Reportable Disease Surveillance in Virginia, 2006

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Introduction

The Virginia Department of Health, Office of Epidemiology is pleased to present its nineteenth annual report of disease surveillance activities. This report summarizes morbidity data reported by the Virginia Department of Health, Office of Epidemiology to the federal Centers for Disease Control and Prevention (CDC) during calendar year 2006.

The Office of Epidemiology, in conjunction with health departments in districts throughout Virginia, is responsible for the ongoing statewide surveillance of diseases according to the provisions of the *Regulations for Disease Reporting and Control.* Disease surveillance involves the collection of pertinent data, the tabulation and evaluation of the data, and the dissemination of the information to all who need to know. These data provide the foundation for public health activities to reduce morbidity.

Diseases must be diagnosed and reported to the health department before case investigations can occur and disease control activities can begin. Physicians, personnel in medical care facilities, laboratories, and other health care providers are therefore key to the surveillance process. By reporting diseases, health care personnel aid the health department in identifying unusual disease patterns occurring in the community. The health department notifies physicians of these unusual disease patterns, which helps physicians provide a more rapid diagnosis and treatment of individuals who present with compatible symptoms.

This report summarizes those diseases and conditions that are either listed as officially reportable in the *Regulations for Disease Reporting and Control* or that represent other communicable diseases of public health interest that were reported to the Virginia Department of Health. The report is divided into four sections as described below.

Introduction and Data Summary: Tables summarizing 2006 morbidity are included in this introductory section. These tables include the list of reportable diseases; ten year trends; the number of reports and incidence rate per 100,000 population for selected diseases by health planning region, age group, race, and sex; and the number and percent of reports by quarter of onset.

Descriptive Epidemiology of Reportable Diseases: This section consists of narrative and graphics summarizing the populations reported with each disease or condition. Included is information about the total number of cases reported; the ten year trend in reported cases; the demographics of cases in terms of their age, race and sex; and the distribution of cases by date of onset and health planning region of the state. Mortality, microbial species, and other attributes of diseases also are presented when applicable. Sources of information include the CDC (http:// www.cdc.gov/) and *Infectious Disease Epidemiology* (Nelson, K., Williams, C., & Graham, N., 2004).

Population-based rates are often presented to provide a measure of disease frequency in the population and to allow for comparisons between groups. In calculating rates, population estimates for 2005 prepared by the United States Census Bureau for the state's cities and counties and total population were used. Some additional notes on coding are listed below.

Race is usually presented as black, white, or other. The "other" race category includes Asian/ Pacific Islanders, American Indians, and Alaskan Natives.

Date of onset is used whenever it is available. Onset is the time at which symptoms first occurred. Some cases reported in 2006 experienced onset prior to the year of report. In some situations information is only available on the date of report, or the date the report was first received by the health department, and these dates are used in place of date of onset. Date of specimen collection or date of diagnosis may also be used to estimate date of onset.

To the extent possible, rates are calculated based on residence of the patient. When the address of the patient is neither reported by the health care provider nor ascertained by the health department, then the location of the reporting source, i.e., the physician, hospital, or laboratory, is used.

Number of Cases and Rate by Locality: This section of the report presents the number of cases and incidence rate per 100,000 population for selected diseases by locality, district, and health planning region. Cities and counties that have separate health departments are listed individually. Those that share one health department are combined. Caution is urged in interpreting the data in this section as well as in the following section. Localities with small populations may have large disease rates but only a few reported cases of disease. Both number of cases and incidence rates should be weighed when using these tables to rank morbidity by city or county.

Maps of Incidence Rates: The first map in this section illustrates the location of the health planning regions in Virginia. Following that, disease-specific maps are presented which depict the incidence rates listed in the previous section. The last map is a transparency that shows the various cities and counties in Virginia. For each disease-specific map, the rates have been divided into four categories using the following process:

Category 1 – Localities reporting zero cases of the disease.

Category 2 – Localities with an incidence rate greater than zero and up to the mean for the state.

