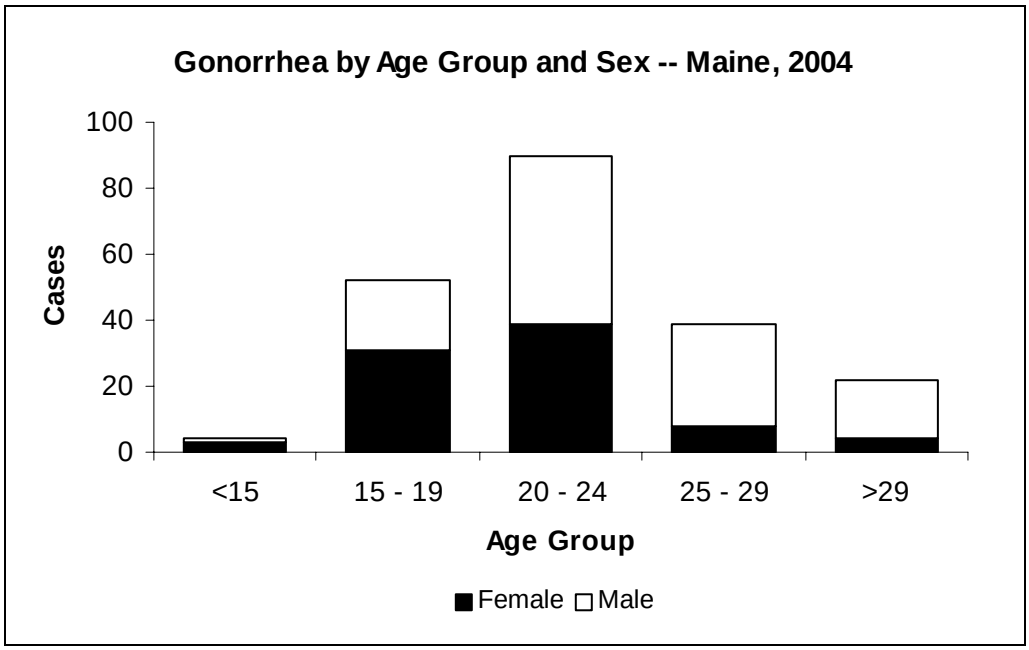


Two hundred fourteen cases of gonorrhea were diagnosed in Maine in 2004, representing a 7% decrease over the 2003 total. Apart from the slight decrease in 2004, gonorrhea diagnoses increased each year between 1996 and 2003.

The 2002 Maine rate is less than one-tenth the US rate. Nonetheless, the Maine rate increased from 5.3 cases per 100,000 in 1998 to 11.1 cases in 2002, while the US rate declined slightly from 131.9 per 100,000 in 1998 to 125.0 in 2002.



Forty-two percent of 2004 diagnoses occurred in the 20-29 year old age group; approximately one quarter of cases were less than 20 years old. Males comprised approximately 60% of all gonorrhea diagnoses. The greater proportion of male diagnoses is likely due to diagnoses among males who have sex with males (MSM), who accounted for a third of cases reported in 2004.

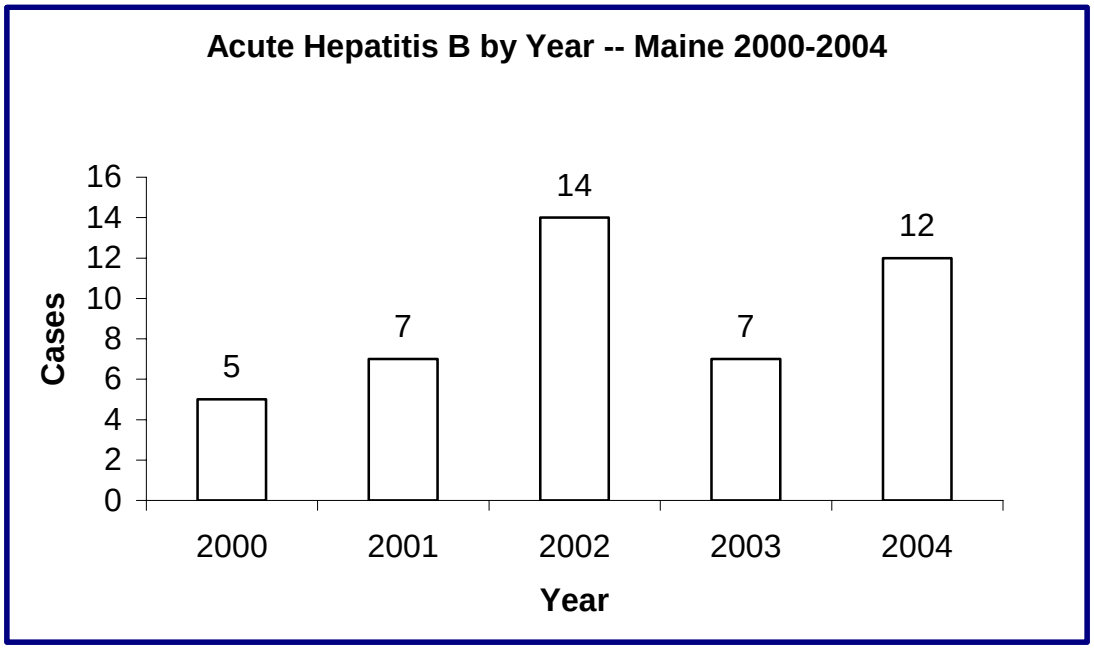


Four counties, Androscoggin, Cumberland, Kennebec and York, had gonorrhea rates that were higher than the state rate.

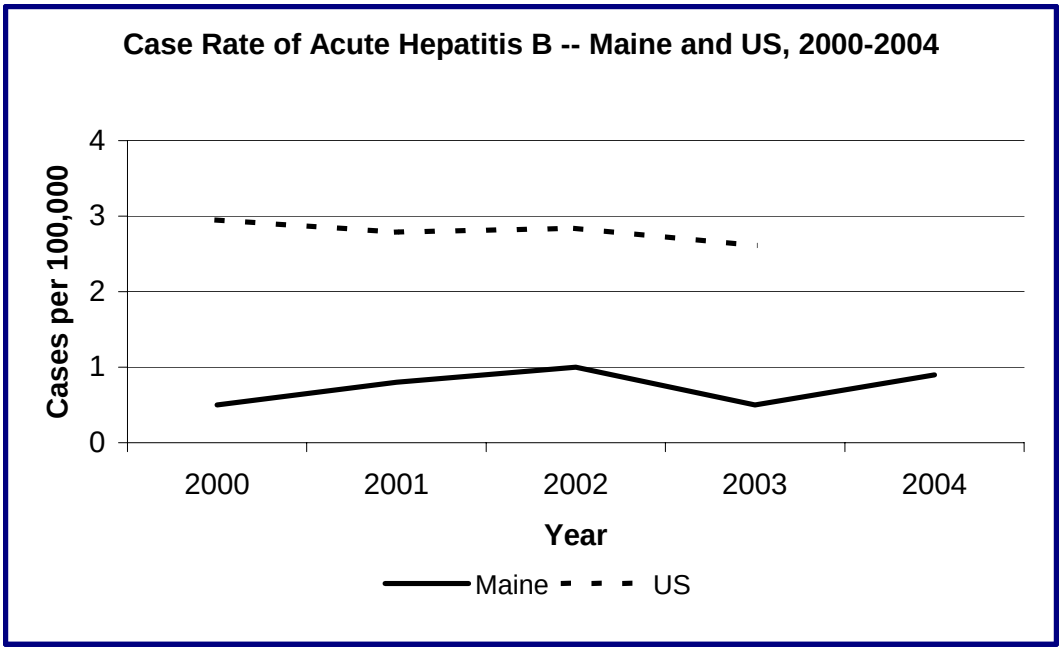
Gonorrhea by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	45.3	47
Aroostook	6.8	5
Cumberland	28.2	75
Franklin	0	0
Hancock	5.8	3
Kennebec	19.6	23
Knox	5	2
Lincoln	11.9	4
Oxford	7.3	4
Penobscot	10.4	15
Piscataquis	0	0
Sagadahoc	5.7	2
Somerset	2	1
Waldo	0	0
Washington	2.9	1
York	17.1	32
State of Maine	16.8	214

Hepatitis B

Hepatitis B is a serious viral infection affecting the liver. It is caused by a DNA virus that is transmitted from one person to another through body fluids such as blood, semen, and cervical secretions. People can contract the disease from sharing needles and having sex. Babies can contract the disease from their mothers.



In 2004, the Maine hepatitis B case rate was 0.9 per 100,000 compared to 2.6 per 100,000 for the US.



