

PHILADELPHIA DEPARTMENT
OF PUBLIC HEALTH

DIVISION OF
DISEASE CONTROL

ANNUAL REPORT 2006



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Introduction

OVERVIEW

This document provides an epidemiological summary of conditions reported to the Division of Disease Control (DDC) in 2006. There are currently 65 medical conditions that health care providers or laboratories must report to the DDC. Here, DDC highlights the most commonly reported conditions in Philadelphia as well as any conditions that are of special public-health importance. Some conditions with few or no cases each year are not described in detail, but can be found in the summary of all reportable conditions (See Appendix D). Data on cases of lead poisoning are reported separately by the Division of Maternal, Child and Family Health--Childhood Lead Poisoning Program. Electronic versions of this report (in pdf format) can be found here:

http://www.phila.gov/health/units/ddc/DDC_Annual_Reports.html

CASE DEFINITION

For most reportable conditions, a standard reporting case definition has been set by the Centers for Disease Control and Prevention (CDC). These case definitions may differ from the criteria used to make a clinical diagnosis. For a full list of CDC case definitions, please visit this website:

http://www.cdc.gov/epo/dphsi/casedef/case_definitions.htm

REPORTING TO PDPH

We want to thank the medical and laboratory communities for their disease reporting activities, and we encourage all providers to continue reporting these conditions to DDC. Reporting to DDC may be accomplished by telephone (215-685-6748); by fax (215-545-8362), or by mail (PDPH, DDC, 500 South Broad Street, Philadelphia, PA 19146). In addition, any report made through the PA-NEDSS system can be viewed by DDC. The latest version of the Notifiable Disease Case Report Form can be found in Appendix B of this report and at this web site:

http://www.phila.gov/health/units/ddc/assets/applets/New_notifiable_disease_form.pdf

The list of reportable conditions can be found at:

http://www.phila.gov/health/units/ddc/assets/applets/PDPH_Notifiable_List_2005-seal.pdf

HOW DDC CAN ASSIST HEALTH-CARE PROVIDERS

If you suspect a disease outbreak or if you suspect an infectious disease of urgent public health importance, DDC can help facilitate diagnostic testing and assist with infection control and disease management. To speak with a medical specialist, please call 215-685-6748. For urgent after-hours consultation, please call 215-686-1776 and ask for the Division of Disease Control on-call staff.

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Central Nervous System

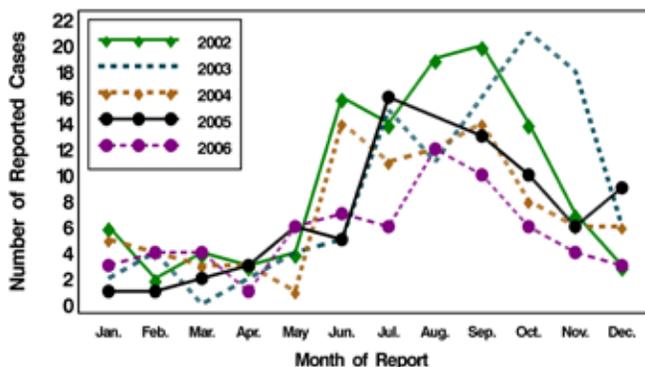
INFECTIONS AND SEPSIS

ASEPTIC MENINGITIS

Classification as aseptic (viral) meningitis is based upon the clinical diagnosis of meningitis with no laboratory evidence of bacterial or fungal infection. To be classified as aseptic meningitis, cerebrospinal fluid (CSF) analyses needed to demonstrate findings consistent with meningitis (e.g., elevated white blood cell count) with negative bacterial and fungal growth. This classification excludes aseptic meningitis caused by West Nile Virus (WNV), which is discussed separately. Common viral causes of aseptic meningitis in the United States (US) include enteroviruses, coxsackie viruses, echoviruses, arboviruses, measles, herpes simplex, and varicella viruses.

In 2006, the Division of Disease Control (DDC) confirmed 66 cases of aseptic meningitis among Philadelphia residents. This was a 31% decrease over the number of cases reported in 2005 (N=95). Slightly more cases occurred among females (58%). Ages ranged from 0 to 79 years with a median of 27 years. Five cases occurred among infants less than 1 year old. There were no fatalities reported. Nine samples were submitted for diagnostic viral testing; of these, 2 were positive for enterovirus. An infectious etiology was not determined for any of the other patients. Cases occurred sporadically throughout Philadelphia with more residing in the densely populated neighborhoods. Most cases were reported in the late summer and early fall months (August-October) as has been observed in previous years (Figure 1).

Figure 1. Aseptic Meningitis, by Month and Year of Report: Philadelphia, 2002 to 2006



MENINGOCOCCAL INFECTION (*NEISSERIA MENINGITIDIS*)

Neisseria meningitidis is a gram-negative diplococcus that can be carried in the nasopharynx of healthy human hosts. It is transmitted through close contact with respiratory secretions of an infected person or an asymptomatic carrier. Clinical illness of invasive disease is characterized by signs and symptoms of meningitis often with progression to purpura fulminans, septic shock, and death. Meningococcal infection in a person with clinically compatible illness is confirmed by isolation of *N. meningitidis* from a normally sterile site (blood, cerebral spinal fluid). In the absence of a positive culture, disease is classified as probable with a consistent clinical picture and evidence of *N. meningitidis* DNA by polymerase chain reaction from a normally sterile site, or from antigen detection by immunohistochemistry of cerebral spinal fluid (CSF).

There were 2 cases of unrelated invasive meningococcal disease reported to DDC in 2006. This represents a large decrease (75%) from 2005. To help explain this decrease, DDC staff made inquiries to select Philadelphia-based hospital clinical laboratories to verify the counts of isolates. Findings from this cursory investigation revealed no unreported cases. Both cases occurred towards the end of 2006 (November, December) and preliminary counts for 2007 identified 4 non-clustered cases of invasive disease (January – April, data provisional). Given the return to baseline rates of illness in Philadelphia during the winter of 2006-2007, we acknowledge an unexplained 10-month period where no cases were identified. Of the 2 cases from 2006, 1 was serogrouped as W135, the other isolate was not subtyped (Table 1).

Both cases of invasive disease in 2006 presented with clinical meningitis and were among females ages 21 and 79. One isolate was obtained from a blood sample, the other from CSF. Neither case resulted in a fatal outcome.

Table 1 . Confirmed Cases of Meningococcal Disease by Serogroup, Philadelphia 2000-2006

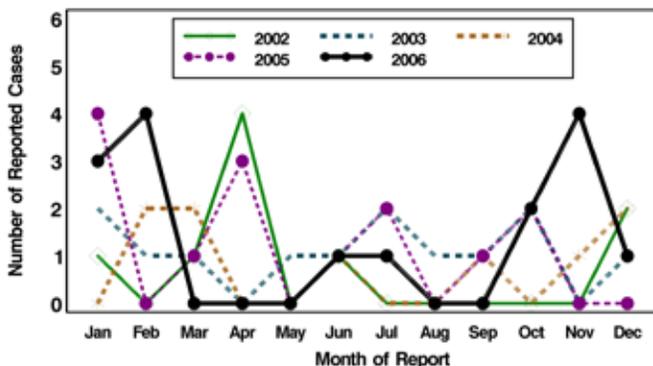
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 7-Year Total (%) |
|-------------|------|------|------|------|------|------|------|------------------|
| Serogroup | | | | | | | | |
| B | 3 | 1 | 5 | 3 | 1 | 1 | 0 | 14 (17%) |
| C | 7 | 2 | 2 | 5 | 3 | 0 | 0 | 19 (23%) |
| W | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 (2%) |
| Y | 9 | 5 | 7 | 4 | 6 | 4 | 0 | 35 (43%) |
| Z | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 (1%) |
| Not grouped | 2 | 1 | 1 | 2 | 1 | 3 | 1 | 11 (13%) |
| Total | 21 | 9 | 15 | 15 | 12 | 8 | 2 | 82 |

INVASIVE HAEMOPHILUS INFLUENZAE

Haemophilus influenzae, a pleomorphic gram-negative coccobacillus, which has both encapsulated and unencapsulated forms, is transmitted through respiratory droplet exposure. Though a common cause of non-invasive infection among pediatric ages (otitis media, epiglottitis, pneumonia), the Philadelphia Department of Public Health (PDPH) mandates reporting of only invasive disease (isolates from normally sterile body fluid).

In 2006, there were 16 confirmed cases of invasive disease caused by *H. influenzae* in Philadelphia. The median age was 49 years, with a range of 0 to 95 years; the eldest case resulted in the only fatal outcome. Eleven cases were among females (69%), and none of the cases were linked epidemiologically. All 16 isolates were obtained from blood cultures. Most of the isolates submitted for serotyping were non-typable (6 of 9) and 7 were not subtyped. There were no isolates that were serotype B. Twelve of the cases (75%) occurred in the colder weather months (January, February, November, December), a pattern typically observed with respiratory secretion transmission (Figure 2).

Figure 2. Invasive *H. influenzae*, by Month and Year of Report: Philadelphia, 2002 to 2006



LISTERIOSIS (LISTERIA MONOCYTOGENES)

Listeriosis, the infection of a normally sterile site by the gram-positive rod *Listeria monocytogenes*, is a rare but serious infection presenting as meningitis or bacteremia and is often acquired from contaminated food products. Cases are confirmed by isolation of *L. monocytogenes* with a consistent clinical description. There were 7 confirmed cases of listeriosis in 2006 in Philadelphia: 6 cases confirmed by blood culture, the other from an amniotic fluid sample. All were adult cases (mean age: 54 years, range 21 – 78 years) with 4 (57%) among females. No cases had fatal outcomes. The 7 cases were unrelated; they occurred in different months and in all seasons of the year. No food items were identified as the source of illness, and 3 of the cases had been treated with steroids in the 6 months prior to illness. Among the 6 cases with available risk factor information, all had underlying health conditions. No other commonalities among the cases were noted.

INVASIVE STREPTOCOCCUS PNEUMONIAE

Invasive diseases due to *Streptococcus pneumoniae*, such as pneumonia, bacteremia, sepsis and meningitis, cause substantial morbidity and mortality. Antimicrobial therapy has resulted in reducing morbidity and mortality but its success is threatened by increasing antimicrobial resistance. Vaccination has been the cornerstone of efforts to reduce the burden of invasive pneumococcal disease: the 23-valent pneumococcal polysaccharide vaccine has been used since the 1970s to protect high-risk individuals older than 2 years of age, and more recently (February 2000) the 7-valent protein-polysaccharide conjugate vaccine (PCV-7) was licensed for universal infant vaccination. A dramatic decline in the incidence of invasive pneumococcal disease was anticipated as a result of the implementation of PCV-7.

During 2006, 139 cases of invasive pneumococcal disease were reported to DDC, a 10% decrease from the 151 cases reported in 2005. Bacteremia as a sole manifestation was detected in 98 cases (70.5%); pneumonia (accompanied by bacteremia or pleuritis) was the diagnosis for 34 cases (24.5%); meningitis was the diagnosis for 7 (5.0%) with 6 of these cases being bacteremic as well. Almost all cases were hospitalized (133, 95.7%). All 8 fatalities were over 40 years of age. Males had a higher incidence than females (Figure 3).

Thirty-three of the 139 isolates (23.7%) were classified as Drug Resistant *S. pneumoniae* (DRSP) based on non-susceptibility to penicillin alone. The proportion of drug-resistant isolates has remained constant over the last 3 years (23% in 2004 and 2005). In cases < 5 years old, however, the proportion that were penicillin

resistant was 54% in 2006 (7 of 13), up from 7% (1 of 15) in 2005.

Among cases < 5 years of age, serotyping was conducted for 6 cases. One was type 16F, 3 were type 19A, another case was type 35F, and the other cases was nontypeable.

OTHER BACTERIAL MENINGITIS

Bacterial meningitides in this category are limited to clinical meningitis with a causative bacterial agent other than *Neisseria meningitidis*, *Haemophilus influenzae*, *Listeria monocytogenes*, and *Streptococcus pneumoniae*. Cases are confirmed when a clinical description of meningitis exists and is accompanied by isolation of a bacterium from CSF or blood. There was 1 case of bacterial meningitis meeting the description above during 2006. *Escherichia coli* was recovered from CSF in a 1-year old male with compatible disease; the outcome was not fatal.

Figure 3. Invasive *Streptococcus pneumoniae* Infections by Age and Gender: Philadelphia, 2006

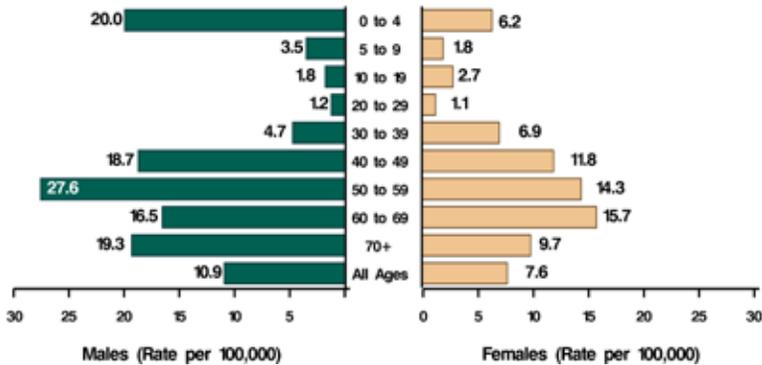


Table 2: Antimicrobial Susceptibility of Invasive *Streptococcus pneumoniae* isolates reported to DDC during 2006.

| Antibiotics | Isolates Tested (No.) | Susceptible Isolates (%) |
|----------------------|-----------------------|--------------------------|
| Penicillin/Oxacillin | 132 | 75 |
| Cephalosporins | 105 | 97 |
| Erythromycin | 54 | 76 |
| Clindamycin | 12 | 92 |
| TMP/SMX | 58 | 85 |
| Vancomycin | 51 | 100 |
| Fluoroquinolones | 63 | 100 |

Respiratory INFECTIONS

INFLUENZA AND RESPIRATORY VIRUS SURVEILLANCE (2006-2007 SEASON)

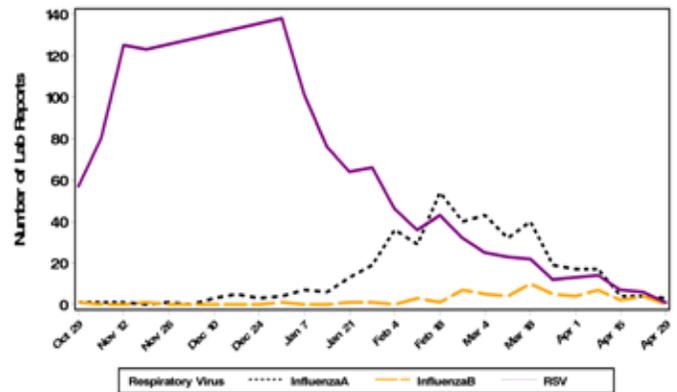
Influenza (the flu) is a respiratory disease caused by the influenza virus. The virus is usually spread from person to person through droplets generated during coughing and sneezing. Clinical illness from influenza can range from mild to severe illness and may lead to death in some cases. A typical influenza season in the United States (US) results in approximately 36,000 deaths and 200,000 hospitalizations. Most cases of severe influenza occur in the very young or in those 65 years old or older. Influenza vaccine, which can be given intranasally or as a shot, remains the most important measure for preventing influenza in individuals and populations. For the 2006-2007 season, CDC expanded the ages for children to receive the vaccine, as they recommended influenza vaccinations for all children aged 6-59 months. Additional populations recommended for vaccination included adults aged 50 years and above, people with a weakened immune system or a chronic illness (including heart, lung or kidney disease, asthma, diabetes, and blood disorders), pregnant women, and anyone living or working in close contact with those listed above.

The Division of Disease Control (DDC) promotes influenza vaccinations for adults in Philadelphia at the community level each year with the Community-based Influenza Vaccination Campaign, which is operated through partnerships with Philadelphia Corporation for Aging, the Federally Qualified Health Centers, local Nursing Schools, and other volunteer providers. The annual campaign serves to raise awareness about influenza and pneumococcal disease, to educate the community about the importance of immunizations, and to increase vaccination coverage by administering vaccine. More than 13,000 flu shots were administered at 250 community-based clinics in Philadelphia in the 2006-2007 season.