Category 3 – Localities with an incidence rate greater than the mean and up to one standard deviation above the mean for the state.

Category 4 – Localities with an incidence rate greater than one standard deviation above the mean for the state.

The Office of Epidemiology hopes that the readers of this report will find it to be a valuable resource for understanding the epidemiology of reportable diseases in Virginia. Any questions or suggestions about this report may be directed to Les Branch, Virginia Department of Health, Office of Epidemiology, P.O. Box 2448, 109 Governor St., 5th Floor, Richmond, Virginia 23218. Phone number 804-864-8141.

Data Summary

Following this section are pages containing tables of statewide summary data for selected diseases. Table 1 is a list of reportable conditions in Virginia in 2006. Table 2 presents the number of cases of selected diseases reported annually during the past ten years. The number of cases of selected diseases reported for 2006 is delineated by age group in Table 3, by race in Table 4, and by sex in Table 5. Table 6 shows number of cases and rate per 100,000 population by health planning region. Table 7 provides the number and percent of cases with onset by quarter of the year. A brief summary of the major findings presented in these tables follows.

TREND – Notable increases in numbers of cases (>5%) were observed for the following diseases in 2006 compared to 2005: amebiasis, campylobacteriosis, chickenpox, *Chlamydia trachomatis* infection, Shiga toxin-producing *Escherichia coli* infection, invasive *Haemophilus influenzae* infection, HIV infection, legionellosis, listeriosis, Lyme disease, malaria, mumps, Q fever, rabies in animals, invasive group A streptococcal disease, invasive *Streptococcus pneumoniae* in children less than 5 years old, early syphilis, and *Vibrio* infection. Notable decreases occurred for the number of cases of AIDS, cryptosporidiosis, cyclosporiasis, ehrlichiosis, giardiasis, gonorrhea, hepatitis A, acute hepatitis B, acute hepatitis C, Kawasaki syndrome, meningococcal infection, pertussis, Rocky Mountain spotted fever, salmonellosis, shigellosis, and tuberculosis.

AGE – Infants (age <1 year) had the highest incidence rates for campylobacteriosis, cryptosporidiosis, Shiga toxin-producing *Escherichia coli* infection, Kawasaki syndrome, listeriosis, meningococcal infection, pertussis, salmonellosis, invasive group A streptococcal disease and reportable invasive *Streptococcus pneumoniae* in children less than 5 years old. They showed the lowest rates for Lyme disease and tuberculosis. Among the conditions for which reports were received in 2006, no cases of amebiasis, arboviral infection, Creutzfeldt-Jakob disease, ehrlichiosis, Hansen disease, hemolytic uremic syndrome, hepatitis A, acute hepatitis B, acute hepatitis C, legionellosis, Q fever, Rocky Mountain spotted fever, early syphilis, or *Vibrio* infection were reported in infants.

Children aged 1-9 years had the highest incidence rates for chickenpox, giardiasis, hepatitis A, Kawasaki syndrome, elevated blood lead levels in children, shigellosis, and typhoid fever. Among the conditions for which reports were received in 2006, no cases of AIDS, arboviral infection, Creutzfeldt-Jakob disease, ehrlichiosis, Hansen disease, acute hepatitis B, acute hepatitis C, legionellosis, listeriosis, Q fever, early syphilis, or *Vibrio* infection were reported among children in this age group. The lowest rates of *Chlamydia trachomatis* infection, gonorrhea, and HIV infection and reportable invasive *Streptococcus pneumoniae* were reported for this age group.

The 10-19 year age group had the highest rate for mumps and the lowest rates for campylobacteriosis, cryptosporidiosis, and elevated blood lead levels in children. There were no cases of arboviral infection, Creutzfeldt-Jakob disease, ehrlichiosis, Hansen disease, hemolytic uremic syndrome, legionellosis, listeriosis, or Q fever reported in this age group.