Acute Hepatitis B by County – Maine, 2004		
County	**Cases Per 100,000**	**Cases**
Androscoggin	1.0	1
Aroostook	0	0
Cumberland	0.4	1
Franklin	0	0
Hancock	1.9	1
Kennebec	1.7	2
Knox	7.6	3
Lincoln	0	0
Oxford	0	0
Penobscot	2.8	4
Piscataquis	0	0
Sagadahoc	0	0
Somerset	0	0
Waldo	0	0
Washington	0	0
York	0	0
State of Maine	0.9	12

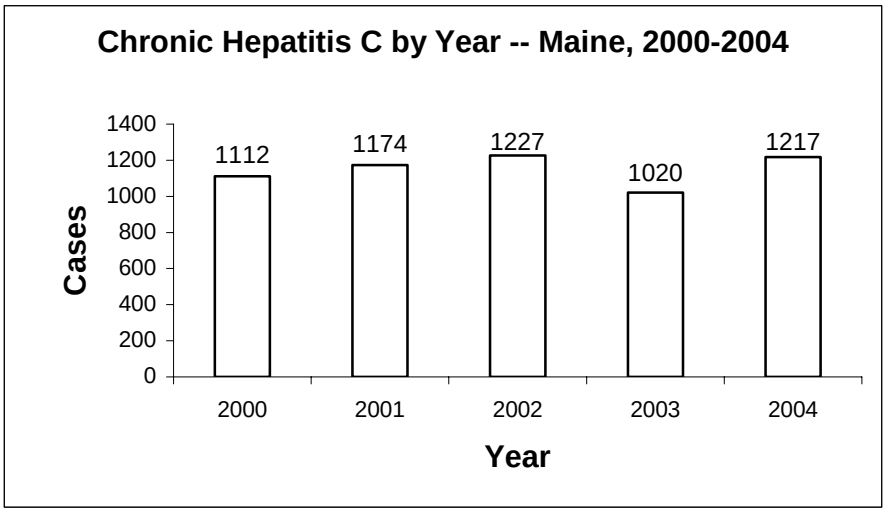
At present, Bureau of Health efforts are focused on evaluating and improving surveillance systems as well as on case management for perinatal hepatitis B. Within the framework of a comprehensive hepatitis plan, the Bureau of Health is initiating conversations with providers, patients, and other stakeholders with the view of improving reporting practices, increasing vaccine coverage rates among high-risk populations, and targeting the most vulnerable with education efforts.

The Bureau of Health also administers a perinatal hepatitis B project through the Maine Immunization Program, which aims at preventing the spread of the disease from mother to child. The program has a statewide registry of pregnant women who are HbsAg positive. The project works with a woman's primary care providers to ensure timely immunization to the newborn, as well as post-vaccination serological testing to ensure that the child has developed immunity. The program also provides educational materials to the mother.

Hepatitis C

Almost four million Americans have evidence of infection with the hepatitis C virus. It is the most common bloodborne infection in the United States and the leading reason for liver transplantation. Although the number of new infections per year has declined from an average of 240,000 in the 1980s to about 30,000 in 2003, the burden of disease continues to grow. Hepatitis C infects individuals of all ages, ethnic groups, and socioeconomic classes in urban and rural areas of Maine. An estimated 20,000 Maine residents have chronic hepatitis C. Most are unaware of their infection and are missing opportunities for therapeutic or preventive care because the infection is often asymptomatic and progresses slowly.

Since official case reporting was initiated in 1997, the Bureau of Health has documented yearly increases in the numbers of individuals diagnosed with hepatitis C. These reports represent Maine residents who tested positive for one or more hepatitis C virus [HCV] diagnostic markers. In 2004, the Bureau of Health received 1,217 reports of persons newly identified with markers for hepatitis C infection positivity, the vast majority of whom were chronically infected. Although the 1,217 reports made in 2004 represent an increase in reports over the 1,020 received in 2003, the annual total is in line with the numbers of reports received over the previous three years.



Due to the number of hepatitis C reports, it is not possible for the Bureau to follow up on each individual report. In addition, because there is no test for acute hepatitis C infection, and because acute infection is usually asymptomatic, acute infections

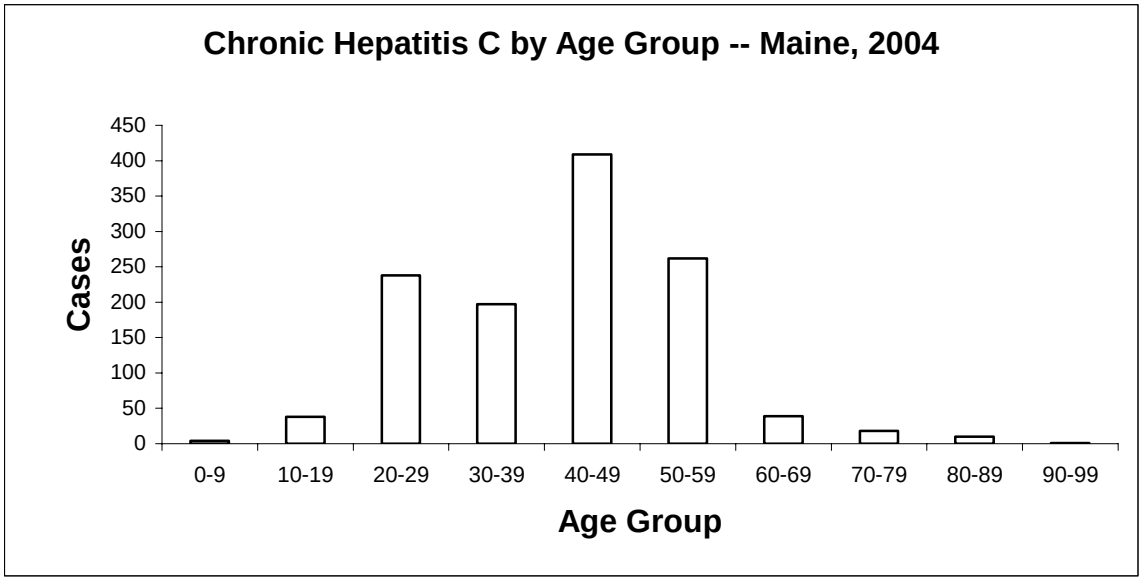
frequently go unrecognized. Thus, while there were no reported cases of acute hepatitis C in 2004, it is likely that such infections occurred in Maine.

Using 2000 Census data, rates per 100,000 population were calculated for all of the 16 Maine counties. Cumberland and Knox counties had the highest case rates followed by Washington, Piscataquis, Hancock, and Penobscot counties respectively. All of the aforementioned counties exceeded the rate for the state as a whole. Before drawing any conclusions from these data, it is important to consider the many factors that may contribute to differences among the counties. These factors include: the location of hepatitis C testing sites, the location of reporting correctional facilities (for example, 23 (43%) of cases from Knox County were incarcerated at the time of report), the location of the Veterans Administration Hospital (which is a site for treatment of large numbers of patients), and health care providers' initiative to test and report positive results. In addition, the location of practices of liver specialists may also explain some of the differences.

Chronic Hepatitis C by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	87.7	91
Aroostook	39.2	29
Cumberland	150.2	399
Franklin	54.3	16
Hancock	100.4	52
Kennebec	90.5	106
Knox	136.3	54
Lincoln	68.4	23
Oxford	74.9	41
Penobscot	98.0	142
Piscataquis	104.4	18
Sagadahoc	28.4	10
Somerset	59.0	30
Waldo	66.2	24
Washington	109.0	37
York	76.0	142
State of Maine	95.5	1217

*Note: County of residence data were available for 1214 of 1217 disease reports received in 2004. County of residence was defined by using the town of residence for the person reported (n=958). In the event town of residence was unavailable (n=259), the location of the medical provider performing the hepatitis C virus test was used as a proxy. A hepatitis C positive report was defined as the presence of any positive serologic marker for hepatitis C infection. These markers include anti-HCV (EIA), anti-HCV (RIBA), hepatitis C antigen (RT-PCR), or reports of HCV genotype. It should be noted that not all anti-HCV (EIA) reports were verified by supplemental assay. Also, neither EIA nor RIBA tests can distinguish between past and current infection. Reports