DDC also conducts active, laboratory-based surveillance of respiratory viral agents. Eight hospital

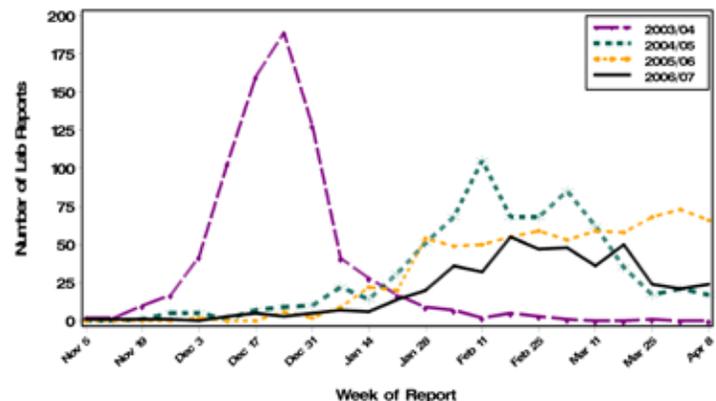
laboratories currently participate in this surveillance system. During the influenza season, these sentinel hospital laboratories transmit data representing aggregate weekly counts of influenza; six of the laboratories also provide aggregate weekly

Figure 4. Respiratory Agents by Week (Reports from 8 Hospital Laboratories): Philadelphia, 2006–2007 Season



counts for respiratory syncytial virus (RSV), parainfluenza, and adenovirus. These counts include data from both Philadelphia and non-Philadelphia residents. Test methods vary and may include rapid antigen tests, viral culture, and PCR. Figure

Figure 5. Active Surveillance for Influenza (A+B) at Three Hospital Labs: Philadelphia, 2003/04 to 2006/07 Influenza Seasons



4 shows the number of influenza A, influenza B, and RSV reports from sentinel laboratories during the 2006-2007 respiratory virus surveillance season. RSV peaked early in the season, influenza A was prevalent in the community from February

through late March, and influenza B never made a substantial impact.

Three of the 10 sentinel laboratories have participated in the respiratory virus surveillance system since 1996. Figure 5 compares total influenza (A and B) reports from these 3 laboratories from the 2003-2004 season through the 2006-2007 season. Of note, the large, early peak in 2003-2004 was driven by pediatric influenza A; comparable disease incidence was seen throughout the US. Philadelphia's 2006-2007 season was relatively milder than previous seasons, and this is thought to be largely due to the 2006-2007 influenza vaccine matching the predominant circulating strains.

The Philadelphia Board of Health requires the reporting of all pediatric mortality and institutional outbreaks attributed to influenza. During the mild 2006-2007 influenza season, no pediatric influenza deaths were reported, and DDC assisted in the management of only one institutional outbreak of influenza. Outbreak management recommendations were instituted and heightened surveillance for influenza-like illness was implemented until resolution of this outbreak.

LEGIONELLOSIS

Legionella pneumophila bacteria can cause two forms of human disease: Legionnaire's Disease, or LD (a form of pneumonia associated with fever and myalgias), and Pontiac Fever (a milder illness also characterized by fever and myalgias, but without pneumonia). Human *Legionella* infection of either type may be called legionellosis. *L. pneumophila* serogroup 1 causes over 90% of LD cases in the US.

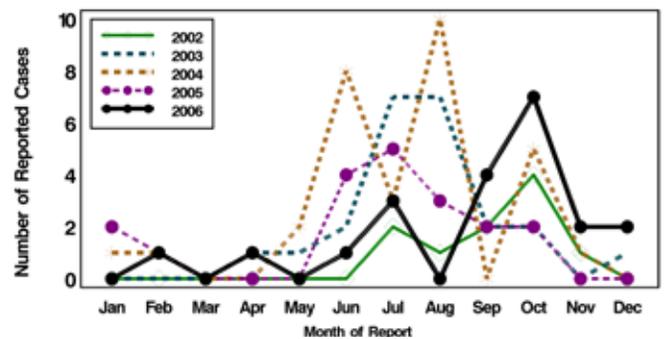
Legionella species are found naturally in the environment, and grow best in warm, stagnant water. *Legionella* is transmitted to humans by the inhalation of infected aerosols or water droplets. The bacteria cannot be transmitted from person to person. The large majority of *Legionella* infections are sporadic and not connected with any known outbreak; however, outbreaks of legionellosis do occur and have been linked to air conditioning towers of large buildings, whirlpool spas, and water used for drinking and bathing. Persons who smoke and those with underlying illness such as lung disease, diabetes, or immunosuppression are at highest risk of contracting legionellosis. One study of southeast Pennsylvania cases also showed that legionellosis incidence increases approximately 6 to 10 days after periods of increased rainfall and humidity.

The CDC defines a confirmed case of legionellosis as any clinically compatible case that meets at least one of the following available confirmatory laboratory diagnostic criteria: the culture of any *Legionella* bacteria from a normally sterile site; a 4-fold or greater rise in paired serum antibody titers to *L. pneumophila* serogroup 1; or the detection of *L. pneumophila* serogroup 1 antigen

in urine. Though urine antigen detection is the most commonly used test for legionellosis, species and serogroups other than *L. pneumophila* serogroup 1 are not detectable by either this method or by serologic diagnosis. Isolation of the organism by culture is the only diagnostic test available to definitively identify other species and serogroups of *Legionella*, and thus is crucial in the identification of outbreaks, disease clusters, and environmental sources of the organism. During outbreaks, DDC can assist with investigation and the collection and transport of *Legionella* specimens for strain-typing and pulsed-field gel electrophoresis (PFGE). DDC is also available for consultation on the management of public information related to any case of legionellosis in a school or workplace.

In 2006, there were 21 cases of legionellosis reported in Philadelphia, with a citywide incidence of 1.45 per 100,000 residents. All reported cases had LD (pneumonia), and all cases were diagnosed using urine antigen testing. Seventy-six percent of cases occurred in males. Of the 19 cases with risk factor data available, 37% were in smokers, 26% were in people with diabetes mellitus, and 16% were in cancer patients. Most cases (62%) occurred from June through September, and peak onset occurred somewhat later in the season (September) than in previous years (see Figure 6). No cases were associated with outbreaks.

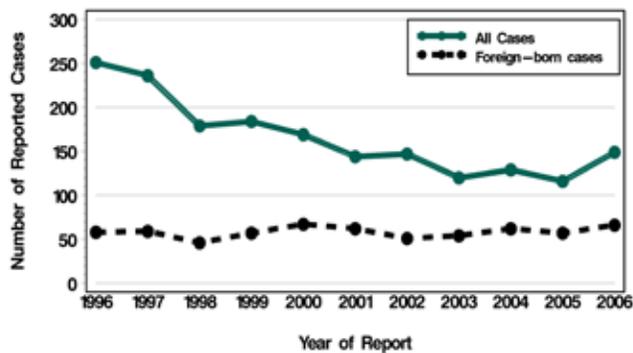
Figure 6. Legionellosis, by Month and Year of Report: Philadelphia, 2002 to 2006



TUBERCULOSIS (MYCOBACTERIUM TUBERCULOSIS)

In 2006, the Philadelphia Tuberculosis Control Program reported 149 newly diagnosed cases of tuberculosis (TB). This represents a 28% increase from the prior year when 116 new cases of TB were reported. In the past decade, there has been a decrease in the number of TB cases reported in Philadelphia, from 251 cases in 1996 to 149 cases last year (Figure 7). In Philadelphia, the TB case rate for 2006 was approximately 9.8 cases per 100,000 population; this is above the Healthy People 2010 Objective of no more than 3.5 per 100,000 population. The Philadelphia cases represent approximately 44% (149 of 337) of all cases in the Commonwealth of Pennsylvania for 2006.

Figure 7. Tuberculosis Cases: Philadelphia 1996–2006



Much of the increase in TB cases last year occurred both in the number of pediatric cases and in the number of clinically diagnosed cases. Tuberculosis in children aged 0-9, rose from an average of 5 cases per year (from 2001-2005) to 23 cases in 2006, a nearly 5 fold increase. Two large contact investigations involving many children were responsible for this increase. Staff initiated source contact investigations on any child not associated with a known case of TB.

The number of clinical cases (as opposed to culture positive cases) rose from an average of 21 cases per year (from 2001-2005) to 59 cases in 2006, a nearly 3-fold increase. The increase in clinical cases is a result of the increased number of pediatric cases described above along with extra pulmonary TB and culture negative cases who showed improved clinical response to therapy.

The increase in pediatric cases associated with the large contact investigations also contributed to a change both in the racial and ethnic profile of cases in 2006. The proportion of cases among Black/Non-Hispanic patients increased from 50% (58/116) in 2005 to 64% (96/149) in 2006. The proportion of Hispanic (8%) cases remained stable while the proportion of White/Non-Hispanic (7.3%) and Asian/Pacific Islander (20%) cases decreased.

Nearly half of the reported cases in Philadelphia (66) were foreign-born and originated from 31 different countries, with China, Vietnam, and Cambodia being the most common countries of origin. Among all 2006 cases, 4 were homeless, 3 resided in long-term care facilities, but none resided in correctional facilities. Six had a history of injected drug use, 9 had a history of non-injected drug use, and 9 had a history of excess alcohol use within a year of diagnosis. Of the 92 cases with a known HIV test result, 13 (14%) were positive.

Ninety-one cases (61%) had a positive isolate for *M. tuberculosis* culture, and susceptibility results were available for 85 (93%) of the positive isolates. Of these isolates, 14 indicated some drug resistance, and 3 of those

were multidrug-resistant TB (MDR-TB), defined as resistance to both isoniazid (INH) and rifampin. These MDR cases are the first identified in Philadelphia since 2003 and most in a single year since 2001 when we also identified 3 cases. Of the other drug-resistant isolates, 3 were resistant to streptomycin only, 1 was resistance to INH only, and 1 was resistant to pyrazinamide only. Six isolates showed resistance to more than 1 drug but were not MDR. Of these, 5 were resistant to INH and streptomycin and 1 was resistant to INH, ethionamide, streptomycin and pyrazinamide.

The TB Control Program provides Directly Observed Therapy (DOT) to all suspected and confirmed TB cases, along with other clinical services, through the Flick Memorial Center for the Treatment of Tuberculosis. The TB Control Program also coordinates universal genotyping of all isolates of *M. tuberculosis* sent to the Philadelphia Public Health Laboratory. The TB Control Program monitors over 300 cases, suspects, and reports each year.

Providers are reminded to report suspected and confirmed TB cases within 24 hours to the TB Control Program (215-685-6873).

Gastrointestinal

INFECTIONS

CAMPYLOBACTERIOSIS

Campylobacteriosis is a diarrheal illness of variable severity caused by *Campylobacter spp.* Symptoms of campylobacteriosis include diarrhea (sometimes bloody), cramping, abdominal pain, nausea, vomiting and fever occurring 2 to 5 days after exposure to the organism. In people with compromised immune systems, *Campylobacter* can occasionally spread to the bloodstream and cause serious, life-threatening infection. Most cases are associated with handling raw poultry or eating raw or undercooked poultry meat. Other cases are associated with drinking unpasteurized milk or contaminated water. The Centers for Disease Control (CDC) case definition describes a confirmed case of campylobacter infection as a diarrheal illness of variable severity with isolation of *Campylobacter* from a clinical specimen. Most cases are sporadic, and large outbreaks are unusual.

Of the 73 cases of campylobacteriosis reported among Philadelphia residents in 2006, 71 were culture confirmed and 2 were epidemiologically linked to a confirmed case who was a household contact. Fourteen of the isolates were speciated using serotyping; of these, 12 were *Campylobacter jejuni*. One case was infected with both *Campylobacter jejuni* and *Campylobacter coli* and 1 was infected with *Campylobacter coli*. Fifty-nine percent of cases were males. Figure 8 displays the distribution of cases by age group and gender. Ninety-four percent of cases had di-

arrhea, 47% had fever, 72% had abdominal pain, 19% were nauseous and 23% experienced vomiting. Of the 73 cases, 10 (14%) required hospitalization. There were no fatalities reported. Ten (14%) cases reported foreign travel during the incubation period.

Antibiotic susceptibility tests were available on 16 (22%) *Campylobacter* isolates; 38% were resistant to ciprofloxacin. For more information on antibiotic susceptibility in Appendix A.

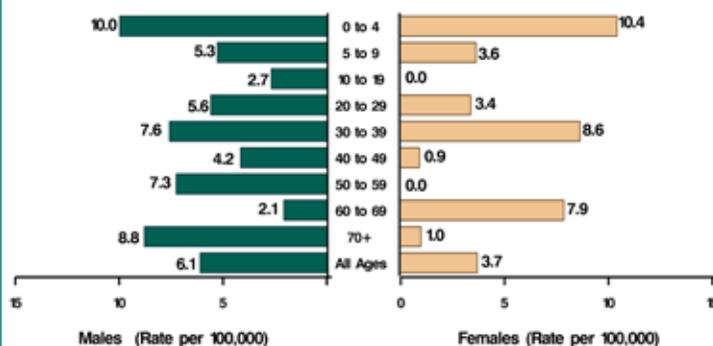
SHIGA-TOXIN PRODUCING ESCHERICHIA COLI (STEC)

Two multi-state outbreaks were associated with *Escherichia coli* O157:H7 in 2006. The first outbreak involved loose-leaf fresh spinach produced in California in August/September. The Division of Disease Control (DDC) became involved in this investigation through the initial testing of spinach samples from a non-resident's home and increased surveillance efforts. The second outbreak in November/December resulted in the closure of Taco Bells in Philadelphia and surrounding counties and states while local and state health departments, the Food and Drug Administration (FDA), and the CDC conducted epidemiologic investigations and widespread testing of food and environmental samples taken from restaurants and production sites. Shredded lettuce produced in California was eventually identified as the most likely source of the outbreak. Two Philadelphia residents were identified by pulsed-field gel electrophoresis (PFGE) as being part of this Taco Bell *E. coli* O157:H7 outbreak cluster.

Shiga-toxin producing *Escherichia coli* (STEC) includes, most notably, *E. coli* O157:H7 and other Shiga-toxin producing *E. coli* non-O157 serotypes which can cause severe abdominal pain, often bloody diarrhea, and little to no fever. Approximately 8% of STEC infections lead to hemolytic uremic syndrome.

Due to widespread laboratory use of enzyme-linked immunological assays for Shiga toxin (STX) detection and PCR amplification of the *stx*

Figure 8. Rates of Campylobacteriosis per 100,000 Population by Age and Gender: Philadelphia, 2006



gene, CDC revised its case definition to reflect the results from these diagnostic tests. According to the 2005 CDC STEC case definition, laboratory-confirmed cases require the isolation of STEC. For all non-*E. coli* O157:H7 there must also be the production of STX or detection of *stx* genes from a clinical specimen. Nineteen cases of STEC infection were identified in 2006; *E. coli* O157:H7 was isolated from 6 cases, and the 13 others were identified by the presence of STX in stool.

Thirty-two percent of cases were male. The age range of cases was from under 1 year to 74 years; only 4 cases were under 5 years old. Symptoms reported by cases were as follows: diarrhea (89%), abdominal cramps (53%), bloody diarrhea (47%) fever (32%), and hemolytic uremic syndrome (5%). Although there were no deaths, STEC infection lead to 4 hospitalizations.

Traditionally, the most common food source of STEC is improperly-cooked beef products, although produce (as indicated in the spinach and Taco Bell outbreaks) and apple juice have also been identified as sources. Eight Philadelphia cases consumed either ground beef, steak, or both within 7 days of their illness onset. Two cases visited farms during the incubation period. Ten Philadelphia cases reported consuming some type of fast food within 7 days of their illness onset. No common risk factors were identified in the other cases.

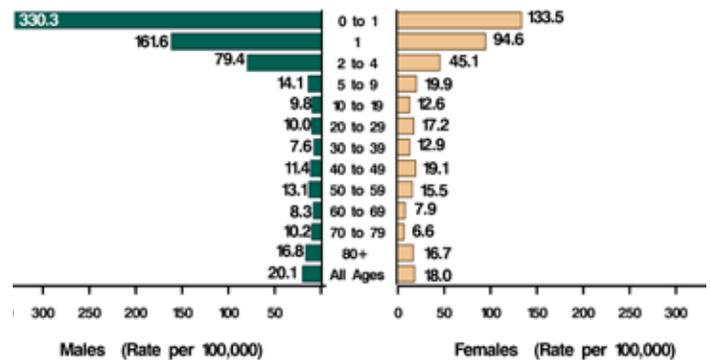
SALMONELLOSIS (NON-TYPHI *SALMONELLA* SPP.)