Persons in their twenties were reported with higher rates of *Chlamydia trachomatis* infection, gonorrhea and early syphilis than persons in other age groups. The only case of Creutzfeldt-Jakob disease was reported among those in their twenties. Persons in their thirties had the highest incidence rates for AIDS and acute hepatitis B. The rate of HIV infection was similar for 20-29 year olds and 30-39 year olds. The only case of Hansen disease occurred in the 30-39 year age group. Persons in their forties had the highest rate of Lyme disease and the lowest rate of Shiga toxin-producing *Eschericia coli* infection. The highest rates of ehrlichiosis, acute hepatitis C, and Rocky Mountain spotted fever were reported in the 50-59 year age group as was the lowest rate of shigellosis. The sixty year and older age group had the highest rates of arboviral infection, invasive *Haemophilus influenzae* infection, legionellosis, Q fever and *Vibrio* infection and the lowest rates of giardiasis, malaria and pertussis.

RACE – Among conditions where race was known for at least 80% of cases, the black population had a higher incidence rate for AIDS, *Chlamydia trachomatis* infection, gonorrhea, acute hepatitis B, HIV infection, malaria, and early syphilis. The white population had a higher incidence rate for arboviral infection, cryptosporidiosis, listeriosis and pertussis. The "other" race group had the highest rate for Kawasaki syndrome and tuberculosis.

SEX – In general, the incidence rates of reportable diseases tend to be similar in males and females or slightly higher in males. The following lists some exceptions seen in the 2006 data. Females were reported to have the following diseases at higher rates than males: *Chlamydia trachomatis* infection, hemolytic uremic syndrome, meningococcal infection, mumps, pertussis, shigellosis and invasive group A streptococcal disease. The incidence rates were very similar or the same for males and females for amebiasis, arboviral infection, ehrlichiosis, Shiga toxin-producing *Escherichia coli* infection, gonorrhea, invasive *Haemophilus influenzae* infection, hepatitis A, Kawasaki syndrome, listeriosis, Rocky Mountain spotted fever, salmonellosis and typhoid fever.

REGION – The northwest health planning region had the highest incidence rates of Shiga toxin-producing *Escherichia coli* infection, giardiasis, mumps and invasive group A streptococcal disease compared to the other regions of the state. The lowest incidence rates of acute hepatitis B, influenza and *Vibrio* infection were seen in this region. No cases of arboviral infection, Creutzfeldt-Jakob disease, Hansen Disease, hemolytic uremic syndrome or Q fever were reported from the northwest region.

The northern health planning region experienced the highest incidence rates of AIDS, hepatitis A, Lyme disease, malaria, pertussis, shigellosis, tuberculosis and typhoid fever. The lowest incidence rates of *Chlamydia trachomatis* infection, gonorrhea, invasive *Haemophilus influenza*e infection, acute hepatitis C, elevated blood lead levels in children, legionellosis and Rocky Mountain spotted fever were reported from the northern region. No cases of Creutzfeldt-Jakob disease, hemolytic uremic syndrome or Q fever were reported in this region. The only case of Hansen disease and all reported arboviral infections were reported from the northern region.

The southwest health planning region had the highest incidence rates for amebiasis, chickenpox, cryptosporidiosis, invasive *Haemophilus influenza*e infection, legionellosis and listeriosis. It had the lowest rates for AIDS, giardiasis, hepatitis A, HIV infection, salmonellosis, invasive *Streptococcus pneumoniae* in children less than 5 years old and tuberculosis. There were no cases of arboviral infection, Creutzfeldt-Jakob disease, Hansen disease, hemolytic uremic syndrome, Q fever or typhoid fever reported from the southwest.

The central health planning region experienced the highest rates of ehrlichiosis, acute hepatitis C, HIV infection, influenza, elevated blood lead levels in children, Rocky Mountain spotted fever and salmonellosis. The lowest rates of campylobacteriosis, chickenpox, cryptosporidiosis, Shiga toxin-producing *Escherichia coli* infection, Lyme and pertussis were seen in this region. No cases of arboviral infection, Creutzfeldt-Jakob disease, Hansen disease or Kawasaki syndrome were reported from the central region.