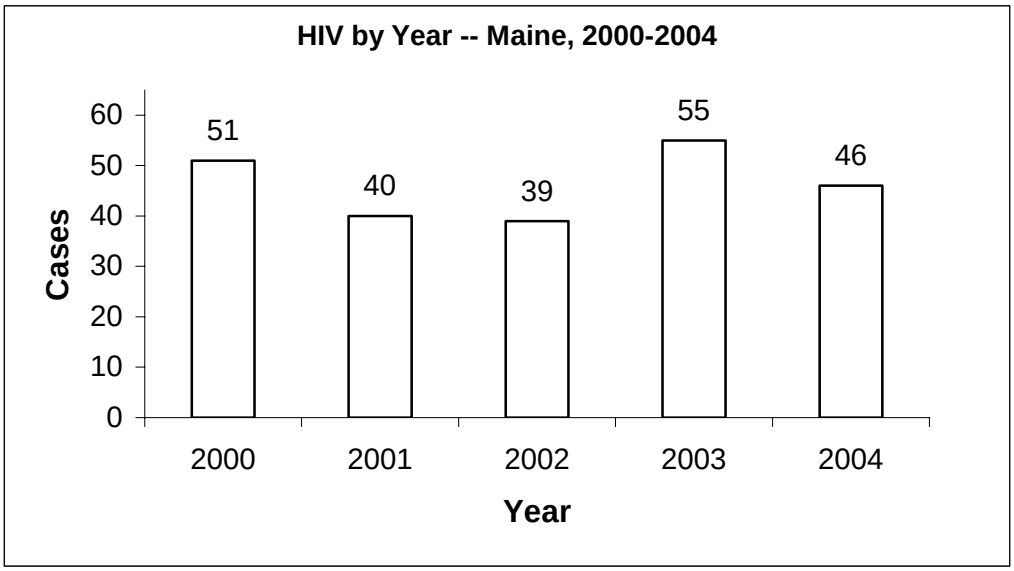
were not cross-referenced with other state registries, but do represent unduplicated individuals reported for each year.



The age distribution for hepatitis C reports made in 2004 demonstrated that the majority of reports received were for persons aged 20-59, with 55% of reports made for persons aged 40-59. Of the 1,217 reported individuals in 2004, 469 (39%) were females and 748 (61%) were males. This represents a slight increase in the percentage of women reported as compared to 32% in 2003.

To help identify cases of hepatitis C infection in Maine, medical providers are encouraged to consider each patient's risk for HCV infection to determine the need for testing. Patients for whom testing is indicated include: persons with past or present injection drug use; recipients of transfusions or organ transplants before July 1992; recipients of clotting factor concentrates produced before 1987; persons on chronic hemodialysis; persons with persistently abnormal alanine aminotransferase levels; healthcare, emergency medical, and public safety workers after needle sticks, sharps or mucosal exposures to HCV-positive blood; and children born to HCV-positive women. Children should not be tested for anti-HCV before 18 months of age as anti-HCV from the mother might last until this age. If a diagnosis is desired prior to 18 months of age, testing for HCV RNA can be performed at 1-2 months of age. HCV RNA testing should be repeated at a subsequent visit regardless of the initial HCV RNA test result. Persons who test positive for HCV should be screened for susceptibility to hepatitis A and B virus infection and immunized appropriately.

HIV/AIDS



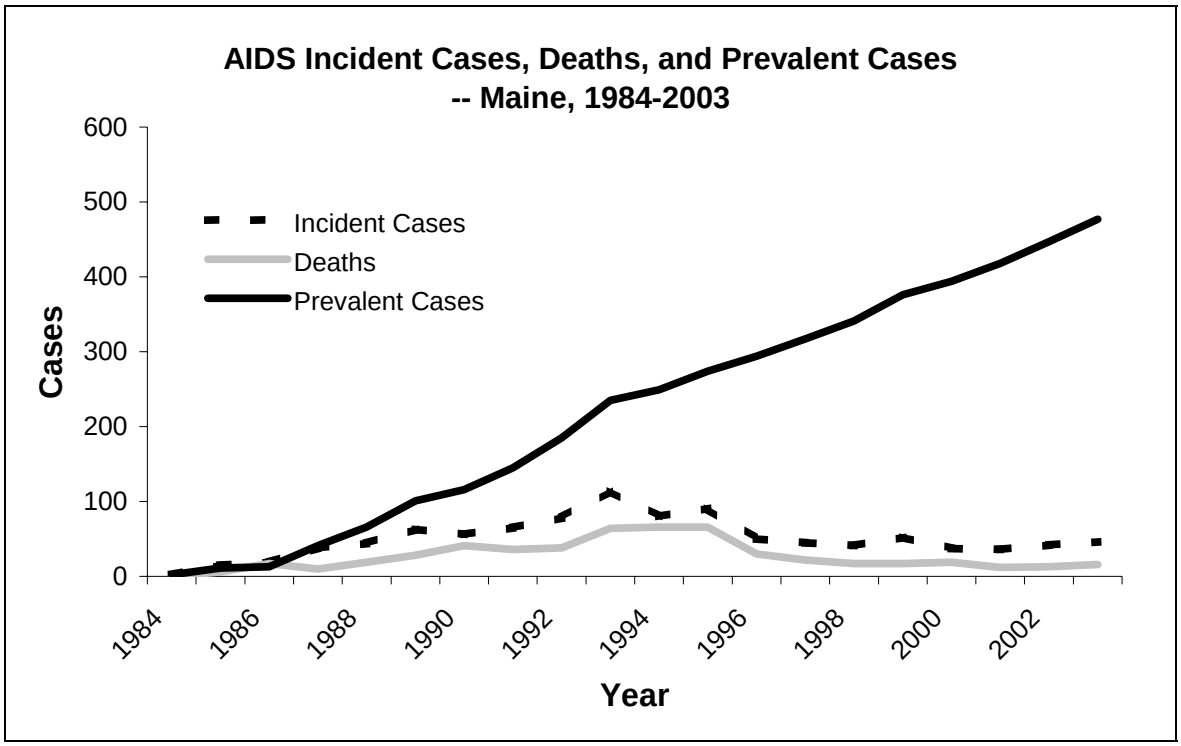
Since the Maine Bureau of Health began recording new HIV diagnoses in 1987, almost 1,400 positive HIV tests have been reported. As has been seen nationally, the annual incidence of HIV-positive diagnoses in Maine has declined from more than 100 positive test reports in the late 1980s and early 1990s to fewer than half that number in recent years. Between 2000 and 2004, there were between 39 and 55 cases reported annually, with a five year mean of 46 cases.

Forty-six new HIV diagnoses occurred in 2004. Of these, 20 were diagnosed with AIDS within six months of their initial HIV diagnosis. Overall, 45% of individuals diagnosed with HIV during the past five years were ill enough to be classified with AIDS within six months of testing positive, indicating that they had probably been infected a significant period of time before diagnosis.

Sixteen people died from AIDS in 2003. The National Center for Health Statistics ranked AIDS as the sixth leading cause of death among persons aged 25 to 44 in Maine during the period 1999 to 2001.

Just under 1,050 people are estimated to be living in Maine with diagnosed HIV/AIDS infection. An additional 350-450 individuals may be unknowingly infected with the virus, for a total estimate of 1,400 to 1,500 people living with HIV/AIDS in Maine.

Each year since 1985 there have been more new AIDS diagnoses than deaths, indicating that the overall number of people living with AIDS has continued to increase over time. These data suggest that there are more people living with HIV/AIDS in Maine than ever before, with an estimated 477 persons living with AIDS at the end of 2003.



In 2004, Cumberland County had the most HIV cases diagnosed with 17, followed by Androscoggin, York and Penobscot counties. Ten of 16 Maine counties contained residents who were newly diagnosed with HIV in 2004.

HIV Diagnoses by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	8.7	9
Aroostook	0	0
Cumberland	6.4	17
Franklin	0	0
Hancock	1.9	1
Kennebec	2.2	2
Knox	2.5	1
Lincoln	3.0	1
Oxford	0	0
Penobscot	3.5	5
Piscataquis	0	0
Sagadahoc	0	0
Somerset	3.9	2
Waldo	5.5	2
Washington	0	0
York	3.2	6
State of Maine	3.6	46

For people living with diagnosed HIV/AIDS, five counties, Cumberland, Kennebec, Androscoggin, Hancock and York had rates that were higher than the statewide rate of 82 cumulative cases per 100,000 population. Cumberland County had the highest rate, with 140 cumulative cases per 100,000 population. This rate was 65% higher than the next highest rate in Kennebec County. Cumberland also had the most cases overall, with 373 cases or 36% of the total number of cases reported.

People Living with Diagnosed HIV/AIDS by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	84	87
Aroostook	35	26
Cumberland	140	373
Franklin	27	8
Hancock	83	43
Kennebec	85	100
Knox	53	21
Lincoln	45	15
Oxford	33	18
Penobscot	72	105
Piscataquis	23	4
Sagadahoc	43	15
Somerset	49	25
Waldo	58	21
Washington	74	25
York	83	155
State of Maine	82	758

Forty-six new HIV diagnoses were reported during 2004, including seven women and 39 men. Fifteen percent of persons newly diagnosed were women, versus 16% in the group “People Living with Diagnosed HIV/AIDS in Maine.”