Infection with *Salmonella* bacteria, or salmonellosis, usually causes diarrhea in humans and animals and is transmitted to humans and animals by the fecal-oral route. Other symptoms include fever, abdominal pain, nausea, and vomiting; more serious infections, such as blood infections, can also occur. Humans become infected when they consume food or drink that is contaminated by *Salmonella* or handle animals that excrete the organism, or when they come into close or intimate contact with someone else who is infected. *Salmonella* species have been implicated as the cause of several recent large, national outbreaks, including a 2006 outbreak caused by *Salmonella*-contaminated peanut butter. The CDC definition of a confirmed case of salmonellosis requires the isolation of the bacteria from a clinical specimen, most often stool or blood.

In 2006, 286 confirmed and 7 probable cases of non-Typhi *Salmonella* were reported in the city of Philadelphia. The incidence rate was 19.9 per 100,000, down slightly from an incidence of 20.1 in 2005. Salmonellosis incidence in Philadelphia is consistently higher than the national incidence; this difference cannot be attributed to any large outbreaks in the city. Incidence is particularly high in children under 5 years of age (Figure 9): in 2006, 37.5% of Philadelphia's *Salmonella* cases occurred in this age group, and boys in this age group had more than twice the incidence of girls.

Of cases for which data is available, 49% were female. Serotype information was available for 276 cases (94%); of these, the most common serotypes were *S. enteritidis* (48%) and *S. typhimurium* (25%). Common symptoms among cases included diarrhea (93%), fever (55%), abdominal pain (50%), vomiting (30%), and nausea (21%). One hundred and six *Salmonella* patients were hospitalized and 1 died. Seventy-seven cases (26%) reported animal contact prior to their illness; 21 (7%) of these cases reported contact with a reptile or amphibian. Fifteen cases (5%) reported foreign travel during the incubation period of their illness.

Figure 9. Rates of Salmonellosis per 100,000 Population by Age and Gender: Philadelphia, 2006



In 2006, there were no local *Salmonella* outbreaks of interest; however, DDC participated in a multi-state outbreak investigation of *S. tennessee* infections associated with the consumption of peanut butter. During the course of the investigation, contaminated peanut butter was traced back to a single manufacturing plant and the plant was subsequently closed for decontamination. Investigation into the source of contamination of the plant is ongoing.

Two hundred twenty-four (78%) *Salmonella* isolates have antibiotic susceptibility test results available for analysis. Of these isolates, 18 (8%) demonstrated resistance to ampicillin. Detailed information on antibiotic susceptibility results is available in Appendix A.

TYPHOID FEVER (*SALMONELLA* TYPHI)

Typhoid fever is a potentially life-threatening illness caused by *Salmonella* Typhi (*Salmonella* enterica serovar Typhi, or *S. Typhi*). Typhoid fever, transmitted by the oral-fecal route, is rare in the United States (US); about 500 cases are reported annually. Most of these are imported from countries in the developing world where the disease is endemic. Symptoms of the disease include sustained fever, headache, abdominal pain, malaise, splenomegaly, anorexia, and non-productive cough. Asymptomatic or milder presentation, such as with clinical gastroenteritis, is common in endemic areas. The CDC definition for a confirmed case of *S. Typhi*

necessitates the isolation of the organism from a clinical specimen such as blood or stool.

To ensure that the disease is not spread within the US, the Philadelphia Department of Public Health (PDPH) and the Pennsylvania Department of Health require that patients with typhoid fever be excluded from certain work environments (such as restaurants) until they have completely recovered from their illness. Recovery is defined as 3 stool samples, taken at ≥ 24 hour intervals at least 48 hours after completion of antibiotic therapy, that are culture-negative for *S. Typhi*. In addition, stool samples must be taken no earlier than 1 month after illness onset.

In 2006, 4 confirmed cases of typhoid fever were reported to DDC. Three of the cases (75%) occurred in females. All 4 cases were confirmed by the isolation of *S. Typhi* in the blood. All cases presented with fever and abdominal pain; 3 (75%) also experienced diarrhea and vomiting. Each case occurred after a foreign trip to countries where *S. Typhi* is endemic; case patients visited Bangladesh, Cambodia, Iraq, or Pakistan. All cases necessitated hospitalization, and none were fatal.

SHIGELLOSIS (*SHIGELLA SPP.*)

The human bacterial pathogen *Shigella spp.* causes an infection characterized by diarrhea (often bloody), fever, and stomach cramps and can be divided into 4 serogroups; *S. dysenteriae*, *S. flexneri*, *S. boydii*, and *S. sonnei*. *S. dysenteriae* and *S. boydii* are uncommon in the US but are important causes of diarrheal disease in the developing world. Since the main route of transmission is fecal-oral, unsanitary conditions or lax adherence to basic infection control guidelines contribute to rapid transmission particularly in daycare populations and institutionalized facilities as experienced in Philadelphia in 2003. According to the CDC case definition, laboratory-confirmed Shigellosis infection is demonstrated by the isolation of *Shigella* from a clinical specimen.

Fourteen laboratory-confirmed reports of *Shigella* were received in 2006. The incidence rate decreased from 2005 to 2006 from 2.0 cases per 100,000 to 0.9 cases per 100,000. This is much lower than the 2005 national incidence of 3.5 cases per 100,000. The incidence of shigellosis in Philadelphia has fluctuated dramatically since 1994 (not shown). Serogroup data were available for all except 1 of the confirmed cases; 2 (15%) were identified as *S. sonnei*, 5 (39%) were identified as *S. flexneri* II, 3 (23%) identified as *S. flexneri* IV, 2 (15%) identified as *S. flexneri* III, and 1 (8%) identified as *S. flexneri* I. The median age of cases was 29 years. Symptoms reported by cases with information on clinical presentation (12 cases) were as follows: diarrhea (92%), fever (50%), abdominal cramps (50%), and vomiting (25%). No fatalities occurred but 6 cases were hospitalized. Of the risk factors reported by cases, only foreign travel seemed to be noteworthy. Two cases trav-

eled abroad during their incubation period. One cluster of four cases was reported in 2006.

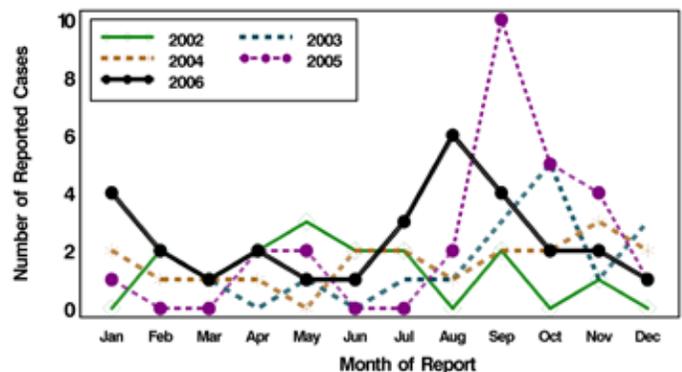
Antibiotic susceptibility tests for ampicillin, ciprofloxain, and trimethoprim-sulfamethoxazole were conducted on 10 (71%) *Shigella* isolates. Eight of the isolates exhibited resistance to ampicillin. Detailed information on antibiotic susceptibility results is presented in Appendix A.

CRYPTOSPORIDIOSIS (*CRYPTOSPORIDIUM PARVUM*)

Cryptosporidiosis is a diarrheal disease caused by microscopic parasites of the genus *Cryptosporidium*. Once an animal or person is infected, the parasite lives in the intestine and passes in the stool. The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very resistant to chlorine-based disinfectants. Cryptosporidiosis has become recognized as one of the most common causes of waterborne disease of humans in the US and worldwide, and large outbreaks of the disease do occur. Symptoms include dehydration, weight loss, stomach cramps, fever, nausea and vomiting. Disease is often more severe and prolonged in persons with compromised immune systems. The CDC confirmed case definition requires the detection of *Cryptosporidium* oocytes or antigen in stool or other appropriate clinical specimen.

Thirty-six suspected cases of cryptosporidiosis were reported to DDC in 2006; of these, 29 were confirmed. The median age of cases was 30 years and the majority of cases were male (57%). Among those with hospitalization information available, 15 cases were admitted to the hospital. Fourteen cases (47%) had traveled outside of Philadelphia, although only 4 of these cases traveled outside of the US and 6 cases reported having immune compromise. There were no reported outbreaks of cryptosporidiosis in Philadelphia in 2006.

Figure 10. Cryptosporidiosis, by Month and Year of Report: Philadelphia, 2002 to 2006

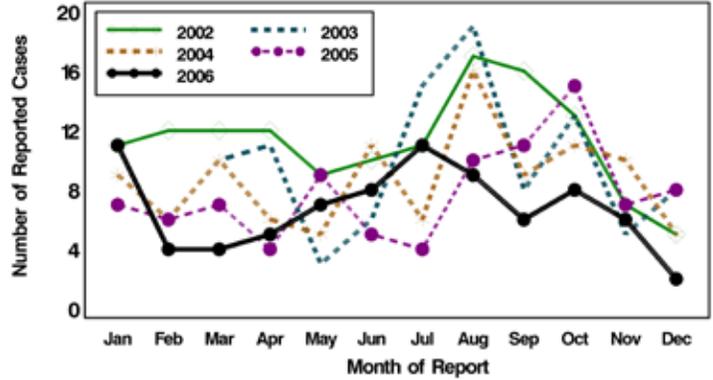


GIARDIASIS (*GIARDIA LAMBLIA*)

Giardiasis is a diarrheal disease caused by the protozoa *Giardia lamblia*. The protozoa lives in the intestine, is passed through the stool, and can live outside the body for long periods of time in multiple environments including soil, food, water, and surfaces that have been contaminated from infected humans or animals. Symptoms of giardiasis include diarrhea lasting 1-2 weeks or longer, gas, abdominal cramping, and greasy stools, but some infected persons may be asymptomatic. The CDC case definition for a laboratory-confirmed case requires the detection of *G. lamblia* cysts, trophozoites, or antigen in stool.

Eighty-one laboratory-confirmed giardiasis cases were reported in 2006, with males accounting for 58 percent of cases (Figure 11). Symptoms included: diarrhea (100%), abdominal pain (56%), nausea (33%), vomiting (26%) and fever (8%). Although 13 cases were known to have required hospitalization, there were no fatalities. Twenty-four cases reported travel to a foreign country in the month prior to symptom onset. The most common countries associated with disease acquisition among foreign travelers were the Dominican Republic, Mexico, Haiti, India, and Cambodia.

Figure 11. Giardiasis, by Month and Year of Report: Philadelphia, 2002 to 2006



Hepatitis

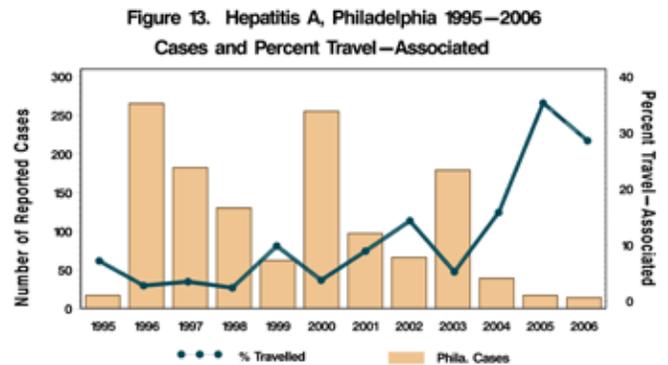
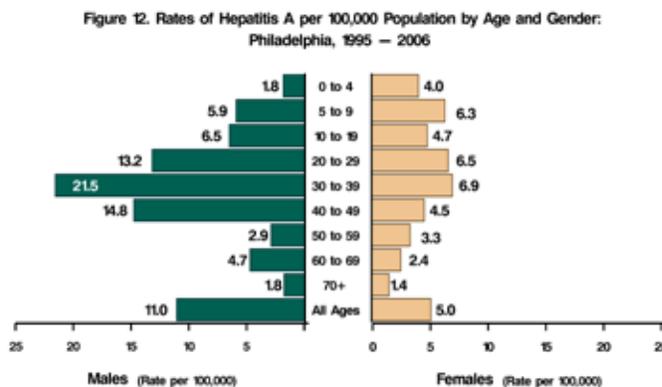
INFECTIONS

HEPATITIS A

Hepatitis A is typically a self-limited disease of the liver caused by the Hepatitis A virus (HAV) and spread through the fecal-oral route. In the United States (US), hepatitis A can occur in situations ranging from isolated cases of disease to widespread epidemics, though HAV infection is far less common than in the developing world. Symptoms include jaundice, fatigue, abdominal pain, nausea, diarrhea, fever and loss of appetite. About 15% of people infected with HAV will have prolonged or relapsing symptoms over a 6-9 month period; however, infection induces life-long immunity. Moreover, an effective vaccine against HAV infection has been available since 1995. The Centers of Disease Control (CDC) case definition for a confirmed case of hepatitis A requires the presence of discrete onset of symptoms, jaundice, or elevated serum aminotransferase level (an enzyme indicative of liver damage), and IgM to HAV.

In 2006, the Division of Disease Control (DDC) received 50 reports of suspect hepatitis A cases. Of these, 14 were confirmed. This reflects an 18% decrease in confirmed cases compared to 2005, bringing Philadelphia's overall 2006 rate (0.92 per 100,000 population) below the 2006 US provisional rate (1.53 per 100,000 population). The overall decrease in the number of confirmed cases may be attributable to the cyclical nature of hepatitis A virus and to DDC's continued outreach to implement immunization in high-risk

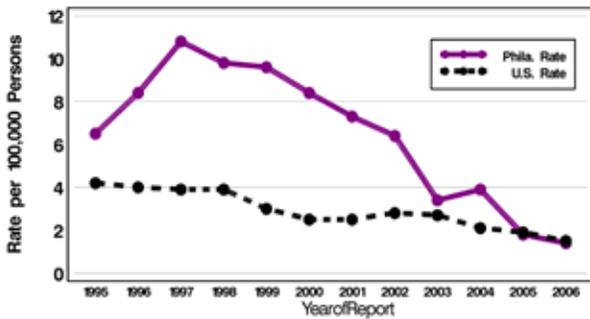
communities, among other factors. Cases ranged in age from 3 to 82 years, with a median age of 34. Seven (50%) of the confirmed cases were between the ages of 20 and 39. None of the cases were epidemiologically linked. Seventy-nine percent of cases were jaundiced, 57% had fever, 50% had abdominal pain, 43% had loss of appetite and 43% experienced nausea and vomiting. Four cases had documented high alanine aminotransferase (ALT) levels. Four cases reported travel to Africa, Asia or Central/South America within 6 weeks of illness. The proportion of cases with recent international travel has increased since 2003 (Figure 13). Four cases (35%) were hospitalized, and there were no fatalities. None of the confirmed cases received vaccine for hepatitis A prior to infection.



ACUTE HEPATITIS B

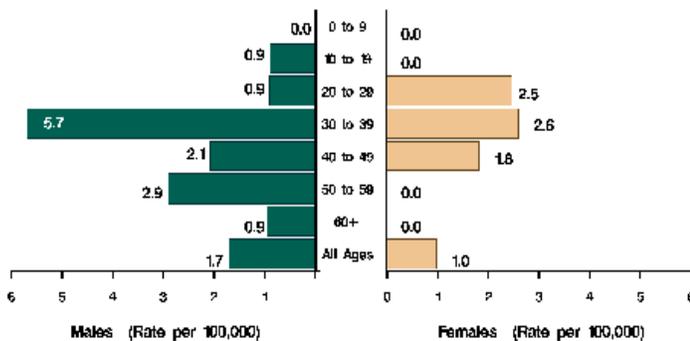
Hepatitis B is a serious infection of the liver that can lead to life long disease. The CDC case definition for acute hepatitis B requires the presence of: a) discrete onset of symptoms, b) jaundice or elevated serum aminotransferase levels, and c) IgM antibody to hepatitis B core or positive hepatitis B surface antigen. In 2006 there were 21 confirmed cases. This represents a 23% decrease in cases compared to 2005 (27). The overall Philadelphia acute hepatitis B rate is now 1.4 per 100,000 population as compared to the 2006 US provisional rate of 1.5 per 100,000 population. The incidence has steadily decrease since the peak in 1997 (Figure 14).

Figure 14. Acute Hepatitis B Rates: Philadelphia and U.S. 1995–2006



Of the confirmed cases, 13 (62%) were male. Cases ranged in age from 15 to 60 with 43% of cases occurring in the 30 to 39 age group. All of the cases (21) reported jaundice, and of those, 71% (15) also had elevated aminotransferase levels. Fourteen cases (66%) were hospitalized, but there were no hepatitis B – associated deaths. Seventy-one percent (15) reported only heterosexual contact. No other risk factors were confirmed.