The eastern health planning region had the highest incidence rates of *Chlamydia trachomatis* infection, gonorrhea, Q fever, early syphilis and *Vibrio* infection. This region experienced the lowest rates of shigellosis. No cases of arboviral infection, Hansen disease, Kawasaki disease or typhoid fever were reported from the eastern region. The only case of Creutzfeldt-Jakob disease was reported from this region.

ONSET – A few diseases showed distinct seasonal trends. The highest number of cases of influenza (74%), Kawasaki syndrome (50%), meningococcal infection (45%), and Q fever (50%) occurred during the first quarter of the year. The highest number of cases of invasive group A streptococcal disease (67%) occurred during the first and second quarters. Both cases of hemolytic uremic syndrome as well as the highest number of cases of campylobacteriosis (67%), Shiga toxin-producing *Escherichia coli* infection, (66%), ehrlichiosis (75%), Lyme disease (79%), Rocky Mountain spotted fever (83%) and typhoid fever (80%) occurred during the second and third quarters of the year. The highest number of arboviral infection (80%), cryptosporidiosis (45%), giaradiasis (37%), acute hepatitis C (56%) and *Vibrio* infection (75%) occurred during the third quarters of the year. The largest proportion of shigellosis (70%) occurred in the third and fourth quarters and the highest number of invasive *Streptococcus pneumoniae* infection in children less than 5 years old (40%) occurred in the fourth quarter. The small number of AIDS, *Chlamydia trachomatis* infection, gonorrhea, HIV infection, Lyme disease, pertussis and early syphilis reported as occurring in the fourth quarter are likely due to delays in obtaining information, and are reflected in the proportion of the 2006 reports for these conditions where onset occurred in 2005.

Table 1. Reportable Diseases in Virginia, 2006

Acquired immunodeficiency syndrome (AIDS)
Amebiasis
Anthrax
Arboviral infection (e.g., EEE, LAC, SLV, WNV)
Botulism
Brucellosis
Campylobacter infection
Chancroid
Chickenpox
Chlamydia trachomatis infection
Cholera
Creutzfieldt-Jakob disease if <55 years of age
Cryptosporidiosis
Cyclosporiasis
Diphtheria
Ehrlichiosis
Escherichia coli O157:H7 and other enterohemorrhagic *E. coli* infections
Giardiasis
Gonorrhea
Granuloma inguinale
Haemophilus influenzae infection, invasive
Hantavirus pulmonary syndrome
Hemolytic uremic syndrome (HUS)
Hepatitis A (IgM+)
Hepatitis B (acute and chronic)
Hepatitis C (acute and chronic)
Hepatitis, other acute viral
Human immunodeficiency virus (HIV) infection
Influenza
Kawasaki syndrome
Lead - elevated blood levels
Legionellosis
Leprosy (Hansen disease)
Listeriosis
Lyme disease
Lymphogranuloma venereum
Malaria
Measles (Rubeola)
Meningococcal infection
Monkeypox
Mumps
Ophthalmia neonatorum
Outbreaks, All (including foodborne, nosocomial, occupational, toxic substance-related, waterborne, and other outbreaks)
Pertussis (Whooping cough)
Plague
Poliomyelitis
Psittacosis
Q fever
Rabies, human and animal
Rabies treatment, post exposure
Rocky Mountain spotted fever
Rubella (German measles), including congenital rubella syndrome
Salmonellosis
Severe acute respiratory syndrome (SARS)
Shigellosis
Smallpox
Streptococcal disease, Group A, invasive
Streptococcus pneumoniae, invasive if <5 years of age
Syphilis
Tetanus
Toxic shock syndrome
Toxic substance-related illness
Trichinosis
Tuberculosis disease (Mycobacteria)
Tuberculosis infection in children <4 years
Tularemia
Typhoid fever
Typhus
Unusual occurrence of disease of public health concern
Vaccinia, disease or adverse event
Vancomycin-resistant *Staphylococcus aureus*
Vibrio infection
Viral hemorrhagic fever
Yellow fever