HIV Diagnoses and People Living with Diagnosed HIV/AIDS by Sex – Maine, 2004				
Sex	**HIV diagnoses**		**People living with diagnosed HIV/AIDS**	
	No.	**%**	**No.**	**%**
Male	39	85	868	83
Female	7	15	170	16
Male-to-female transgender	0	0	3	<1
Total	46	100	1041	100

Seventy-eight percent of both 2004 HIV diagnoses and persons living with diagnosed infection occurred in those 30 years of age and over. Twenty percent of 2004 diagnoses were among persons in their twenties. Because many people are HIV-infected for some time before being tested, it is likely that a large proportion of those who tested positive in this age category were infected when in their teens or early twenties. This emphasizes the need for continuing HIV prevention services for young people.

HIV Diagnoses and People Living with Diagnosed HIV/AIDS by Age at HIV Diagnosis – Maine, 2004				
Age at HIV Diagnosis	**HIV diagnoses**		**People living with diagnosed HIV/AIDS**	
	No.	**%**	**No.**	**%**
<13	1	2	10	1
13-19	0	0	16	2
20-29	9	20	149	19
30-39	12	26	347	44
40-49	19	41	197	25
>49	5	11	67	9
Total	46	100	786	100

The majority of persons affected by HIV in Maine are non-Hispanic White, with this group comprising 84% of 2004 diagnoses and 87% of persons living with diagnosed infection. After Whites, African American/Blacks are most represented, comprising 9% of 2004 diagnoses and 7% of people living with diagnosed HIV/AIDS. Hispanics comprised 7% of 2004 diagnoses and 5% of people living with diagnosed HIV/AIDS. Although racial and ethnic minorities make up less than 4% of Maine's population, people of color comprise nearly 13% of persons living with diagnosed infection. African-American/Blacks, Hispanics and American Indians in Maine are all disproportionately affected by HIV.

HIV Diagnoses and People Living with Diagnosed HIV/AIDS by Race and Ethnicity – Maine, 2004				
Race	**HIV diagnoses**		**People living with diagnosed HIV/AIDS**	
	No.	**%**	**No.**	**%**
White	42	91	955	92
Black or African American	4	9	71	7
Asian	0	0	2	<1
American Indian/Alaskan Native	0	0	11	1
Native Hawaiian or Other Pacific Islander	0	0	0	0
More than one race	0	0	0	0
Some other race	0	0	0	0
Unknown	0	0	2	<1
Total	46	100	1041	100
Ethnicity				
Hispanic	3	7	51	5
Not Hispanic	43	93	990	95
Total	46	100	1041	100

In comparison to the general population, two key populations are disproportionately affected by HIV in Maine. These include males who have unsafe sex with males (MSM) and injection drug users who shared works or needles (IDU). Heterosexual contact with an at-risk partner is also a significant mode of transmission.

In 2004, almost three-quarters (72%) of HIV diagnoses were attributed to male-to-male sexual contact, followed by heterosexual transmission with an at-risk partner (13%), injection drug use (2%), and mother-to-child transmission (2%). Exposure was unknown or undetermined for 11% of diagnoses. This includes individuals who reported heterosexual contact, but were unable to identify an at-risk partner (7%). An at-risk partner is defined as a person who is MSM (female partners only), IDU, or HIV-infected.

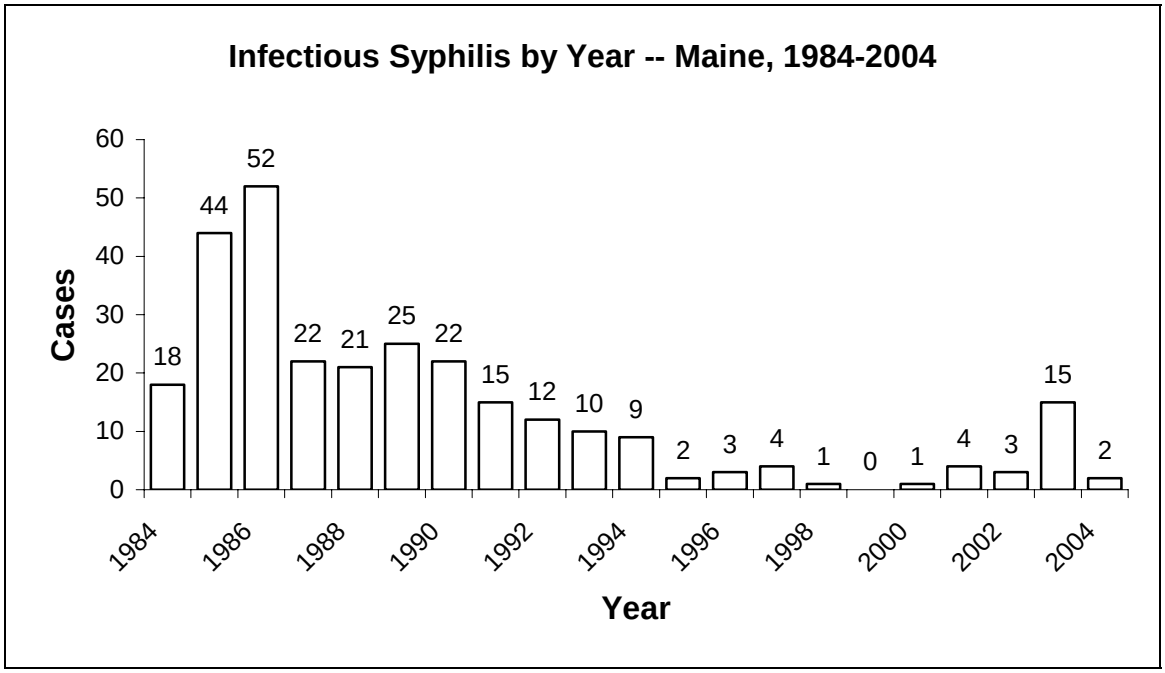
It appears that HIV infection is on the rise among MSM; the proportion of HIV diagnoses among this population has increased each year for the past four years.

It is important to note that, in some instances, individuals may not report their true transmission risk because of fears about disclosure of participation in culturally stigmatized behaviors. These behaviors include both injection drug use and male-to-male sex. This may artificially inflate the heterosexual contact exposure category.

HIV Diagnoses and People Living with Diagnosed HIV/AIDS by Mode of Transmission – Maine, 2004				
Mode of Transmission	**HIV diagnoses**		**People living with diagnosed HIV/AIDS**	
	No.	**%**	**No.**	**%**
Males who have sex with males (MSM)	33	72	571	55
Injection drug users (IDU)	1	2	154	15
MSM/IDU	0	0	42	4
Heterosexual contact with at-risk partners	6	13	118	11
Heterosexual contact with no at-risk partners disclosed	3	7	66	6
Received contaminated blood products	0	0	14	1
Child born to mother with HIV	1	2	12	1
Undetermined	2	4	64	6
Total	46	100	1041	100

People infected through contaminated blood products and mother-to-infant transmissions represent a small number of people living with diagnosed HIV in Maine. The mother-to-infant transmission reported in 2004 was the only one of its type since 1996, and the infection occurred outside of Maine. There have been no documented instances of occupationally-acquired HIV infection in the state.

Syphilis



After peaking in the mid-1980s, primary and secondary syphilis steadily declined in Maine until 1999, when there were no cases reported in the state. During 2003, syphilis reemerged with 15 cases reported. This total was greater than any annual total since 1991. During 2004, only two cases were reported in the state. Both cases occurred among MSM. Of the 15 diagnoses reported in 2003, roughly half occurred among MSM.

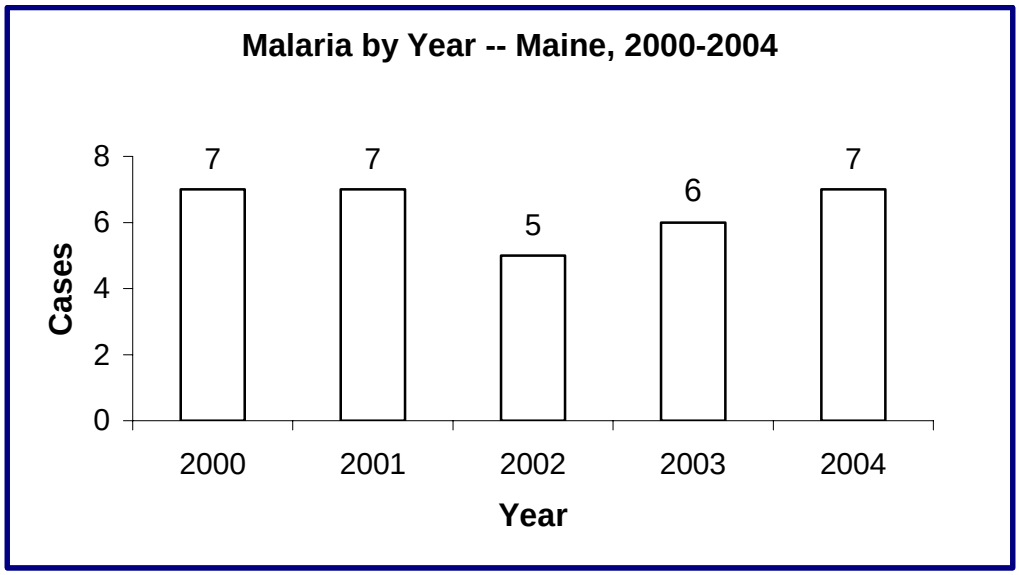
Genital sores (chancres) caused by syphilis make it easier to transmit and acquire HIV infection sexually. There is an estimated two- to five-fold increased risk of acquiring HIV infection when syphilis is present.