Figure 15. Rates of Acute Hepatitis B per 100,000 Population by Age and Gender: Philadelphia, 2006



PERINATAL HEPATITIS B

Philadelphia has a Perinatal Hepatitis B Prevention Program (PHBPP) through the Immunization Program of DDC. The primary focus of the PHBPP is disease prevention among infants born to women with chronic hepatitis B virus (HBV) infection, although a secondary goal is disease prevention among other household contacts of those chronically infected with HBV.

Clinical and epidemiologic studies have shown that the younger a person is when first infected with HBV, the more likely he or she is to become a chronic carrier. As a result, HBV prevention among infants at high-risk for infection is key to disease prevention in the broader population. The Philadelphia Board of Health requires that all women be screened for hepatitis B virus (HBV) infection in pregnancy through use of a surface antigen test (HBsAg), and that positive HBsAg results be reported to DDC.

The PHBPP Nurse Manager works with pregnant wom-

en who test positive for chronic HBV infection and their health and obstetrical care providers to ensure that their infants receive hepatitis B immune globulin (HBIG) prophylaxis at delivery, a birth dose of hepatitis B vaccine, and at least 2 additional doses of vaccine 1 and 6 months after the birth dose. After at least 3 doses of hepatitis B vaccine have been administered, these infants receive serologic testing to define their immune status to HBV. More than 90% of these infants receive HBIG and 3 doses of vaccine by the age of 7 months and 95% receive all immunoprophylaxis (HBIG and 3 vaccine doses) and serologic testing by the age of 1 year. The follow-up process – from prenatal identification to birth to vaccination and post-immunization screening – can take up to 2 years.

In 2005, 144 infants in Philadelphia were born to women with chronic HBV, and 6 of these infants (4%) were non-residents who were transferred to other programs at birth for case management. In the 138 resident infants remaining, immunoprophylaxis was successful in preventing disease, except in 1 infant found to have a chronic HBV infection as a result of perinatal transmission. All 138 infants received HBIG and a complete Hepatitis B series by 10 months of age. Complete serologic testing was not possible for 17 infants (12%) whose families left the U.S. after completion of vaccine series and 1 infant whose parent refused serology for her infant. Of the remaining 120 infants fully managed by PHBPP, 119 (99.2%) had complete serologic testing. 188 household contacts of mother and infant were identified, educated and offered free serological testing. Of the 153 contacts tested, 20 (13%) were positive for HBV infection, 112 (73%) were immune and 21 (14%) were susceptible. Of the 21 susceptible contacts, 17 completed a 3 dose vaccine series provided by DDC staff. Complete 2006 data for PHBPP-Philadelphia will not be available until 2008. Provisional analyses, however, show that DDC learned of 124 infants born to mothers with chronic HBV infections in 2006 and, at the time of writing of this summary, data were available to indicate that 122 (98.3%) had received HBIG and a birth-dose of hepatitis B vaccine. Data collection, follow-up, and serologic testing will continue as the year progresses.

HEPATITIS C

Hepatitis C virus (HCV) is the most common chronic bloodborne viral infection in the US. CDC estimates that between 4 and 5 million Americans have been infected with HCV and 2.7 million Americans with HCV are chronically infected. HCV is the leading indicator for liver cancer and approximately 70% of those chronically infected have chronic liver disease. As a nationally notifiable infectious disease, clinical laboratories are required to report patients with evidence of acute or chronic hepatitis C infection to the DDC.

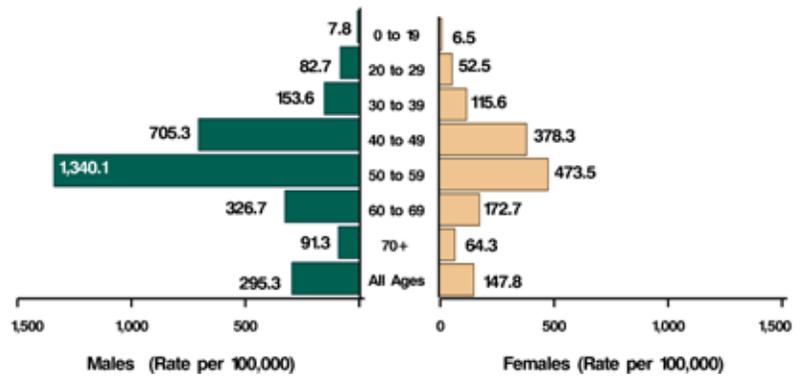
The Philadelphia Hepatitis C Program implemented several of the objectives set forth in the CDC National

Hepatitis C Prevention Strategy. This guidance is directed towards city and statewide hepatitis programs, and the recommendations fulfill the mission of the CDC Division of Viral Hepatitis, which is to provide the scientific and programmatic foundation for the prevention, control, and elimination of hepatitis virus infections in the US, and assist the international public health community in these activities. Specifically, this year the Philadelphia program implemented educational programs, enhanced surveillance, and participated in integration activities with existing health programs.

The Hepatitis C Coordinator conducted educational presentations to approximately 800 community members and providers on basic HCV education, HCV and HIV, and HCV and substance abuse. In taking an integrative approach to viral hepatitis education, these presentations were implemented at health fairs, community events, medical and social service agencies, drug rehabilitation centers, and HIV service organizations. Surveillance and disease reporting activities were enhanced through continuous trend monitoring, in-services to various reporting agencies, and monthly data importing and cleaning. As another method of integration and information sharing, this is the second year of the Hepatitis C Network listserv. The goal of this internet-based listserv is to foster communication and exchange information concerning policy, research, trainings, and any issues around Hepatitis C in Philadelphia. This year there was a 40.3% increase in listserv membership of medical providers, social-service providers, and community members, resulting in 73 listserv members that participate and exchange relevant hepatitis focused information.

In 2006, DDC identified 3,284 newly confirmed HCV cases who met at least 1 of the laboratory criteria for the CDC confirmed case definition for Hepatitis C virus infection, past or present. Another 27 newly reported cases were probable cases, as they had positive antibody tests and elevated liver enzymes, but lacked further reported testing that would confirm the CDC case definition. More than 2,000 additional new cases were reported with positive HCV antibody tests, but lacked additional confirmatory laboratory testing. Demonstration of acute HCV infection requires additional tests to rule out acute hepatitis A and hepatitis B infections accompanied with elevated liver enzymes. PDPH confirmed 1 case who met the CDC definition for acute HCV infection. Although DDC is unable to assure that cases with only positive antibody tests indicate true HCV infection, in a region of high HCV disease prevalence, such as Philadelphia, the positive predictive value of a single positive HCV laboratory test is high. The highest HCV incidence is in men aged 40 to 59 years (Figure 16).

Figure 16. Rates of Newly Confirmed Hepatitis C Virus, Past or Present Infection per 100,000 Population by Age and Gender: Philadelphia, 2006



Vector-borne DISEASES

LYME DISEASE

Lyme disease is a bacterial infection caused by the spirochete *Borrelia burgdorferi* and transmitted by *Ixodes* sp. deer ticks. The Centers for Disease Control (CDC) defines a confirmed case of Lyme disease as 1) an individual with physician-diagnosed erythema migrans of size > 5cm -or- 2) an individual with one of the late manifestations of the disease (see http://www.cdc.gov/ncidod/dvbid/lyme/ld_humandisease_symptoms.htm) in addition to positive laboratory evidence of infection.

In 2006, clinical laboratories reported positive Lyme serologic test results for 614 patients. Of these, 139 (22.6%) were considered confirmed cases, a 19% decrease from the previous year. The remaining 475 individuals were not confirmed as cases either because no clinical information was obtained from healthcare providers upon inquiry, clinical case definition was not fulfilled upon investigation, or the case lived outside of Philadelphia.

The age range among cases was 2 to 103 years (median, 36 years) and 78 cases (56.1%) were male. The highest incidence was in the 5-9 year old and 50-59 year old age groups (Figure 17). Among the recorded clinical manifestations of the disease, 71 cases (51.1%) reported having erythema migrans, 60 cases (43.2%) reported having arthritis, 14 cases (10%) reported having Bell's palsy, 12 cases (8.6%) reported having radiculopathy, 6 cases (4.3%) reported hav-

ing lymphocytic meningitis/encephalitis, and 2 (1.4%) cases reported having carditis. Twenty-four cases (16.6%) reported having multiple symptoms. Analysis of the testing dates among cases demonstrated an increased frequency of testing during the summer months, reflecting the known seasonality of this disease. As in the past, the highest incidence of infection occurred in the northwest and northeast portions of the city, in zip codes bordering the Wissahickon River valley (Fairmont Park) and the Pennypack Park area (Figure 18).

Figure 17. Rates of Lyme Disease per 100,000 Population by Age and Gender: Philadelphia, 2006

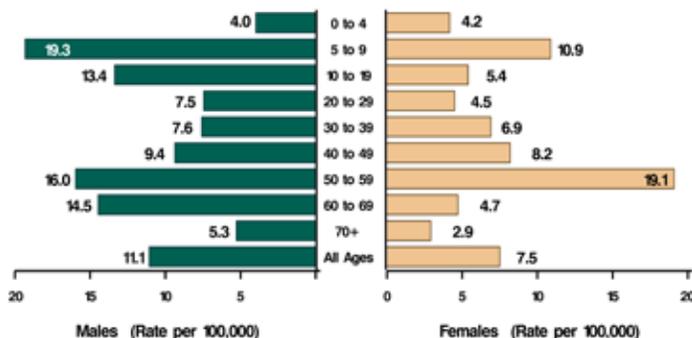
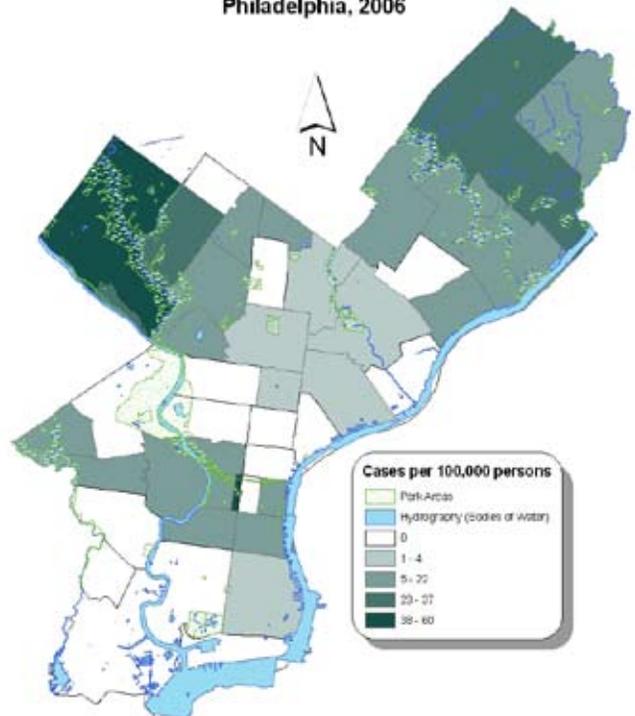


Figure 18. Rate of Lyme Disease by ZIP code of Residence, Philadelphia, 2006



MALARIA (*PLASMODIUM SPP.*)

A confirmed case of malaria is defined as an episode of microscopically confirmed *Plasmodium spp.* parasitemia in the blood stream of any person, symptomatic or asymptomatic, diagnosed in the United States (US), regardless of whether the person experienced previous episodes of malaria

while outside the country.

In 2006, 15 Philadelphia residents were confirmed as cases of malaria based on microscopic examination of smears of their blood. Among those 15 cases, 13 had their smears further characterized by species: 8 individuals had parasitemia of *P. falciparum*, 3 persons were infected with *P. vivax* and 1 person with *P. ovale*. The median age for cases was 37 years (range: 2-57 years). Eight cases (53%) were male.

All of the cases were located and interviewed. Of these, 10 cases appeared to have acquired their infection in Africa, 4 cases in South or Southeast Asia, and 1 in South America. Seven cases reported having taken anti-malarial prophylaxis. Fourteen cases were documented to have received treatment.

WEST NILE VIRUS

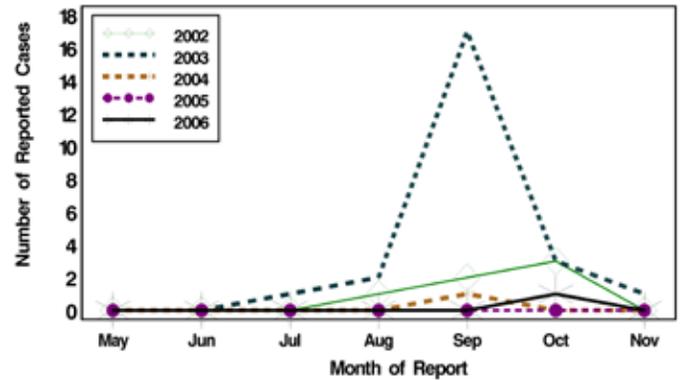
Since the emergence of West Nile Virus (WNV) in 1999 in New York City, this arthropod-borne virus has traversed efficiently across the continental US. Humans are incidental and dead-end hosts for WNV, and are not key components in WNV amplification and transmission. While typical human clinical presentation of WNV infection involves fever, headache, and fatigue, cases experiencing more severe sequelae such as WNV-associated neuroinvasive disease are more likely to be diagnosed and reported. Previous versions of the clinical case definition focused on the neuroinvasive aspects of the disease: encephalitis, meningitis, and poliomyelitis-like acute flaccid paralysis. The 2004 amendment to this case definition provides for counting the non-neuroinvasive and less severe manifestations of the disease. Laboratory confirmation requires evidence of acute disease: isolation of the virus, virus-specific antigen or nucleic acid testing, 4-fold or greater change in virus-specific serum antibody titer, or the presence of virus-specific immunoglobulin (IgM) in CSF and virus-specific immunoglobulin G (IgG) in the same specimen or in a subsequent specimen. Both elements of clinical and laboratory diagnostic criteria are necessary for a laboratory-confirmed WNV case.

The PDPH reported its first cases of WNV in the summer of 2001. Philadelphia experienced its peak in the WNV epidemic in 2003 when it reported 24 cases (Figure 19). In 2006, PDPH received 1 laboratory-confirmed report of acute WNV. The patient experienced symptoms consistent with neuroinvasive WNV disease - altered mental status and slurred speech. Patient reported symptom onset in early October and no travel outside of Philadelphia.

Surveillance of WNV necessitates collaboration between the DDC WNV Control Program and Environmental Health Services (EHS)-Vector Control Program. Throughout the city the EHS-Vector Control Program implemented extensive mosquito control efforts. Between May 13 and

September 15, 2006, the program treated 76,331 catch basins (storm-water sewers) with larvicide (to kill mosquito larvae). In addition to the larvicidal treatments, the program also conducted 36 treatments to control adult mosquitoes, including a combination of barrier treatments and ultra low volume spray events. During this period, 1 mosquito pool, near the Philadelphia International Airport, tested positive for WNV, indicating that WNV was circulating in Philadelphia. Statewide WNV surveillance demonstrated that WNV was also present in mosquito populations in the surrounding counties of Bucks, Montgomery, and Chester.

Figure 19. West Nile Virus, by Month and Year of Report: Philadelphia, 2002 to 2006



PDPH remains committed to WNV surveillance, aggressive mosquito control activities, and public education in hopes of preventing human WNV cases. Current efforts extend beyond WNV as PDPH also tracks other newly emerging arboviruses in the US.

Vaccine-Preventable DISEASES

The Division of Disease Control's (DDC) Immunization Program provides no-cost, routine vaccines for children 0-18 years of age who are on Medicaid or who are uninsured, via the Vaccines For Children (VFC) Program. Currently, there are over 250 health care providers in Philadelphia receiving more \$20 million worth of vaccines via the VFC Entitlement Program. The Immunization Program also maintains a computerized childhood immunization registry (KIDS) to provide centralized record storage and retrieval system on all children 0-18 years of age citywide. At-risk children who fall behind on their immunization schedules are referred to a network of community-based organizations contracted to work with families to overcome barriers to access to timely immunization services, to explore health insurance alternatives if needed, and to educate on the importance of maintaining a medical home. The Immunization Program also runs an extensive provider education program, a program that distributes no-cost Vaccines For Adults At-Risk (VFAAR) to health care providers, a program for vaccine-preventable disease surveillance and outbreak control, among many other vaccine-related activities.