Syphilis can also lead to serious health complications among pregnant women and their infants, including spontaneous abortions, stillbirths, and multi-system disorders caused by congenital syphilis acquired from mothers with syphilis.

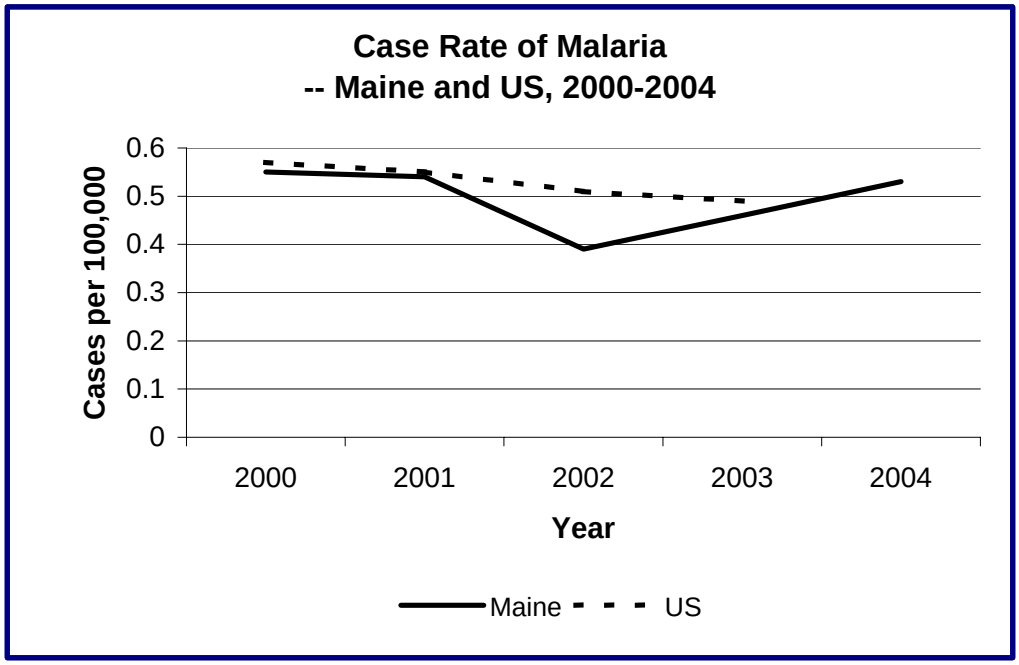
VECTORBORNE DISEASES

Malaria

Seven cases of malaria were reported in Maine during 2004. All cases were the result of exposure overseas. Four cases were due to *P. falciparum* and two to *P. vivax*. The species in one case was not determined.



The incidence of malaria in Maine is similar to that for the United States with approximately 0.5 cases per 100,000 population per year.



Cases ranged in age from 5 to 35 years with a mean of 21. Six (86%) cases were male and one (14%) was female. All cases had traveled internationally: Five to Africa, one to South America, and one to Oceania. Only one person reported using appropriate prophylaxis for malaria, and he was non-compliant due to side effects. Two cases occurred in missionaries or their dependents, two in students or teachers, and one each in a soldier, a tourist, and a refugee/immigrant.

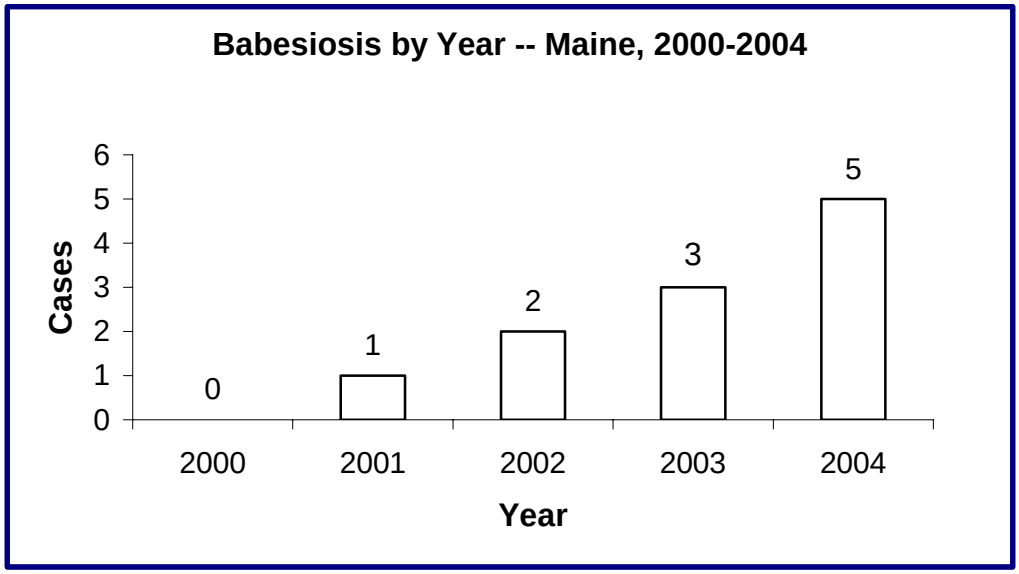
Malaria is preventable by using appropriate prophylaxis and by avoiding mosquito bites through the use of insect repellents, bed nets, and protective clothing.

Tick-borne Diseases

There are four tick-borne diseases of particular concern in Maine: babesiosis, human granulocytic ehrlichiosis, Lyme disease, and powassan encephalitis. The highest risk to residents and visitors is in the southern, central, and coastal regions of the state. However, given that these diseases are underreported and that the geographic range of the tick population continues to expand, it is important for individuals to be familiar with tick bite prevention measures and clinicians to be well-versed in diagnosis and management.

Babesiosis

There were five cases of babesiosis reported to the Bureau of Health during 2004. Since the first acquired case of babesiosis in Maine in 2001, there has been a continual increase of reported cases. The case rate in 2004 for Maine was 0.4 per 100,000.



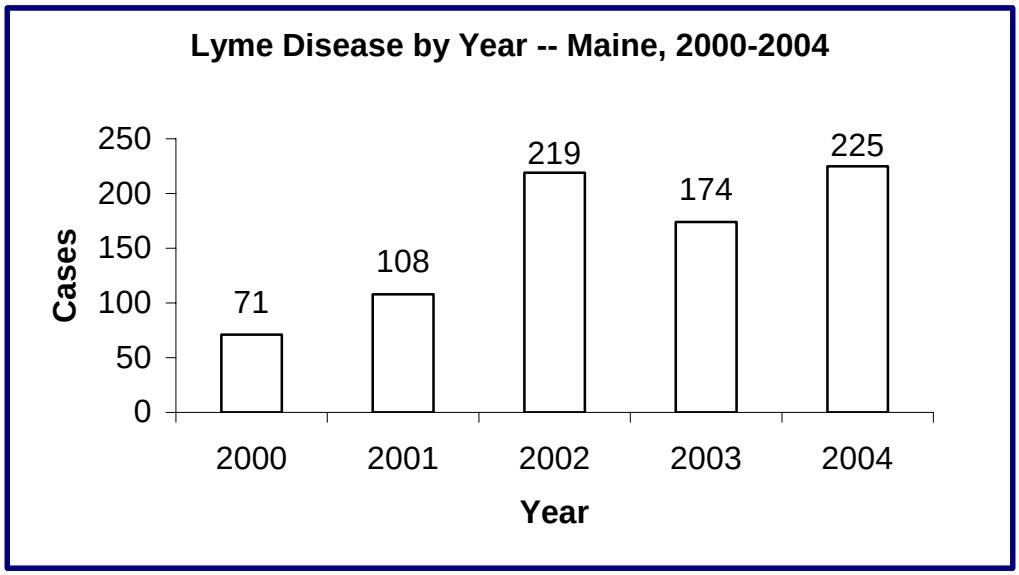
Cases of babesiosis were concentrated in the southern part of Maine during 2004. York County reported four cases; Cumberland County reported one. Cases ranged in age from 53 to 70 years. The mean age was 59. Sixty percent (n=3) of the cases were male. Eighty percent (n=4) were reported during July through September.

Human Granulocytic Ehrlichiosis (HGE)

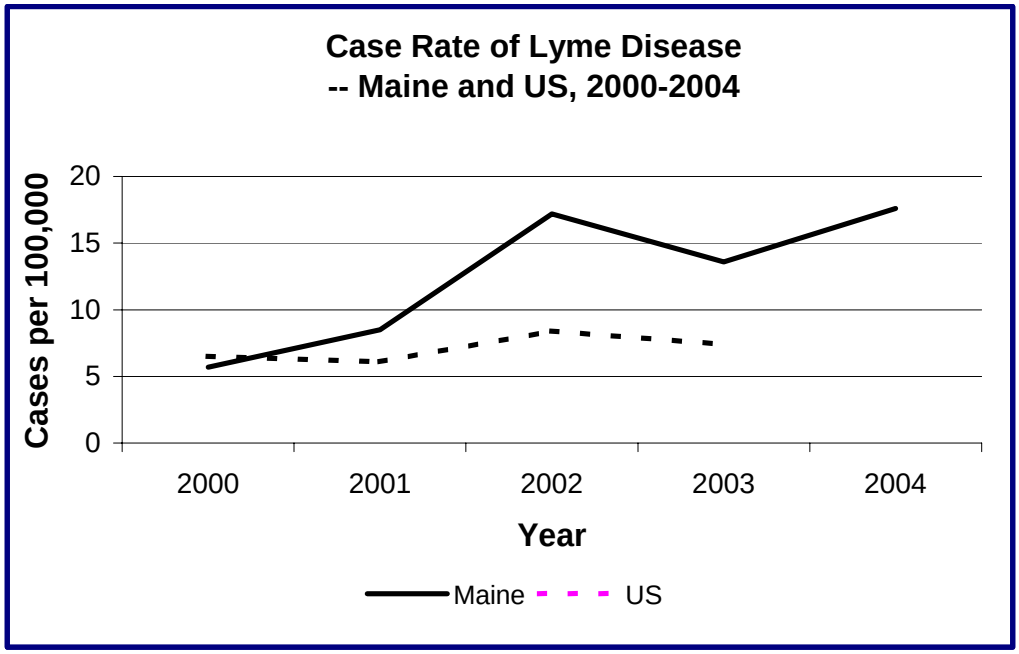
In September 2004, there was a single case of Human Granulocytic Ehrlichiosis (HGE) reported in Maine. The case was a white, 37-year old male from Knox County who became ill in July 2004.

Lyme Disease

During 2004, there were 225 cases of Lyme disease reported to the Bureau of Health. The 5-year mean of reported Lyme disease in Maine was 159 cases.



The case rate in 2004 for Maine was 17.6 per 100,000 population while the national case rate was 7.4 (2003).



Lyme disease was reported in a total of 15 counties in Maine in 2004. York County accounted for the largest number of cases with 100 and the highest case rate.

Lyme Disease by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	5.8	6
Aroostook	2.7	2
Cumberland	21.8	58
Franklin	6.8	2
Hancock	9.7	5
Kennebec	7.7	9
Knox	30.3	12
Lincoln	17.8	6
Oxford	5.5	3
Penobscot	2.1	3
Piscataquis	5.8	1
Sagadahoc	25.6	9
Somerset	13.8	7
Waldo	5.5	2
York	53.5	100
State of Maine	17.6	225

The age range of Lyme disease cases in Maine was 1 to 85 years. The mean age was 39. Fifty-five percent (n=125) of the cases were male. Like most tick-borne diseases, Lyme disease has a definite seasonality with peak incidence during July and September.

Powassan Encephalitis

One case of Powassan encephalitis in a 74-year old female from Franklin County was reported in Maine in July 2004.

West Nile Virus

No human cases of West Nile Virus have yet been reported in Maine, however, the virus has been identified in birds in the state.

OTHER INFECTIOUS DISEASES

Community-associated Methicillin-Resistant *Staphylococcus aureus*

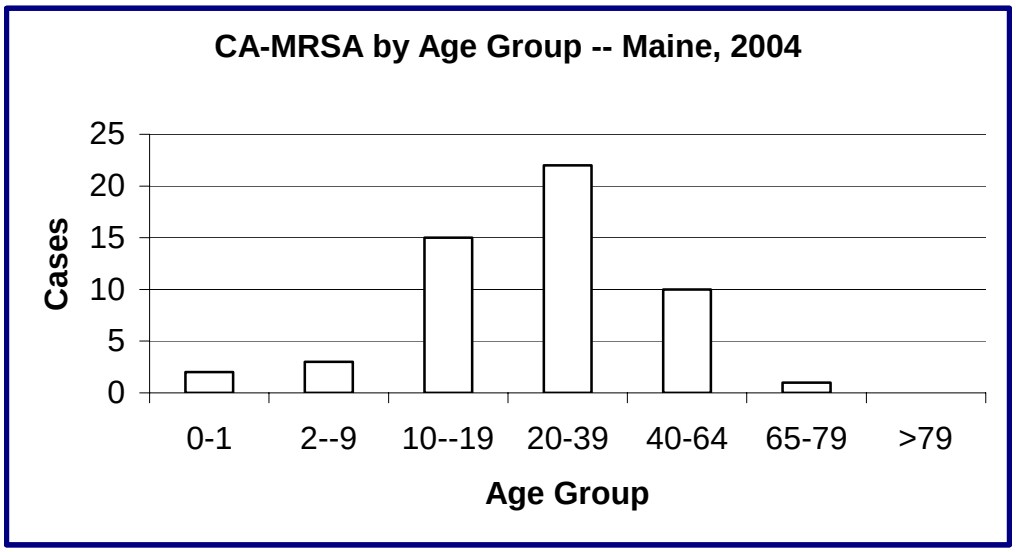
Individuals with community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) often present with skin and soft tissue infections (SSTI) that are clinically indistinguishable from other staphylococcal infections, including pustules, cellulitis, and abscesses. However, CA-MRSA skin infections have a greater propensity to become locally invasive and to require incision and drainage. These infections are also unlikely to respond to standard beta-lactam antibiotics.

CA-MRSA strains are genetically and epidemiologically distinct from strains causing MRSA in hospitals. CA-MRSA strains are often sensitive to a variety of ordinary oral antibiotics, which is not the case for the health care-associated strains. In addition, most CA-MRSA strains produce a toxin (PVL) that accounts for its potentially increased severity when compared to health care-associated variants. The case definition used to conduct CA-MRSA surveillance in Maine is laboratory evidence of MRSA from culture of tissue or blood in a community dwelling person without established risk factors for healthcare-acquired MRSA in the 12 months preceding infection, which includes hospitalization or surgery, residence in a long-term care facility, dialysis, and indwelling percutaneous medical devices and catheters.

Surveillance for CA-MRSA has been conducted in Maine since February 2004, when suspected CA MRSA became a notifiable condition and routine case investigation of each report was initiated. A total of 92 suspected CA-MRSA cases were reported in 2004, 53 (57.6%) of which were confirmed as CA-MRSA.

Community-associated MRSA – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	4.8	5
Aroostook	10.8	8
Cumberland	3.4	9
Franklin	0	0
Hancock	1.9	1
Kennebec	2.6	3
Knox	22.7	9
Lincoln	0	0
Oxford	3.7	2
Penobscot	3.5	5
Piscataquis	0	0
Sagadahoc	5.7	2
Somerset	7.9	4
Waldo	11.0	4
Washington	2.9	1
York	0	0
State of Maine	4.2	53

The mean age of persons with CA-MRSA was 25 years, with a range of 7 months to 67 years. Of the 53 CA-MRSA cases reported in 2004, 47.1% were female, and 52.8% were male.



CA-MRSA is a public health concern across Maine and the nation. Clinicians should have a high index of suspicion for CA-MRSA in individuals who are currently or have recently been incarcerated, drug users, persons living with HIV infection, and persons not responding to conventional antibiotic treatment. Clinicians should also consider obtaining wound cultures and sensitivity studies of SSTI in persons who play contact sports or are living in crowded or congregate settings. CA-MRSA is transmitted in the same way as is ordinary *Staphylococcus aureus* - primarily through direct skin-to-skin contact and secondarily through contamination of environmental surfaces such as clothing and towels.