For additional information, please contact Jim Lutz, Immunization Program Manager, at (215) 685-6603, or visit the Immunization Program and KIDS Registry website at: <https://kids.phila.gov>

PERTUSSIS (*BORDETELLA PERTUSSIS*)

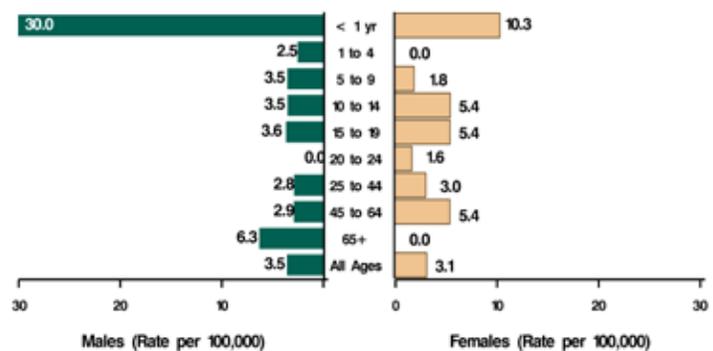
Pertussis (whooping cough) is a highly communicable and vaccine-preventable disease of the respiratory system. Caused by an infection of the upper airway with the bacteria *Bordetella pertussis*, symptoms usually occur after a 7- to 21-day incubation period, and the classic infection can include spasmodic coughing with post-tussive vomiting, apnea, and/or classic "whoop" on inspiration of breath. The pertussis-containing vaccine formulation used in the United States (US) is acellular pertussis with diphtheria and tetanus toxoids (DTaP) for children, and has a recommended schedule of doses at 2, 4, 6, and 12-

to-18 months, followed by a fifth dose at 4-to-6 years of age. For adolescents, adults (age 10-64) and healthcare workers, one single dose of the Tdap vaccine (tetanus, diphtheria, and acellular pertussis) is recommended.

Although vaccination has markedly decreased incidence of pertussis, the disease remains endemic in the US with 13,144 cases (4.4 cases per 100,000) reported in 2006 (provisional data). Infants are at greatest risk for clinical disease and complications, in part because they are too young to be fully vaccinated.

The case definition for pertussis used by DDC is broader than that of the Centers for Disease Control (CDC), accepting a wider range of laboratory tests when symptoms are clinically consistent with pertussis. In Philadelphia in 2006, 50 reports met the DDC case definition for confirmed (n=20) or probable (n=30) pertussis, yielding a rate of 3.3 cases per 100,000 population. The probable cases either: 1) met the clinical definition for pertussis but lacked a sufficient laboratory diagnosis or 2) had a high pertussis toxin IgG titer at least 4 weeks after disease onset in the absence of additional corroborating information.

Figure 20. Rates of Pertussis per 100,000 Population by Age and Gender: Philadelphia, 2006



Distribution of incidence by age and gender is represented in Figure 20. Of the 50 cases, 4 (8%) were children <1 year old; 2 of whom were PCR confirmed. Four (8%) were children aged 1 to 9 years; 2 of whom were PCR confirmed. Ten cases (20%) were adolescents aged 10 to 19 years, 2 of

whom were PCR confirmed. Of the 32 cases in adults aged 20 years and older, 2 were PCR confirmed. Most adults had serologic testing, and represent the probable cases. Twenty-five (50%) of Philadelphia's pertussis cases were female. Eleven of these were women of child-bearing age, a group where booster vaccines with Tdap may be particularly important for preventing pertussis transmission to infants. Vaccination status was determined in all 5 cases (1 probable and 4 confirmed) in children less than 5 years of age. Two of these (1 confirmed and 1 probable) were less than 2 months old and therefore not eligible for DTaP vaccination. One 3-month old confirmed case had received the first DTaP 7 days before disease onset, and a 5-month old confirmed case had received 2 DTaP vaccinations before disease onset. The 1-year old confirmed case had received no vaccinations, despite previous outreach attempts by DDC.

The average number of exposed contacts for each case was 2.5 (range 1 to 6), and community clinicians had provided prophylaxis to at least 1 contact for 62% of cases. Reported symptoms consisted of paroxysmal cough in 64% of cases, whoop (53%), apnea (40%) and post-tussive vomiting (31%). Of the 39 cases with documented antibiotic treatment, 67% received antibiotics that are effective against pertussis (azithromycin, clarithromycin, or erythromycin).

Of all cases, 9 (18%) were found to be part of a household cluster. There was 1 community-based cluster in 2006 associated with transmission in a day care, and in response, DDC provided medical prophylaxis to more than 100 day-care contacts and their family members.

In suspected outbreaks, DDC can help facilitate diagnostic testing and assist with infection control and disease management. To report a case or speak with a medical specialist about a suspected outbreak of pertussis, please call 215-685-6748.

MUMPS

Mumps is a vaccine-preventable viral illness, transmitted by respiratory droplets or direct contact with infected respiratory secretions or saliva, and with an incubation period of 16 – 18 days (range 12 – 25 days) [WHO 2003; CDC 2004]. The infectious period spans approximately 12 days: from 3 days before symptoms appear to 9 days after the symptoms appear. Mumps infections are typically characterized by swelling of the parotid (salivary) glands on 1 or both sides of the head that lasts for at least 3 days, preceded by and accompanied by symptoms such as fever, headache, fatigue, muscle aches, and loss of appetite. According to the CDC, up to 20% of infected persons can be asymptomatic, and an additional 40% to 50% of infections may present with just respiratory symptoms and malaise. As described by CDC and the World Health Organization (WHO), although it is typically a mild disease of childhood, approximately

15% of mumps cases have meningeal signs. Permanent sequelae are rare with nerve deafness being most common of these. Furthermore, 20% to 50% of infected adolescent and adult males can have orchitis (testicular inflammation), which can lead to testicular atrophy and (rarely) diminished fertility. Before the vaccine era, mumps infection was the most common cause of acquired deafness. In the US, people tend to be vaccinated against mumps with the MMR (measles, mumps, rubella) vaccine. As of May 2007, the Philadelphia public school system requires students from kindergarten through grade 12 to have at least 2 doses of mumps vaccine, administered after 1 year of age. Since 1989, most children in Philadelphia have received 2 doses of MMR vaccine, and recent annual audits of public high school vaccination records have shown that >90% of students have 2 documented doses of MMR vaccine.

It is important that clinicians recognize that the clinical presentation of mumps can be mimicked by infection with other viruses, such as Epstein-Barr virus, enteroviruses, parainfluenza viruses, and adenoviruses. Because the clinical syndrome is not specific to mumps, the confirmatory diagnosis of mumps infections is laboratory-based. Mumps diagnosis can be made by viral culture of buccal swab, nasopharyngeal aspirate, or urine – or by a positive IgM serologic test. DDC will coordinate transporting specimens to the Pennsylvania Bureau of Laboratories for testing.

In 2006, the US experienced a large outbreak of mumps. Of the more than 6,500 cases identified nationally, the highest incidence was in those aged 18-24 years, most of whom were college students. In response to the outbreak, the Advisory Committee on Immunization Practices (ACIP) revised vaccination recommendations to include 2 doses of live mumps vaccine for school-aged children and adults at higher risk for exposure and infection. The circulating strain (genotype G) was the same as the strain found in the United Kingdom outbreaks of 2004-2005 and the strain responsible for Canadian outbreaks in 2006-2007.

Of the 22 suspected Philadelphia mumps cases reported to DDC in 2006, 1 was confirmed, 1 met the definition of a probable case, and 20 were closed as non-cases. The confirmed case (lab confirmed IGM positive) was a 27 year-old male who developed mumps while traveling in Europe. The probable case was a 13 year-old male who met the clinical case definition for mumps but did not have confirmatory laboratory testing. Neither case was epidemiologically linked to another recognized case of mumps.

MEASLES

Measles is a serious, vaccine-preventable viral illness, with the first dose of vaccine given to children on or after the first birthday. Complications of infection can include pneumonia, diarrhea, ear infections, blindness, and encephalitis, with outcomes more severe among people who are malnourished or immunosuppressed. There were no (0) cases of measles in Philadelphia in 2006. Preliminary national data indicate there were 52 cases reported in the US in 2006.

In recent history, Philadelphia had 1 measles case in 2001 (associated with exposure in Mongolia), and 1 case in 1998 (associated with exposure in Nigeria). In 1997, there were 7 cases in Philadelphia, 6 of whom were in a homeless shelter. The Philadelphia public school system requires students from kindergarten through grade 12 to have 2 doses of measles vaccine (MMR), both administered after 1 year of age.

Clinicians seeing suspect measles cases should obtain travel histories from the patients in order to find possible epidemiologic links to regions with measles outbreaks. All suspect cases of measles must be reported to DDC promptly (within 24 hours).

RUBELLA

Rubella (also known as German measles) is a vaccine-preventable viral illness, transmitted by respiratory droplets, with an average incubation period of 2 weeks. As described by CDC, the rubella virus spreads through the body of an infected person in 5 to 7 days, and up to 50% of infections are sub-clinical. Rubella is a mild illness during childhood, with symptoms of rash and low grade fever for several days; but 20% of women infected with rubella in the early stages of pregnancy will have children with congenital rubella syndrome, characterized by birth defects such as deafness, mental retardation, and heart defects.

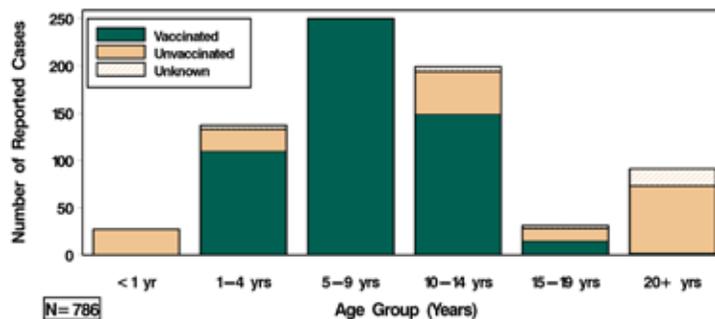
There were no cases of rubella reported in Philadelphia in 2006. The last 2 cases of rubella infection recorded for Philadelphia occurred in 1998 and 1996. According to provisional data, 9 cases of rubella were identified in the US in 2006.

CITYWIDE VARICELLA SURVEILLANCE

Since January 2005, varicella (chickenpox) has been a reportable condition nationwide as recommended by the Council for State and Territorial Epidemiologists (CSTE) and the CDC. During 2006, 787 confirmed and probable varicella cases from Philadelphia were reported to DDC, marking a 28% increase from 2005 (614 cases). The majority of the 2006 varicella case reports (690, 88%) resided outside the West Philadelphia active surveil-

lance area. Please see the Special Projects section of this report for more information on the Varicella Active Surveillance Project (VASP). Median age for the varicella cases was 8 years (range: 2 months to 78 years). Most of the reported varicella cases (552, 70%) were vaccinated, while 25% were unvaccinated, and the remaining 5% were unsure of their varicella vaccination status. Among the vaccinated cases, 514 (93%) were breakthrough infections occurring more than 42 days after varicella vaccination, 25 (5%) received their first dose within 42 days of rash onset, and 13 (2%) received their second dose within 42 days of rash onset, including 12 children 3 to 11 years of age. Varicella vaccination status varied by age group (Figure 21) with higher proportions of vaccinated cases occurring among those age groups where use of varicella vaccine has been more widespread (1-4 years, 5-9 years, and 10-14 years). Twenty-one varicella cases were hospitalized in 2006: 15 unvaccinated adults, 1 older adolescent with an uncertain vaccination status, 3 previously vaccinated children with breakthrough varicella, 1 immunocompromised child not eligible for vaccination, and 1 child who received the first dose of varicella vaccine within 42 days of rash onset. None of the hospitalizations resulted in death.

Figure 21. Citywide Varicella Reports by Age Group and Varicella Vaccination Status: Philadelphia, 2006*



*One case missing age with unknown varicella vaccination status excluded.

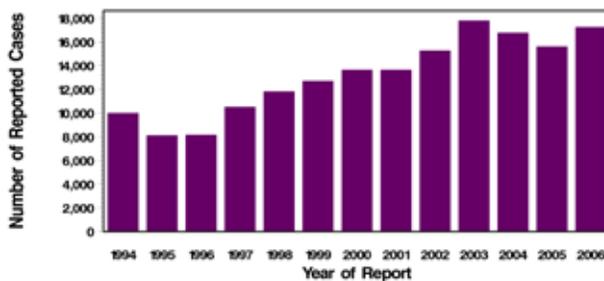
Sixteen varicella outbreaks, defined as 5 or more cases of varicella from one facility over a three-week period occurred among school students and contributed to the increased morbidity in 2006. One-quarter (199, 25%) of the year 2006 cases were outbreak-related compared to 12% in 2005 when 10 varicella outbreaks occurred. Most outbreaks in 2006 involved populations having high single-dose varicella vaccine coverage, and 79% of the outbreak-related cases were single dose recipients with breakthrough varicella. At their June 2006 meeting, the ACIP voted unanimously to recommend a routine second dose of the varicella (chickenpox) vaccine for previously vaccinated persons 4 years of age and older. The new recommendation addresses concerns over the duration of immunity provided by a single-dose regimen, and the high percentage of single-dose vaccinees who will develop disease after exposure to varicella, as observed during the year 2006 varicella outbreaks in Philadelphia.

Sexually Transmitted DISEASES

CHLAMYDIA TRACHOMATIS

Chlamydia is among the most frequently reported infectious diseases in the United States (US). Although 976,445 cases were reported in the US in 2005, a 5.1% (+46,983 cases) increase when compared to 2004, an estimated 3 million cases occur annually. Before 2006, reported Chlamydia cases showed a downward trend in Philadelphia, from a peak of 17,747 cases reported in 2003 to 15,577 cases reported in 2005 (12.2% decline, see Figure 22). This decrease was attributed to the impact of sustained, increased screening activities, especially among adolescent males and females in 2003 and 2004 which resulted in the identification and treatment of 9,138 persons in 2003, 8,623 persons in 2004 and 8,387 persons in 2005 through our citywide screening program. The number identified and treated includes 1,112 high school students in 2003, 960 in 2004, 812 students in 2005, and 879 students in 2006. (See below for more details on high school screening.) The elimination of these individuals from the reservoir of predominantly asymptomatic, infected persons during these 3 years, combined with ongoing screening and treatment efforts, was credited with the progress made in reducing reported incidence.

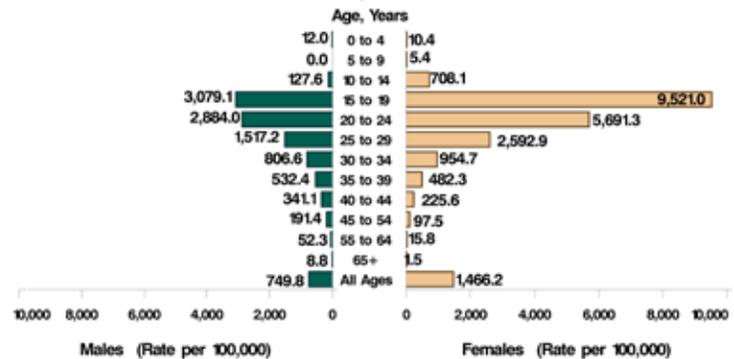
Figure 22. Reported Cases of Chlamydia: Philadelphia, 1994–2006



In 2006, 17,199 cases were reported to the Division of Disease Control (DDC), an increase of 10.4% (+1,622 cases) when compared to 2005. At first glance, this increase appears to be a re-

versal of a 2-year trend of reduced reported disease burden. In fact, it represents the impact of changes in screening activities, not in the public sector, but in the private medical community in Philadelphia. Analysis of reported case data suggest a pattern of increasing testing and/or screening in the private medical sector, and increased reliance on highly sensitive nucleic acid amplifi-

Figure 23. Chlamydia Rates per 100,000 Population by Age and Gender Philadelphia, 2006



cation tests (NAATs) by clinical laboratories. In 2006, 11,604 cases were reported from private medical providers, an increase of 15.2% (+1,532 cases) when compared to 2005 (10,072 cases). Of particular note among privately reported cases was a 25.1% (+393 cases) increase from 2005 to 2006 in the number of male cases reported from the private sector. Similarly, a particularly large increase was found in cases reported from 3 laboratories that had either switched to NAATs late in 2005, or noted a dramatic increase in the use of NAATs in 2006. Patients tested by 1 of these 3 laboratories accounted for 67.6% of the 2006 case increase and in one lab, the positivity rate increased from 7.7% to 10.4% after switching to NAATs, a 35.1% increase in rate, despite stable testing volume. Rates of reported chlamydia infection are consistently much higher in women than in men (Figure 23) and are highest in the 15-19 age group. In 2006, there continued to be a disproportionate number of female cases reported, resulting in a female/male ratio of 2.25:1; this is down, however, from F/M ratios of 3.87:1 in 2001, 2.40:1 in 2002, 2.60:1 in 2003, 2.33:1 in 2004 and 2.36:1 in 2005. Overall, the number of male cas-

es of chlamydia has increased 141.7% since the 2,187 males reported in 1999, before targeted male screening began. The identification and treatment of males is critical to reduce both the high reinfection rates of women (25% within 5 years) and the continued spread of infection in the community.

Note: Screening of asymptomatic men and women in both traditional and nontraditional venues has become feasible and is now widely available with noninvasive, urine-based tests using nucleic acid amplification methods. Urine-based screening of young men and women was initiated at the end of 1999 primarily in the Youth Study Center of the Philadelphia Corrections System. Screening efforts expanded during the period 2001-2006 to include District Health Care Center clinics, adult prisons, Philadelphia Public High Schools and Family Court. In 2006, 156,624 tests for chlamydia were performed through the citywide screening program (includes limited diagnostic testing), with 9,933 (6.3%) positives identified. This total includes 58,343 males (2,943; 5.0% positive) tested through routine screening and 4,437 males (664; 15.0% positive) tested through diagnostic testing. In 2005, a total of 158,378 tests for Chlamydia were performed through the citywide screening program with 9,342 (5.9%) positives identified. In 2004, 154,612 tests were performed with 9,763 (6.3%) positives; in 2003, 153,324 tests were performed with 10,541 (6.9%) positives; and, in 2002 108,893 tests were performed with 8,246 (7.6%) positives identified.

GONORRHEA (*NEISSERIA GONORRHOEAE*)

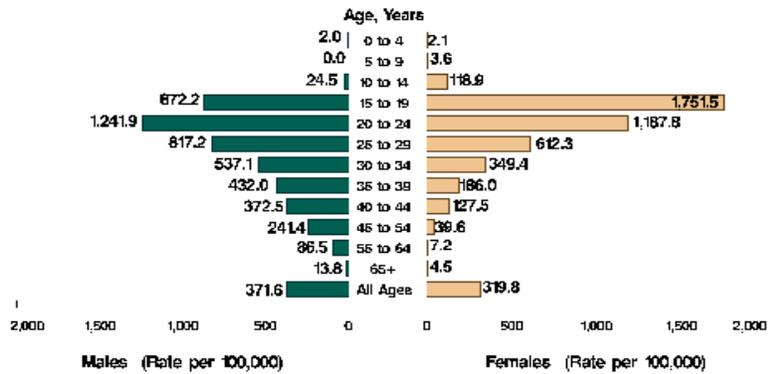
In 2006, 5,218 cases of gonorrhea were reported in Philadelphia, a 3.3% increase (+165 cases) from 2005. This increase ended a 5-year long trend of decreasing reported gonorrhea incidence. Teenagers and young adults remain disproportionately affected with 55.3% of the cases (2,883) occurring among 15-24 year-olds.

The number of DDC-supported routine gonorrhea screening tests for asymptomatic men has increased dramatically from 1,991 tests (25 positive; 1.3%) in 2002 to 55,849 screened (482 positive; 0.9%) in 2005 to 58,343 (511 positives; 0.9%) in 2006. An additional 4,437 tests were performed diagnostically in 2006 which identified 1,029 (+23.2%) positives. This increase in testing volume was made possible by enhanced screening efforts that made use of a non-invasive, urine-based laboratory test that could detect both *Neisseria gonorrhoeae* and *Chlamydia trachomatis*.

While a proportion of men infected with gonor-

rhea will be symptomatic and seek medical care, routine screening in women remains necessary as women are likely to have subtle or no symptoms. In 2006, the Philadelphia Department of Public Health (PDPH) provided or supported 105,139 screening tests for gonorrhea among females resulting in the identification of 1,264 (1.2%) infected women; these cases accounted for more than 48.7% of the total reported incidence in women (1,264/2,598). As with chlamydia, women with gonorrhea who are untreated are at risk of developing complications including pelvic inflammatory disease (PID) that may lead to infertility and increase the chance of ectopic pregnancy. Increased screening and educational efforts targeted at young, asymptomatic men and women will be needed to have a continued impact on

Figure 24. Gonorrhea Rates per 100,000 Population by Age and Gender Philadelphia, 2006



this disease.

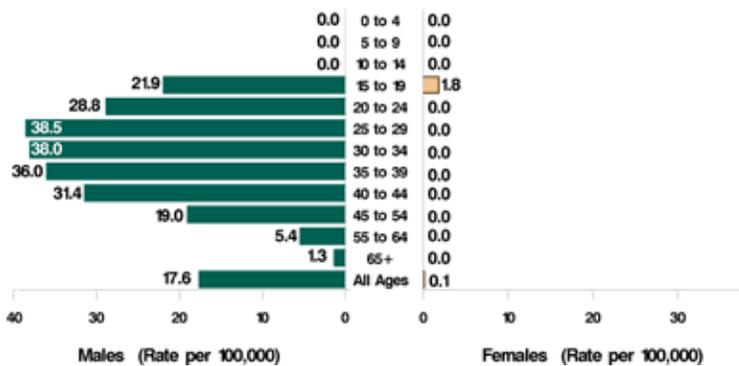
EARLY SYPHILIS (*TREPONEMA PALLIDUM*)

The 125 cases of reported primary and secondary (P&S) syphilis in 2006 represent a 45.3% increase (+39 cases) from the 86 cases reported in 2005. Since 1990, the peak year of our most recent syphilis epidemic, there has been a 94.7% overall decrease in reported P&S syphilis from the 2,361 cases reported in that year. This overall decrease may be attributed to many factors including saturation of the at-risk population, increased use of condoms and reductions in unprotected sexual activity resulting from educational messages targeting HIV and STD prevention, and the disease intervention activities of the Philadelphia STD Control Program which aggressively provided testing and preventive treatment to contacts of early syphilis cases. Reported rates of P&S syphilis were higher among men than women in 2006 (Figure 25); in fact, only 1 case of infectious syphilis in females was reported. The cause may be multifactorial, including an increase in the percent of male P&S cases attributable to men who have sex with men from 0.9% (1/130 males) in 1995 to 81.5% (101/124 males) in 2006, and an increased likelihood that a male will notice a lesion on his genitalia and be diagnosed. In

2006, 184 cases of early latent syphilis were reported; this represents an increase of 50.8% (+62 cases) when compared to 2005. Reported early latent syphilis cases have declined 95.3% (-3,723 cases) since the peak of the epidemic in 1990 when 3,907 cases were reported. The incidence of syphilis was highest among Hispanics in 2006, a reversal from prior years when higher rates were among blacks. The largest number of cases, however, continues to be reported among blacks.

With rates of infectious syphilis at an all time low in the US, CDC launched a National Plan to Eliminate Syphilis by 2010. The Philadelphia STD Control Program, in conjunction with this effort, initiated a weekly syphilis outbreak surveillance report and established thresholds for reported incidence above which outbreak control activities are initiated. In addition, liaisons with community-based organizations have been established, and intensified syphilis case management activities have been maintained.

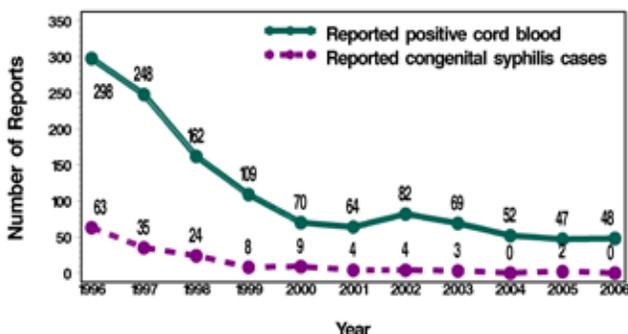
Figure 25. Primary and Secondary Syphilis Rates per 100,000 Population by Age and Gender: Philadelphia, 2006



CONGENITAL SYPHILIS

In 2006, no cases of congenital syphilis were reported. This compares to 2 cases in 2005, no cases reported in 2004 and 3 cases reported in 2003. For 2006, this represents a 100.0% (-301 cases) decrease when compared to the 301 cases reported in 1991, the peak year since the reporting definition changed in 1990. Of particular note is the number of positive cord blood and maternal

Figure 26. Reported Cases of Congenital Syphilis and Positive Cord Blood Tests: Philadelphia, 1996–2006



serologic tests for syphilis detected at delivery (Figure 26). This number has decreased from 82 in 2002 to 48 in 2006 (-41.5%). Since 1992, we have seen an overall 94.5% decrease (-816 reports). The occurrence of congenital syphilis is directly linked to the incidence of early syphilis in the city, especially among heterosexual men and women. Adequate prenatal care, with routine screening and treatment of syphilis in pregnant women clearly plays a major role in preventing congenital syphilis. The shift in cases from the heterosexual to the male homosexual community has also played a role in reducing congenital syphilis incidence.

MANAGEMENT OF POSITIVE SYPHILIS SEROLOGY

Special notes on syphilis reports: When DDC receives a report of infectious syphilis, and the laboratory report precedes the physician case report, the physician is contacted to confirm diagnosis, stage of infection and treatment. Patients diagnosed with infectious or early syphilis are then contacted confidentially by trained DDC staff and offered voluntary disease prevention and partner notification services. These efforts are designed to help patients avoid reinfection and to stop the spread of infection in the community. Case reports also allow DDC to maintain historical diagnostic and treatment information, which is often critical for proper patient management. For example, patients treated for syphilis may remain seropositive for decades after adequate treatment. Only through a comparison of quantitative serology results at time of initial treatment with subsequent test results can the current status of a patient with a history of syphilis be properly evaluated. DDC maintains these records and routinely assists health care providers and their patients to obtain this critical information, even when the patient has seen many different providers over the years.

PHILADELPHIA HIGH SCHOOL STD SCREENING PROGRAM

Reported incidence for *Chlamydia trachomatis* in Philadelphia continues to disproportionately affect adolescents in the 15-19 age group (see Figure 23). In 2006, the rate of chlamydia infection in girls and boys between the ages of 15-19 years was 9,521 and 3,079 per 100,000 population, respectively. While reported rates among boys remain lower than among girls, they have increased as screening programs reach them. In general, lower rates among adolescent males may be attributed to a number of factors including limited availability of routine screening, behavioral traits, and physiological or anatomic differences between males and females that may affect susceptibility, duration of infection and sensitivity of testing.

Because the CDC's 2001 Youth Risk Behavior Survey of High School Students indicated that 62% of Philadelphia

Sexually Transmitted Diseases

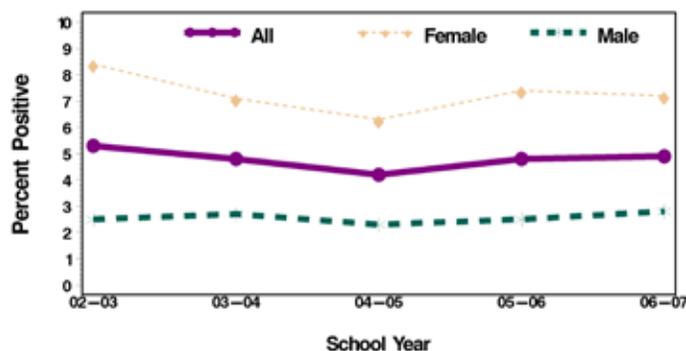
students had been sexually active, PDPH determined that diagnosis and treatment of STDs in adolescents should be a priority. Continued advances in testing technology, such as non-invasive urine-based testing for chlamydia and gonorrhea, made large-scale screening of adolescents feasible. Thus, in January 2003, PDPH and the School District collaborated to initiate Philadelphia High School STD Screening Program (PHSSP), a citywide voluntary screening effort including all public high schools. Between January and June of 2003, 19,713 students were screened in 53 Philadelphia public high schools. The program continued to screen large numbers of students each year with 17,019 students tested in the 2003–2004 school year, 16,378 tested in the 2004–2005 school year and 15,919 tested in the 2005–2006 school year. In the most recent school year 15,821 students were tested between September 2006 and June 2007. Of the 7,590 females screened then, 545 (7.2%) tested positive for chlamydia alone (511), gonorrhea alone (22) or both STDs (12); of the 8,231 males screened, 232 (2.8%) were infected with chlamydia alone (218), gonorrhea alone (12) or both STDs (2). Each year, treatment has been confirmed for at least 98% of those who tested positive. As an addition to the program in the public high schools, the STD Control Program initiated a similar program in 4 of the city’s charter high schools in the 2005–2006 school year and expanded to 1 additional charter high school in the 2006–2007 school year, for a total of 5 charter high schools. In the 2006–2007 school year, 969 students were tested in charter high schools. Of the 520 females tested, 35 (6.7%) were positive for chlamydia (33) or gonorrhea (2). Of the 449 males tested, 12 (2.7%) were positive for chlamydia (9) or gonorrhea (3) (Figure 27). No students were infected with both STDs. In total, the STD Control Program provided testing to 16,790 students during the 2006–2007 school year.

Since the 2002–2003 school year, ongoing testing has been provided at high schools with Health Resource Centers (HRC). These centers offer counseling and referral services for STD, HIV and family planning. They also provide condoms to students whose parents have not opted them out of the program. During the 2006–2007 school year, the 4 HRCs submitted 1,912 tests

on 1,536 students for gonorrhea and chlamydia. Of the 1,148 tests from females, 9.2% (106) were infected with chlamydia (95), gonorrhea (7) or both STDs (4). Of the 764 tests from males, 5.8% (44) were found to be positive for chlamydia (37), gonorrhea (6), or both STDs (1). Of those who tested positive, 92.6% have been treated to date.

During the 2006–2007 school year, these 3 screening programs (public school, charter school and HRC school) combined identified more than 974 students infected with chlamydia, gonorrhea or both STDs. The treatment of these students has prevented hundreds of cases of PID and avoided the transmission of these infections to hundreds more. The STD Control Program continues to search for new venues and innovative programs to reach adolescents, who are disproportionately affected by these diseases.

Figure 27. Percent of Students Testing Positive for CT and/or GC by Gender and School Year



Other Reportable DISEASES AND CONDITIONS

ACQUIRED- IMMUNODEFICIENCY SYNDROME (AIDS)

The City of Philadelphia is the epicenter of the HIV/AIDS epidemic in Pennsylvania. In 2006, 699 cases of AIDS were diagnosed and reported to the AIDS Activities Coordination Office (AACO) Surveillance Unit. The AIDS epidemic in Philadelphia disproportionately affects African Americans (72% of cases) as compared to Whites (16%) and Hispanics (11%). This indicates that a change in the epidemic has occurred over time with newer cases of AIDS more likely to occur in blacks than in whites. More than two-thirds of cases (68%) were among males, and approximately two-thirds of cases (59%) were among persons 20-44 years of age. In contrast with the early years of the epidemic, heterosexual contact was the dominant mode of transmission (49%), compared to homosexual contact (26%) and injection drug use (23%).

HUMAN- IMMUNODEFICIENCY VIRUS (HIV)

Name-based reporting of HIV diagnoses was implemented in October of 2005. AACO maintains a database of newly diagnosed HIV reported from laboratories and hospitals across the city. 703 cases of HIV (non-AIDS) were diagnosed and reported to AACO in 2006. Due to changing reporting requirements, however, this likely underestimates the true number of new infections in Philadelphia.

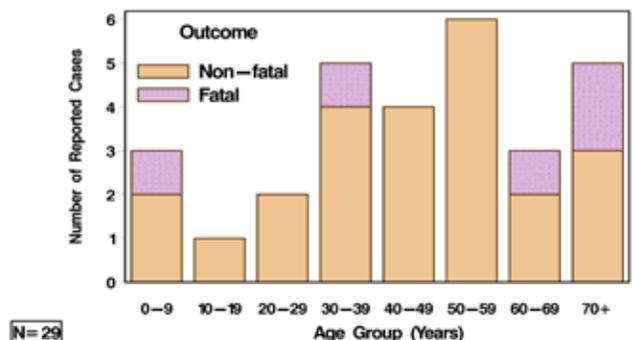
GROUP A *STREPTOCOCCUS* (GAS)

Group A *Streptococcus* (GAS) causes a spectrum of human infections, from pharyngitis and mild soft-tissue infections to life-threatening toxic shock. GAS is typically spread through direct contact with infected pharyngeal secretions, skin, or wounds. Invasive GAS infection is a reportable condition in Philadelphia; a confirmed case

of GAS infection is defined by the Centers for Disease Control (CDC) as any infection where the organism is isolated from a normally sterile site, including cerebrospinal fluid, blood, joint, pleural, or pericardial fluid. Cases of Streptococcal Toxic Shock Syndrome (STSS) are also considered to be invasive GAS infections.