The following measures should be implemented to prevent CA-MRSA:

- Frequent hand washing with antibacterial soaps or alcohol-based sanitizers
- Cover any wounds or draining skin lesions
- Avoid sharing clothing and other personal items
- Clean shared athletic equipment with disinfectants between users in gyms and other athletic facilities

Legionellosis

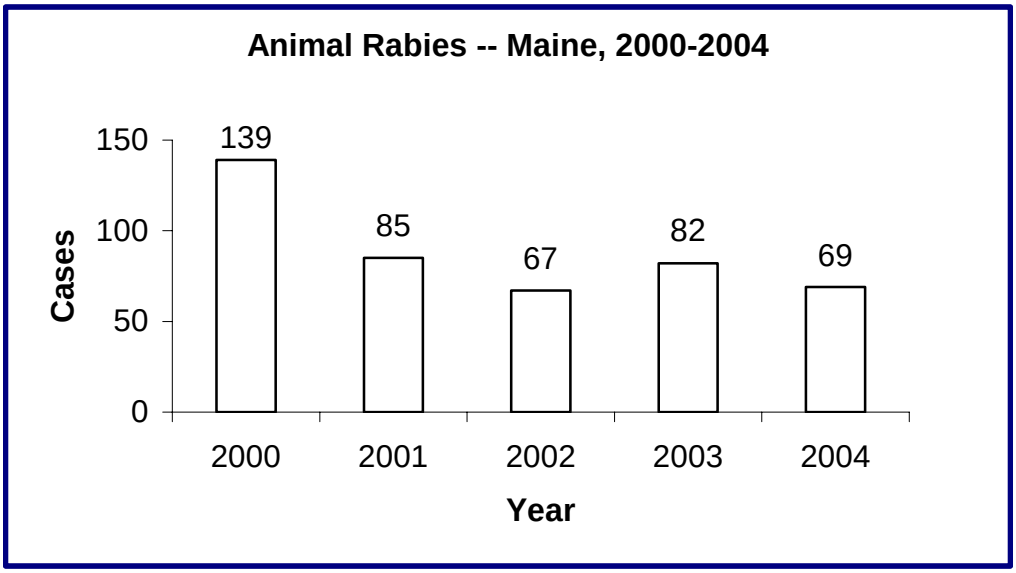
One case of Legionellosis was reported in Maine in 2004. The case occurred in a 48 year old female. The source of infection was not determined. The total number of cases in the state during the previous four years (2000-2003) was 18, with a range from 2 to 8 cases per year.

Psittacosis

One case of psittacosis was reported in Maine in June 2004. The case was a 49-year old male from York County.

Rabies in Animals

Sixty-nine cases of animal rabies were confirmed in Maine during 2004. The 5-year (2000-2004) mean of reported animal rabies in Maine was 88.



Rabies was identified in five wildlife species (skunk – 29, raccoon – 26, bat – 7, fox – 4, and woodchuck – 2) and one domestic species (cat – 1). Rabid animals were submitted from 10 of the 16 counties in the state.

Animal Rabies by County – Maine, 2004	
County	**Cases**
Androscoggin	14
Aroostook	0
Cumberland	11
Franklin	8
Hancock	0
Kennebec	16
Knox	0
Lincoln	2
Oxford	2
Penobscot	1
Piscataquis	0
Sagadahoc	7
Somerset	2
Waldo	0
Washington	0
York	6
State of Maine	69

Toxic Shock Syndrome (TSS)

One case of Toxic Shock Syndrome was reported in Maine in 2004. The total number of cases in the state during the previous four years (2000-2003) was five. The case in 2004 occurred in a 15 year-year old female. The patient had onset of symptoms two days after beginning her menstrual period. She reported using super absorbent tampons at the time of illness onset. The clinical course included fever (105 F), hypotension, rash, vomiting, conjunctival and oropharyngeal hyperemia, bilateral lower lobe infiltrates/effusions, an elevated white cell count, and a low platelet count. A vaginal culture was positive for *Staphylococcus aureus*. This case illustrates the continued need to educate menstruating women about the association of Toxic Shock Syndrome and use of tampons.

Toxoplasmosis

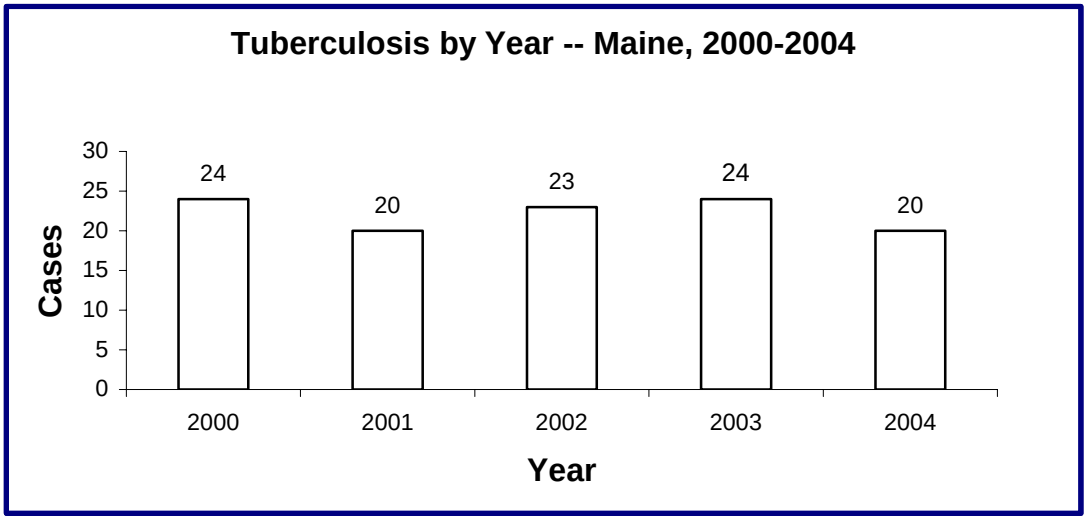
One case of toxoplasmosis was reported in Maine in 2004. One case was reported in the state during the previous four years (2000-2003). The case in 2004 occurred in a 40-year old male. Diagnosis was based on a positive IgM antibody to toxoplasma.

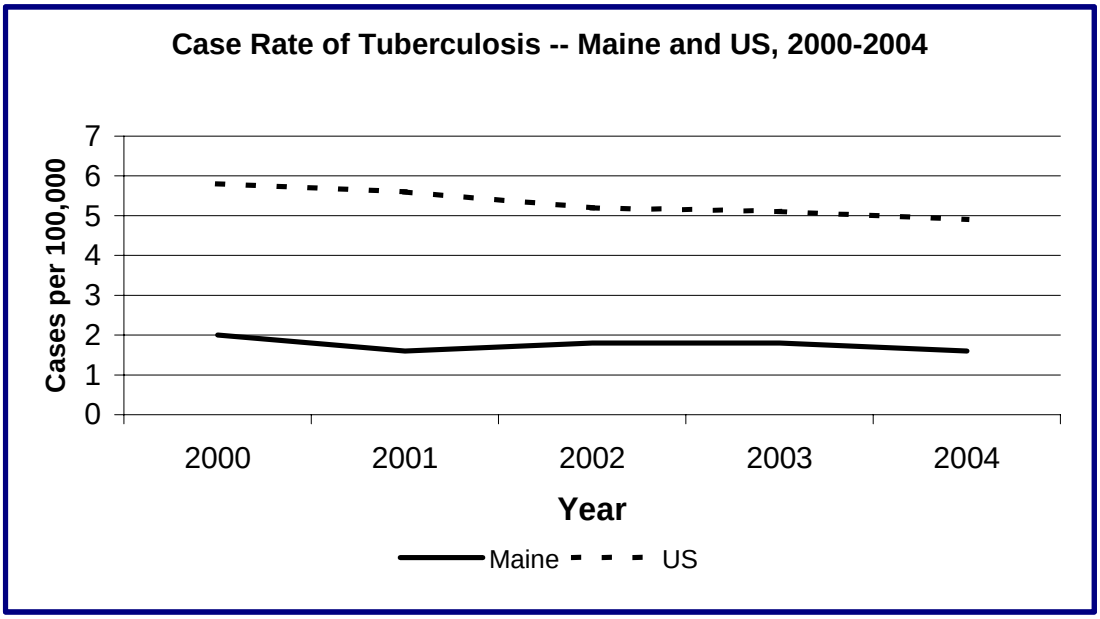
Tuberculosis

Maine's 2004 tuberculosis case rate of 1.6 per 100,000 continues to reflect a low incidence of disease, compared to the national case rate of 4.9 per 100,000. In 2004, 20

cases of tuberculosis were reported, compared to 24 reported cases in 2003 (five year mean = 22). This trend mirrors the national trend of a gradual decline in tuberculosis case rates. No cases of drug resistant tuberculosis were diagnosed in 2004. One individual was co-infected with tuberculosis and HIV.

Although case rates are declining in Maine, it is critical that tuberculosis infrastructure be maintained. The shifting nature of Maine's demographic profile and a recent outbreak of tuberculosis among Maine's homeless population is illustrative of the need for continuing tuberculosis surveillance, monitoring of treatment, and provider education.