In 2006, there were 37 reported cases of invasive GAS, with a citywide incidence of 2.5 per 100,000 persons. This is somewhat higher than the Philadelphia incidence rate of 1.8 per 100,000 in 2005; however, there were no known links between cases. GAS was isolated from blood in 34 cases (92%); the remaining 3 cases were confirmed by the isolation of GAS in synovial fluid, muscle, and brain tissue. Sixteen (43%) of the cases were in females. There were 3 known fatalities. The age and death distribution of cases is shown in Figure 28.

Figure 28. Group A Strep by Age Group and Outcome: Philadelphia, 2006



There were no reported clusters or outbreaks of invasive GAS in Philadelphia in 2006. Division of Disease Control (DDC) identifies and investigates GAS clusters or outbreaks, facilitates collection and transport of clinical specimens for molecular typing, and offers guidelines for the management of institutional GAS outbreaks.

ANIMAL EXPOSURES AND ANIMAL RABIES TESTING

In Philadelphia, animal bites are reportable to the DDC. In addition, DDC maintains records of other reported animal exposures, such as scratches or contact with bodily fluids, in which there was a risk of rabies exposure. In 2006, DDC received reports of 1,457 animal exposures (including bites). Reported exposure types included 1,412 bites (96.9%), 24 scratches (1.7%), and 21 other exposures (1.4%).

Dogs and cats accounted for 74.3% and 21.8% of all reported exposures, respectively. The other species of animals with reported exposures included bats (19), rats (10), squirrels (7), mice (4), guinea pigs (4), ferrets (3), opossums (2), raccoons (2), fox (1), groundhog (1), rabbit (1), skunk (1), and hamster (1). An owner of the animal involved was identified for 61.3% of incidents. In 236 bite incidents (16.2%), it is known that victims were bitten by a pet from their own household.

Age of the bite victim was available in 1,326 (91.0%) of the exposure incidents. Among these, the median age was 24 years. For children, reported bites were more frequent among boys than among girls. The age and gender distribution of cases is in Figure 29.

In 2006, the Philadelphia Public Health Laboratory tested 66 animals for rabies by direct fluorescent antibody staining of brain tissue. The animals tested included 37 cats, 14 dogs, 11 bats, 2 raccoons, a skunk, and a squirrel.

rel. Among all Philadelphia animals tested for rabies, 2 were positive: a bat and a skunk. Rabies post exposure prophylaxis was recommended for all potential contacts of these animals.

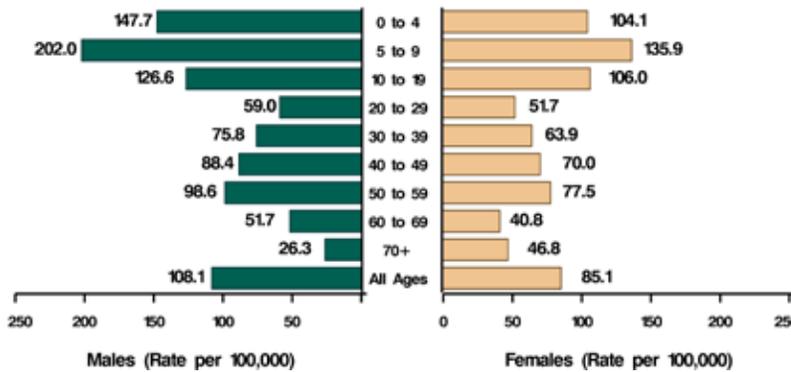
The most recent complete United States (US) rabies surveillance data are from 2005, when 6,418 cases of rabid animals were reported to CDC. The most commonly reported species were raccoons (39.5%), skunks (23.0%), bats (21.9%), and foxes (5.9%). Among US states, Pennsylvania ranked fifth in the number of reported rabies cases in animals in 2005 (413 positive animals). These 413 animals included 254 raccoons, 55 skunks, 29 domestic cats, 39 bats, and 19 foxes.

In 2006, 2 US cases of rabies in humans were reported to CDC, including a 10-year old bitten by a dog in the Philippines 2 years previously. Neither patient survived even though both received treatment similar to the Wisconsin teenage girl who survived in 2004.

In recent years, most human cases of rabies in the US have been associated with exposure to bats carrying the rabies virus.

Therefore, in the event that a person is exposed to a bat and the bat is not available for testing, rabies post exposure prophylaxis (PEP) is indicated. To arrange for rabies fluorescent antibody testing of animals, or for medical consultation on the management of animal exposure incidents, contact DDC at (215) 685-6748. General PEP guidelines are also available at: http://www.phila.gov/health/units/ddc/Zoonotic_Diseases.html

Figure 29. Rates of Animal Exposures per 100,000 Population by Age and Gender: Philadelphia, 2006



Special PROJECTS

SYNDROMIC SURVEILLANCE

As part of the effort to detect bioterrorist attacks or significant naturally-occurring disease events, the Division of Disease Control (DDC), in conjunction with area health partners, constructed an active surveillance system that monitors emergency department (ED) visits and 911 emergency medical calls. De-identified data from hospital triage logs and 911 medical calls are received daily, and analyzed within a 24-hour timeframe. More specifically, each visit or call is assigned a syndrome of public health interest. The collective daily syndromic proportions are then monitored over time and statistical algorithms are used to detect significant changes in trends established from previous days. Aberrations are carefully scrutinized and if unusual, then they are investigated.

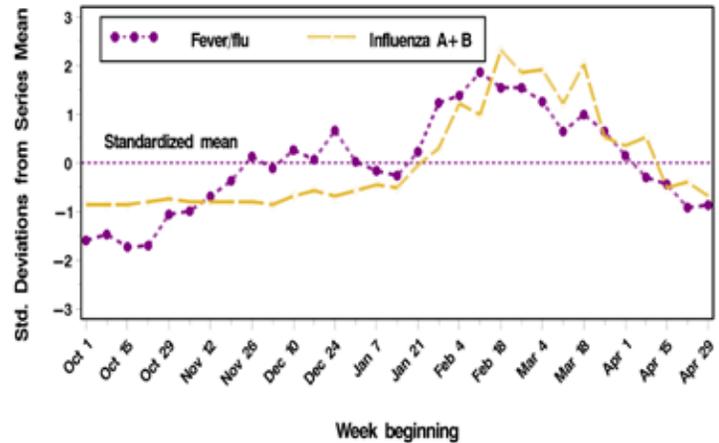
ED surveillance

During 2006, 944,866 ED visits from 23 hospitals were analyzed for syndromic categorization and detection of statistical anomalies. This resulted in the identification of roughly 1,200 statistically significant hospital-specific or city-wide (aggregate) increases for the various syndromes. Approximately 18 were determined to warrant additional investigation, of which none were found to be outbreak-related.

Despite the lack of outbreak detections, however, evidence suggests that ED syndromic surveillance has utility in detecting larger scale disease spread, or seasonal epidemics. In late December flu-like complaints began to increase among the participating hospitals, in conjunction with increases in laboratory positive counts of influenza received from clinical laboratories (Figure 30). Results were disseminated to the medical community to assist with clinical decision making.

In addition to syndromic surveillance, we scan ED visit chief complaints and discharge diagnoses for the identification of reportable conditions. For 2006, 29 notifiable conditions were discovered that had not yet been reported through other surveillance systems.

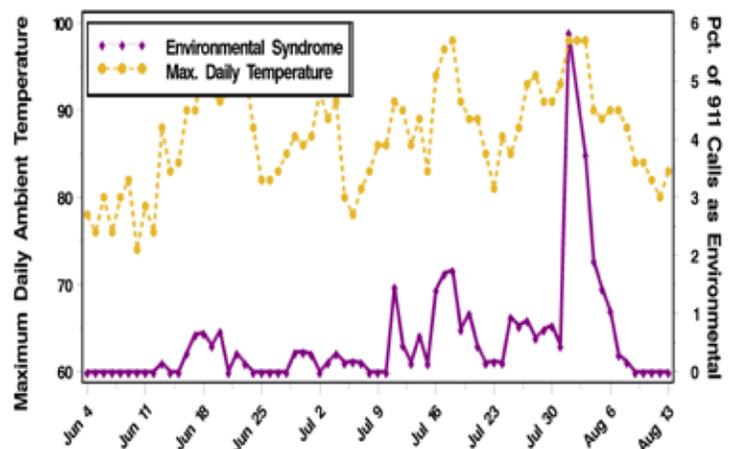
Figure 30. Time-Series Comparison of Fever/flu Syndrome And Positive Influenza Specimens (Flu A + B), 2006–2007 Season



911 emergency call surveillance

Similar surveillance of 911 medical calls was completed for 2006, marking the 2nd year of this project. In sum, we received information on 213,074 calls from the Emergency Operations Center in Philadelphia. Of note, this data source appeared to support ED evidence of the budding flu season prior to identification of positive laboratory isolates (data not shown) and also was instrumental in providing an estimate of the morbidity surrounding summertime ambient temperature increases in the city (Figure 31).

Figure 31. Time-Series Comparison of 911 Emergency Environmental Calls and Maximum Daily Ambient Temperature, 2006



VARICELLA ACTIVE SURVEILLANCE PROJECT

The PDPH's Varicella Active Surveillance Project (VASP) completed its 12th year monitoring the occurrence and epidemiology of varicella in the target area of West Philadelphia during 2006. (Please see the Vaccine Preventable Diseases section of this report for information on citywide varicella surveillance.) VASP has continued to work with community-based sites to conduct active disease surveillance of varicella and herpes zoster (HZ, shingles) in individuals less than 20 years of age from West Philadelphia as well as varicella-zoster virus (VZV) related studies. VASP expanded its surveillance system in 2006 to better conduct active HZ surveillance among adults 50 years of age and older in West Philadelphia. Currently, state and local health departments do not routinely conduct HZ disease surveillance.

Varicella Active Surveillance

In 2006, a total of 102 confirmed cases of varicella were reported from the VASP surveillance area of West Philadelphia. Varicella morbidity has remained much lower than 1995 (Figure 32) when the varicella vaccine was licensed for use in the US. The number of reported varicella cases in 2006 was similar to 2005 (102 vs. 108). Since 1995, varicella vaccine coverage rates among children 19 to 35 months in Philadelphia have increased from 43% in 1997 to 94% in 2005, according to the National Immunization Survey.

Schools and primary care facilities/physicians were the greatest sources of varicella case reports received by the VASP in 2006, accounting for 28% and 27% of all reported cases during the year, respectively. In 2006, the number of cases in all age groups remained dramatically lower than (Table 3). Over one-half of the year 2006 cases (57%) were 1 to 9 years; however, the vast majority (93%) of these cases were vaccinated against varicella. It must be noted that school entry regulations for varicella immunity covered grades Kindergarten

through eleventh grade in Fall 2006.

Four varicella cases (all unvaccinated adults) were hospitalized as a result of their illness in 2006. No varicella-related deaths in Philadelphia residents were reported to VASP in 2006. Only one varicella-related death from West Philadelphia has occurred, since the start of the project.

Herpes Zoster Active Surveillance Among Children and Adolescents

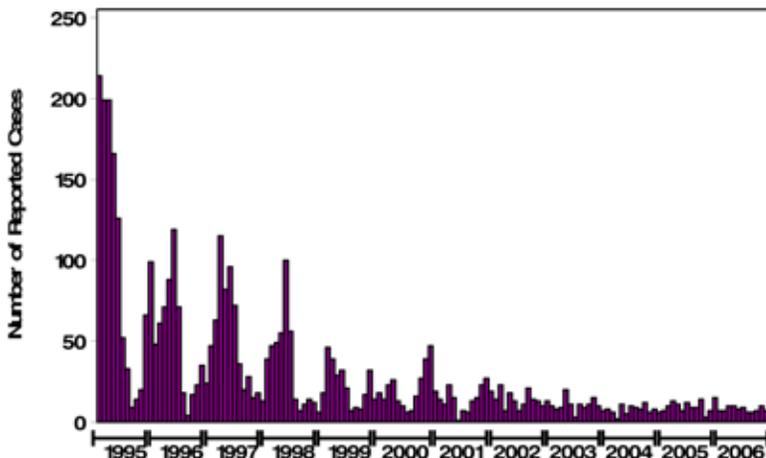
Although surveillance of HZ (shingles) has been in place throughout the course of the project, extensive investigation of reported cases less than 20 years of age did not start until January 2000. Twenty-two confirmed HZ cases less than 20 years of age from West Philadelphia were reported to VASP in 2006. Ages of the HZ cases ranged from 3 to 19 years with a median age of 15 years. The annual number of confirmed HZ cases less than 20 years of age from West Philadelphia reported to VASP has remained somewhat level for the <1, 1-4, 5-9, and 10-14 year old age groups since 2000. HZ cases among those 9 years of age and younger continue to be rare. An initial increase in the reported HZ cases among older adolescents aged 15-19 years occurred from 2000 to 2001, and may be attributed to improvements in reporting of this disease by VASP surveillance sites and the receipt of electronic billing reports for varicella and HZ from hospital systems within the City of Philadelphia. Since 2001, the annual number of HZ cases among 15-19 year olds has fluctuated between 9 and 22 cases. Of the 22 HZ cases from year 2006, 18 (82%) reported a history of varicella; 3 (14%) reported prior varicella vaccination; and 1 (5%) could not recall having disease or receiving varicella vaccine. No HZ cases less than 20 years of age were hospitalized in 2006.

Adult Herpes Zoster Surveillance

During 2006, VASP began active surveillance of HZ among adults 50 years of age and older in the target area of West Philadelphia. Data from these cases will broaden our ongoing evaluation of the varicella vaccination program's impact on VZV disease occurrence and address concerns regarding potential increases in adult HZ associated with the varicella vaccination program. Both baseline and post-vaccine-licensure data on HZ incidence also will be needed to evaluate the shingles vaccine, which was licensed in May 2006 to prevent HZ among older adults.

In 2006, VASP received 154 confirmed HZ case reports among West Philadelphia residents 50 years of age and older. As expected, the year 2006 HZ rates increased with age from 1.7 cases per 1,000 population among 50-59 year olds to 2.9 cases per 1,000 and 2.8 cases per 1,000 population among 70-79 year olds and those aged >80 years, respectively. One adult HZ case received the shingles vaccine prior to HZ; however, the time interval between vaccination and rash onset was only 16 days. Most of the adult HZ cases (128, 83%)

Figure 32. Varicella, Cases by Month of Onset: West Philadelphia, 1995—2006



experienced pain. Among those with pain, 96 have completed the Post Herpetic Neuralgia (PHN) inventory interview, which is administered 4 months after the HZ rash has healed. Slightly under one-third (30, 31%) of those who completed the PHN inventory were classified as having PHN or persistent pain at the location of the VZV reactivation after the HZ rash had resolved and >90 days after rash onset. Of the 154 adult HZ cases occurring during 2006, 15 (10%) were hospitalized, and none of the HZ-related hospitalizations resulted in death.

Table 3. Varicella, Cases by Age Group: West Philadelphia, 1995-2006*

| Year | Age Group (Years) | | | | | | Missing | Total |
|------|-------------------|----------|----------|-----------|-----------|---------|---------|-------|
| | <1 (%) | 1-4 (%) | 5-9 (%) | 10-14 (%) | 15-19 (%) | ≥20 (%) | | |
| 2006 | 2 (2) | 31 (30) | 27 (26) | 25 (25) | 5 (5) | 12 (12) | 0 | 102 |
| 2005 | 7 (6) | 30 (28) | 29 (27) | 13 (12) | 6 (6) | 23 (21) | 0 | 108 |
| 2004 | 7 (8) | 31 (34) | 29 (32) | 4 (4) | 10 (11) | 11 (12) | 0 | 92 |
| 2003 | 11 (9) | 34 (26) | 34 (26) | 22 (17) | 5 (4) | 24 (19) | 0 | 130 |
| 2002 | 10 (6) | 49 (29) | 44 (26) | 26 (15) | 9 (5) | 32 (19) | 0 | 170 |
| 2001 | 5 (3) | 46 (26) | 71 (41) | 17 (10) | 8 (5) | 27 (16) | 0 | 174 |
| 2000 | 12 (5) | 60 (24) | 123 (49) | 30 (12) | 7 (3) | 18 (7) | 0 | 250 |
| 1999 | 11 (4) | 48 (18) | 133 (49) | 43 (16) | 19 (7) | 17 (6) | 0 | 271 |
| 1998 | 15 (4) | 99 (24) | 189 (46) | 56 (14) | 17 (4) | 34 (8) | 0 | 410 |
| 1997 | 32 (5) | 166 (27) | 284 (47) | 52 (9) | 22 (4) | 49 (8) | 0 | 605 |
| 1996 | 28 (5) | 189 (33) | 235 (41) | 65 (11) | 15 (3) | 44 (8) | 3 | 579 |
| 1995 | 36 (3) | 361 (30) | 533 (45) | 162 (14) | 39 (3) | 60 (5) | 6 | 1,197 |

*Removal of stratified sampling of child-care sites after year 1999. All West Philadelphia child-care centers with 15 or more attendees were included as surveillance sites starting in year 2000.

Public Health

PREPAREDNESS

PUBLIC HEALTH EMERGENCY PREPAREDNESS UPDATE – 2006

Public health emergency preparedness has been a focus for the Division of Disease Control (DDC) since 1999. This summary highlights some of the major activities of this program in 2006.

Enhanced Disease Surveillance

Since 2000, DDC has been exploring active surveillance initiatives geared towards improving existing notifiable disease surveillance and also establishing systems of early event detection. Over the years, a comprehensive surveillance program has been developed. This currently includes: 1) laboratory-based respiratory and enteric virus surveillance, 2) reviews of medical examiner autopsy reports, and 3) syndromic surveillance of emergency department visits and 911 medical calls (described in detail within the Special Projects section). In 2006, this enhanced surveillance assisted with the assessment of morbidity related to extreme weather, contaminated heroin, and seasonal influenza transmission.

Pandemic Influenza Preparedness

In the spring of 2006, the Philadelphia Department of Public Health (PDPH) completed the first draft of a public health response plan for pandemic influenza and posted this plan on the city's public website. This plan has been updated several times since that first posting, and DDC planners and clinicians have developed specific guidance for sectors on which a pandemic may have a unique impact – the business community, and schools for children ages K-12 – (available on www.phila.gov/ready). In May 2006, PDPH convened a medical advisory group drawing from healthcare professionals and planners in city hospitals. This first meeting launched a joint process between PDPH and the local healthcare community to develop specific guidelines for healthcare planning in the city. Written guidelines to assist healthcare facilities with pandemic planning will be completed in 2007.

Planning – Mass Prophylaxis and the Cities Readiness Initiative

In the fall of 2004, Philadelphia became one of the first 21 cities in the country to participate in the federal Cities Readiness Initiative program, a grant-supported initiative to support planning for mass prophylaxis in the country's major urban areas. Since that time, DDC has developed a scalable plan for mass prophylaxis and vaccination relying on Points of Dispensing or PODS, located throughout the city. The PDPH has conducted 2 field exercises using this model, testing both dispensing and vaccination protocols. The planning and logistical preparations for this project were used to support a field operation run by PDPH at the Philadelphia International Airport in July 2006 for US subjects repatriated from Lebanon during the conflict in that country. As part of this planning effort, PDPH launched a volunteer Medical Reserve Corps to provide healthcare professionals with opportunities to provide their services during public health emergencies. Further information regarding the MRC can be found at:

www.phila.gov/mrc.

Appendix A: **ANTIBIOTIC RESISTANCE IN**
Selected Enteric Pathogens

| Pathogen | Antibiotics Tested | Total Tested | Resistant n (%) | Intermediate n (%) |
|----------------------|-------------------------------|---------------------|------------------------|---------------------------|
| <i>Campylobacter</i> | | | | |
| | Ciprofloxacin | 16 | 6 (38) | 0 (0) |
| | Erythromycin | 16 | 2 (13) | 0 (0) |
| <i>Salmonella</i> | | | | |
| | Ampicillin | 224 | 18 (8) | 0 (0) |
| | Ceftriaxone | 83 | 3 (4) | 0 (0) |
| | Ciprofloxacin | 185 | 1 (0.5) | 0 (0) |
| | Trimethoprim-Sulfamethoxazole | 211 | 1 (0.5) | 0 (0) |
| <i>Shigella</i> | | | | |
| | Ampicillin | 9 | 8 (89) | 0 (0) |
| | Ciprofloxacin | 10 | 1 (10) | 0 (0) |
| | Trimethoprim-Sulfamethoxazole | 10 | 0 (0) | 0 (0) |

PHILADELPHIA DEPARTMENT OF PUBLIC HEALTH DIVISION OF DISEASE CONTROL (DDC)

Report: 215-685-6748

Fax: 215-545-8362

For after hours immediate reporting & consultation: 215-686-1776 – ask for Division of Disease Control on-call staff

REPORTABLE DISEASES AND CONDITIONS

| | |
|--|---|
| <p>Acquired Immune Deficiency Syndrome (AIDS/HIV) ‡</p> <p>Amebiasis</p> <p>Animal bites (wild/stray/domestic)</p> <p>Anthrax *</p> <p>Botulism *</p> <p>Brucellosis *</p> <p>Campylobacteriosis</p> <p><i>Chlamydia trachomatis</i> including lymphogranuloma venereum (LGV)</p> <p>Chancroid</p> <p>Cholera *</p> <p>Creutzfeldt-Jakob disease</p> <p>Cryptosporidiosis</p> <p>Cyclosporiasis</p> <p>Diphtheria *</p> <p>Ehrlichiosis</p> <p>Encephalitis including all arboviruses *</p> <p><i>Escherichia coli</i> O157:H7 *</p> <p>Food poisoning *</p> <p>Giardiasis</p> <p>Gonococcal infections</p> <p>Guillain-Barré syndrome</p> <p><i>Haemophilus influenzae</i>, invasive disease *</p> <p>Hantavirus Pulmonary Syndrome *</p> <p>Hepatitis A</p> <p>Hepatitis B</p> <p>Hepatitis C</p> <p>Hepatitis, other viral</p> <p>Histoplasmosis</p> <p>Influenza – pediatric mortality and institutional outbreaks</p> <p>Lead poisoning</p> <p>Legionnaires' disease *</p> <p>Leprosy (Hansen's disease)</p> <p>Leptospirosis (Weil's disease)</p> | <p>Listeriosis *</p> <p>Lyme disease</p> <p>Malaria</p> <p>Measles (rubeola) *</p> <p>Meningitis - all types</p> <p>Meningococcal infections *</p> <p>Mumps</p> <p>Pelvic inflammatory disease</p> <p>Pertussis (whooping cough)</p> <p>Plague *</p> <p>Poliomyelitis *</p> <p>Psittacosis (ornithosis)</p> <p>Rabies *</p> <p>Rickettsial diseases</p> <p>Rubella (German Measles) & Congenital Rubella *</p> <p>Severe Acute Respiratory Syndrome (SARS) *</p> <p>Salmonellosis</p> <p>Shigellosis</p> <p>Smallpox *</p> <p><i>Staphylococcus aureus</i>, vancomycin insensitive</p> <p>Streptococcal disease, invasive group A</p> <p><i>Streptococcus pneumoniae</i>, invasive disease</p> <p>Syphilis</p> <p>Tetanus</p> <p>Toxic Shock Syndrome</p> <p>Trichinosis</p> <p>Tuberculosis §</p> <p>Tularemia *</p> <p>Typhoid (<i>Salmonella typhi</i> and <i>paratyphi</i>) *</p> <p>West Nile Virus *</p> <p>Varicella, including zoster</p> <p>Yellow Fever and other viral hemorrhagic fevers *</p> |
|--|---|

* Report suspected and confirmed cases within 24 hours ‡ Report to AIDS Activities Coordinating Office at 215-685-4781
 All other cases should be reported within 5 days § Report to TB Control Program at 215-685-6744 or -6873
All unusual disease clusters, disease outbreaks, and unusual disease occurrences should be reported immediately

To Report a Case Call, Fax or Submit through NEDSS the Following Information to DDC:

Condition | Patient Name, Age/DOB, Sex, Address & Phone | Clinician Name, Address & Phone

Identification of Patient

| | | |
|---|--------------------------|---|
| Report Date (Mo., Day, Yr.) | Name (Last, First, M.I.) | Parent or caretaker (if applicable) |
| | | |
| Address (Number, Street, Apt #, City, Zip Code) | | Telephone (H) _____ |
| | | (W) _____ |
| | | (C) _____ |
| DOB (Mo., Day, Yr.) | Age | Sex |
| | | <input type="checkbox"/> M <input type="checkbox"/> F |
| Occupation | | |
| Name of Employer or School | | Address (Number, Street, City, Zip Code) |

Medical Information

| | | | |
|---|---|--|------------------------------|
| Disease or Condition | Date of Onset (Mo., Day, Yr.) | Diagnosis (check one) | Fatal (check one) |
| | <i>(If animal bite, Date it Occurred)</i> | <input type="checkbox"/> Clinical | <input type="checkbox"/> Yes |
| | | <input type="checkbox"/> Lab confirmed | <input type="checkbox"/> No |
| Chief Symptoms / Complaints | | Suspected source of Infection (if known) | |
| If Case Hospitalized (Name of Hospital) | | Admission Date | Discharge Date |
| | | | |

Laboratory Information If Pertinent (Attach Copies If Applicable)

| Name of Tests Done | Site/Source | Results | Dates Done |
|--------------------|-------------|---------|------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Animal Exposures

| | | | |
|----------------------|----------------|--|---|
| Parts of Body Bitten | Type of Animal | Breed of Animal | Current Location Of Animal <i>(Indicate if available for testing)</i> |
| | | | |
| Name of Owner | | Address of Owner (Number, Street, Apt #, City, Zip Code) | |
| | | | |

Reporter Information

| | | |
|-------------------------------|---|-------|
| Name of Person Reporting Case | Reporter | Phone |
| | <input type="checkbox"/> ICP <input type="checkbox"/> ED <input type="checkbox"/> Other _____ | |
| Reporting Institution | Address (Number, Street, City, Zip Code) | |
| | | |

DO NOT WRITE IN AREA BELOW - FOR DEPARTMENT USE

| | |
|--------------------------------|---|
| Name (Person Receiving Report) | Method of reporting |
| | <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> Mail <input type="checkbox"/> Active Surveillance <input type="checkbox"/> Other _____ |

Any unusual illness, disease clusters or possible outbreaks should be reported *immediately* by telephone.
 Please fax all completed reports to 215-545-8362, or call 215-685-6748 to report case by phone.

Appendix D: Annual Communicable Disease Reports

PHILADELPHIA DEPARTMENT OF PUBLIC HEALTH
DIVISION OF DISEASE CONTROL

| (NR = Not reportable, NA = Not available) | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| ACQUIRED IMMUNODEFICIENCY SYNDROME | 1,173 | 1,001 | 891 | 1,224 | 947 | 893 | 914 | 848 | 760 | 508 | 699 |
| AMEBIASIS | 9 | 27 | 4 | 15 | 31 | 30 | 20 | 18 | 9 | 6 | 4 |
| ANIMAL BITES/EXPOSURES | 2,184 | 2,120 | 2,345 | 2,130 | 2,096 | 1,894 | 1,922 | 1,612 | 1,353 | 1,418 | 1,457 |
| ANTHRAX | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BOTULISM | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 3 | 0 | 1 | 1 |
| BRUCELLA | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| CAMPYLOBACTERIOSIS | 193 | 157 | 142 | 132 | 148 | 90 | 97 | 114 | 96 | 74 | 73 |
| CHLAMYDIA TRACHOMATIS | 8,118 | 10,480 | 11,763 | 12,660 | 13,593 | 13,586 | 15,234 | 17,747 | 16,723 | 15,577 | 17,199 |
| CHOLERA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CRYPTOSPORIDIOSIS | 20 | 14 | 14 | 24 | 22 | 13 | 15 | 19 | 19 | 27 | 29 |
| CYCLOSPORIASIS | NR | NR | NR | NR | NR | 1 | 0 | 2 | 0 | 3 | 0 |
| DIPHTHERIA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ENCEPHALITIS, PRIMARY excluding West Nile Virus | 1 | 5 | 0 | 1 | 1 | 5 | 6 | 9 | 6 | 0 | 0 |
| ESCHERICHIA COLI, shiga-toxin producing (STEC) | 5 | 3 | 6 | 7 | 6 | 42 | 17 | 14 | 11 | 7 | 19 |
| GIARDIASIS | 180 | 179 | 130 | 105 | 132 | 120 | 135 | 113 | 104 | 93 | 81 |
| GONORRHEA | 6,415 | 6,504 | 7,271 | 7,776 | 8,170 | 8,061 | 7,277 | 5,731 | 5,206 | 5,053 | 5,218 |
| GUILLIAN-BARRE SYNDROME | 1 | 1 | 0 | 2 | 3 | 2 | 2 | 0 | 0 | 1 | 2 |
| HAEMOPHILUS INFLUENZAE [# type b] | NR [4] | NR [2] | NR [0] | NR [0] | NR [0] | 7 [1] | 8 [1] | 14 [1] | 9 [0] | 14 [0] | 16 [0] |
| HEPATITIS A | 269 | 176 | 133 | 62 | 255 | 98 | 70 | 179 | 39 | 17 | 14 |
| HEPATITIS B, ACUTE | 134 | 171 | 155 | 152 | 134 | 111 | 97 | 51 | 60 | 27 | 21 |
| HEPATITIS C, ACUTE, (Non-A, Non-B until 1998) | 0 | 7 | 0 | 3 | 1 | 1 | 4 | 3 | 0 | 2 | 1 |
| HISTOPLASMOSIS | 0 | 1 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 1 |
| HUMAN IMMUNODEFICIENCY VIRUS | NR | 703 |
| LEGIONELLOSIS | 8 | 9 | 15 | 15 | 19 | 3 | 10 | 23 | 31 | 19 | 21 |
| LEPTOSPIROSIS | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| LISTERIOSIS | 3 | 6 | 5 | 10 | 12 | 8 | 19 | 11 | 11 | 2 | 7 |
| LYME DISEASE | 225 | 184 | 179 | 220 | 165 | 99 | 179 | 164 | 182 | 172 | 139 |
| MALARIA | 8 | 10 | 11 | 10 | 11 | 16 | 16 | 19 | 13 | 14 | 15 |
| MEASLES | 1 | 7 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| MENINGITIS, ASEPTIC | 11 | 39 | 26 | 25 | 68 | 71 | 112 | 120 | 87 | 95 | 66 |
| MENINGITIS, BACTERIAL | 10 | 32 | 12 | 15 | 23 | 15 | 21 | 7* | 4* | 4* | 1* |
| MENINGOCOCCAL INFECTIONS | 18 | 15 | 13 | 13 | 24 | 12 | 15 | 15 | 14 | 8 | 2 |
| MUMPS | 9 | 5 | 1 | 5 | 2 | 1 | 1 | 2 | 1 | 2 | 2 |
| PERTUSSIS | 100 | 46 | 31 | 44 | 61 | 34 | 31 | 98 | 109 | 75 | 50 |
| PLAGUE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| POLIOMYELITIS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RABIES (Human) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RICKETTSIAL DISEASES, including RMSF | 1 | 1 | 1 | 4 | 0 | 2 | 4 | 0 | 7 | 3 | 8 |
| RUBELLA, including congenital rubella syndrome | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SALMONELLOSIS, excluding typhoid | 424 | 395 | 319 | 346 | 328 | 287 | 324 | 316 | 261 | 305 | 293 |
| SHIGELLOSIS | 412 | 361 | 123 | 129 | 115 | 139 | 191 | 696 | 31 | 31 | 14 |
| STREP PNEUMONIAE, INVASIVE | NR | 101 | 94 | 151 | 139 |
| STREPTOCOCCUS, INVASIVE Gp. A[# with TSS] | NR | NR | NR | NR | NR | 14 [7] | 16 [1] | 43 [3] | 24 [3] | 27 [0] | 37 [0] |
| SYPHILIS -PRIMARY & SECONDARY | 141 | 108 | 89 | 69 | 67 | 77 | 71 | 98 | 72 | 86 | 125 |
| SYPHILIS- CONGENITAL | 63 | 35 | 24 | 8 | 9 | 4 | 4 | 3 | 0 | 2 | 0 |
| SYPHILIS- TOTAL | 1,298 | 1,091 | 796 | 826 | 622 | 639 | 589 | 587 | 470 | 417 | 540 |
| TETANUS | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOXIC SHOCK SYNDROME, staphylococcal | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| TUBERCULOSIS | 250 | 233 | 179 | 184 | 169 | 144 | 147 | 120 | 129 | 116 | 149 |
| TULAREMIA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TYPHOID FEVER | 2 | 1 | 4 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 4 |
| VARICELLA | N/A** | 614 | 787 |
| WEST NILE VIRUS | NR | NR | NR | NR | 0 | 2 | 6 | 24 | 1 | 0 | 1 |
| YELLOW FEVER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

* excluding *Neisseria meningitidis*, *Haemophilus influenzae*, *Listeria*, and invasive *Streptococcus pneumoniae*. Beginning in 2003,

S. pneumoniae meningitis was counted with other *S. pneumoniae* cases.

**Citywide varicella data not available for these years.