The geographic distribution of Maine's tuberculosis cases reflects the distribution of at-risk populations throughout the state. Higher tuberculosis incidence was noted in urban areas of greater foreign-born population density (Cumberland and Androscoggin counties) and in rural areas where greater numbers of elderly persons reside (Aroostook, Hancock, and Sagadahoc counties).

Tuberculosis by County – Maine, 2004		
County	**Cases per 100,000**	**Cases**
Androscoggin	3.9	4
Aroostook	5.4	4
Cumberland	2.3	6
Franklin	0	0
Hancock	1.9	1
Kennebec	0.9	1
Knox	0	0
Lincoln	3.0	1
Oxford	0	0
Penobscot	1.4	2
Piscataquis	0	0
Sagadahoc	2.8	1
Somerset	0	0
Waldo	0	0
Washington	0	0
York	0	0
State of Maine	1.6	20

With regard to age distribution, seven of Maine's 20 cases (35%) were over age 65. The median age for tuberculosis cases in Maine in 2004 was 47 years. Two pediatric cases were diagnosed. Eight (40%) of Maine's 2004 tuberculosis cases were diagnosed among females and 12 cases were male (60%).

Foreign-born persons continue to arrive in Maine in increasing numbers, both as refugees and as secondary migrants from other areas of the United States. New arrivals in Maine are screened for tuberculosis within weeks of arrival and more than 60% are found to have evidence of tuberculosis infection. In 2004, one case of active tuberculosis disease was diagnosed among the 474 new arrivals that were screened. In 2004, 50% of Maine's tuberculosis cases occurred among foreign-born residents.

Persons over age 65 continue to comprise Maine's second highest risk group, with 35% of 2004 cases diagnosed in persons over age 65. According to the US Census Bureau, Maine has become "the oldest state in the US", with 16% of its' population over age 65. Chronic disease and previous tuberculosis infection are risk factors that contribute to increased rates of tuberculosis among the elderly population.

In 2003, an outbreak of tuberculosis occurred among eight homeless men in Portland. All of the eight cases completed therapy. The Maine Bureau of Health, Portland Public Health Division, homeless shelter providers and corrections staff collaborated to locate and screen more than 1,000 persons who were exposed to the eight cases of active disease. More than 700 exposed individuals received at least one tuberculin skin test. Ten percent of the contacts were identified as tuberculin reactors. Treatment for latent tuberculosis infection was completed by 89% of the infected contacts who initiated therapy for latent tuberculosis infection. Efforts to locate and screen exposed contacts

have continued for more than two years and have been extraordinarily resource intensive. Contact tracing for the outbreak will continue until all of the exposed individuals have been located and evaluated. During 2004, there were no additional cases of tuberculosis diagnosed among homeless individuals in Maine.

During the winter of 2004, a TB Prevention Shelter Work Group (TBPSWG) was established to respond to the urgent need for TB prevention and case finding in homeless shelters. The work group was comprised of homeless services providers and representatives from the Bureau of Health, Maine State Housing Authority (MESHA), and the Portland Public Health Division. The work group represents a critical partnership between public health entities and the social services support system that interfaces with homeless men and women throughout the State. The document, “Recommendations for Tuberculosis Prevention and Control in Maine’s Homeless Shelters” was developed and distributed to homeless services providers across the State. The document is available at: http://www.maine.gov/dhhs/boh/ddc/tuberculosis.htm

Appendix A: Maine Notifiable Conditions List

NOTIFIABLE CONDITIONS LIST
MAINE DEPARTMENT OF HUMAN SERVICES, BUREAU OF HEALTH

Category 1: Reportable immediately by telephone on the day of recognition or strong suspicion of disease:	Category 2: Reportable within 48 hours of recognition or strong suspicion:	Laboratory Specimen Submission:
Chickenpox (varicella) ▪ Admission to hospital, any age ▪ Adults >18 years, any clinical setting Diphtheria Hepatitis A, B, and C (acute) Hepatitis, acute (etiologic tests pending or etiology unknown) Measles (rubeola) Meningococcal disease Outbreaks ▪ Foodborne (involving 2 or more persons); waterborne; and respiratory ▪ Institutional ▪ Unusual disease or illness Pertussis Poliomyelitis Rabies (human and animal) Rubella (including congenital) *Staphylococcus aureus* disease, reduced or resistant susceptibility to vancomycin Tuberculosis (active and presumptive cases) **Category 1 Diseases that are possible indicators of bioterrorism:** Anthrax Botulism Brucellosis Gram positive rod septicemia or meningitis, growth within 72 hours of inoculation in laboratory Outbreaks of unusual disease or illness Plague Q fever Ricin Poisoning Smallpox Staphylococcal enterotoxin B pulmonary poisoning Tularemia Venezuelan equine encephalitis	Acquired Immunodeficiency Syndrome (AIDS) Babesiosis Campylobacteriosis CD4 lymphocyte counts <200/ul or <14% of total lymphocytes Chancroid Chlamydia (*c. trachomatis*) (all sites) Chickenpox Chickenpox-related death Creutzfeldt-Jacob disease, <55 years of age Cryptosporidiosis Cyclosporiasis Ehrlichiosis Encephalitis, arboviral *Escherichia coli* 0157:H7 (and all other hemorrhagic *E. coli* enteritis, shiga producing *E. coli* strains) Giardiasis Gonorrhea *Haemophilus influenzae* disease, invasive, all serotypes Hantavirus pulmonary syndrome Hemolytic-uremic syndrome (post-diarrheal) Hepatitis B (chronic, prenatal) Hepatitis C (chronic) Human Immunodeficiency virus (HIV) infection* Influenza-like illness outbreaks Legionellosis Listeriosis Lyme Disease Malaria Meningitis, bacterial Meningococcal invasive disease Methicillin-resistant *Staphylococcus aureus* suspected to be community-acquired Mumps Psittacosis Salmonellosis Shiga toxin-related disease (gastroenteritis) Shigellosis Streptococcal disease, invasive Groups A and B *Streptococcus pneumoniae*, invasive disease Severe Acute Respiratory Syndrome (SARS) Syphilis Tetanus Toxoplasmosis Trichinosis Vancomycin-resistant *Staphylococcus aureus* *Vibrio* species, including Cholera West Nile virus infection Yellow Fever *Soundex patient identifier or patient name required	**Directors of Laboratories are to submit cultures of the following organisms to the Maine Health and Environmental Testing Laboratory for confirmation, typing, and/or antibiotic sensitivity including but not limited to:** *Bordetella pertussis* *Clostridium botulinum* *Clostridium tetani* *Corynebacterium diphtheria* *Escherichia coli* 0157:H7 *Francisella* species *Haemophilus influenzae,* invasive *Legionella* species *Listeria* species *Mycobacterium* species (TB complex only) *Neisseria meningitidis* *Salmonella* species, including *S. typhi* *Shigella* species *Streptococcus,* Group A, invasive only *Streptococcus pneumoniae,* invasive only *Vibrio* specie *Yersinia pestis* **Antibiotic-resistant Diseases in Special Category:** Other diseases caused by selected antiobiotic-resistant organisms are to be reported semiannually (twice each year) in aggregate form by clinical laboratories. These include: ▪ Invasive disease caused by methicillin-resistant *Staphylococcus aureus* (MRSA) ▪ Invasive disease caused by vancomycin-resistant Enterococcal species ▪ Invasive disease caused by penicillin-resistant *Streptococcus pneumoniae*

Who must report:
Health Care Providers, Medical Laboratories, Health Care Facilities, Administrators, Health Officers, Veterinarians

When to report:
- Category 1 diseases are reportable immediately by telephone on recognition or strong suspicion of disease
- Category 2 diseases are reportable by telephone, fax, or mail within 48 hours of recognition or strong suspicion of disease

What to report:
Disease reports must include as much of the following as is known:
- Disease or condition diagnosed or suspected
- Case's name, date of birth, address, phone number, occupation and race
- Diagnostic laboratory findings and dates of test relevant to the notifiable condition
- Health care provider name, address and phone number
- Name and phone number of person making the report

Complete Rules for the Control of Notifiable Conditions at http://www.maine.gov/dhs/boh/ddc/DiseaseReporting.htm

HOW TO REPORT:

TELEPHONE: 1-800-821-5821 (24 hours a day) *OR* **FAX:** 1-800-293-7534 (24 hours a day)

The Department of Human Services
Bureau of Health

October 21, 2003

Appendix B: Case Definition for Infectious Conditions

Most case definitions for infectious conditions under public health surveillance in Maine are available at **http://www.cdc.gov/epo/dphsi/casedef/case_definitions.htm**

Appendix C: Map of Maine