Reportable Disease Surveillance in Virginia, 2012

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TABLE OF CONTENTS

INTRODUCTION

DESCRIPTIVE EPIDEMIOLOGY OF REPORTABLE DISEASES

NUMBER OF REPORTED CASES AND RATE PER 100,000 POPULATION FOR SELECTED DISEASES BY LOCALITY, DISTRICT, AND REGION

MAPS OF INCIDENCE RATES OF SELECTED DISEASES BY LOCALITY

LIST OF TABLES

*Tables 8 – 10 were originally assigned to the Outbreaks section of this report. At this time, this section is being revised and is not included with the report.

INTRODUCTION
AND
DATA SUMMARY TABLES

Introduction

The Virginia Department of Health, Office of Epidemiology is pleased to present its twenty-fifth 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 2012.

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. 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, laboratory directors, and other health care providers are therefore essential 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 listed as officially reportable in the *Regulations for Disease Reporting and Control.* The report is divided into four sections as described below.

Introduction and Data Summary: Tables summarizing 2012 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 age group, race, sex, and health planning region; and the number and percent of reports by quarter of onset.

Descriptive Epidemiology of Reportable Diseases: This section consists of narrative and graphics describing the populations reported with each disease or condition. The section includes information about the total number of cases reported; the ten year trend in reported cases; the demographics of cases in terms of 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/), *Infectious Disease Epidemiology* (Nelson, K., Williams, C., & Graham, N., 2004), *Red Book: 2012 Report of the Committee on Infectious Diseases* (American Academy of Pediatrics, Pickering, L., Baker, C., Kimberlin, D., Long, S., eds., 2012), and *Control of Communicable Diseases Manual* (Heymann, D., ed., 2008)

Population-based rates are often presented to provide a measure of disease frequency in the population and to allow for comparisons between groups. When calculating rates, population estimates for 2012 prepared by the United States Census Bureau for the state's cities and counties and total population were used.

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

In describing the occurrence of disease throughout the year, date of onset is used whenever it is available. Onset is the time when symptoms first occurred. Some cases reported in 2012 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 by locality 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, the location of the reporting source, such as 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 because localities with small populations may have large disease rates but only a few reported cases of disease. Both numbers of cases and incidence rates should be considered 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, while the second map provides a geographical view of counties and selected cities in the state. Following that, disease-specific maps are presented which depict the incidence rates listed in the previous section. 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 Lala Wilson at the Virginia Department of Health, Office of Epidemiology, P.O. Box 2448, 109 Governor St., 5th Floor, Richmond, Virginia 23218, or by telephone at 804-864-8141.

Table 1. Reportable Diseases in Virginia, 2012

Acquired immunodeficiency syndrome (AIDS)	Monkeypox
Amebiasis	Mumps
Anthrax	Mycobacterial Diseases (including AFB)
Arboviral infection (e.g., dengue, EEE, LAC, SLE, WNV)	Ophthalmia neonatorum
Botulism	Outbreaks, all (including foodborne, healthcare-associated, occupational, toxic substance-related, and waterborne
Brucellosis	
Campylobacteriosis	Pertussis
Chancroid	Plague
Chickenpox (Varicella)	Poliovirus infection, including poliomyelitis
Chlamydia trachomatis infection	Psittacosis
Cholera	Q fever
Creutzfeldt-Jakob disease if <55 years of age	Rabies, human and animal
Cryptosporidiosis	Rabies treatment, post-exposure
Cyclosporiasis	Rubella, including congenital rubella syndrome
Diphtheria	Salmonellosis
Disease caused by an agent that may have been used as a weapon	Severe acute respiratory syndrome (SARS)
Ehrlichiosis/Anaplasmosis	Shigellosis
Escherichia coli infection, Shiga toxin-producing	Smallpox (variola)
Giardiasis	Spotted fever rickettsiosis, including RMSF
Gonorrhea	*Staphylococcus aureus* infection, invasive, methicillin-resistant (MRSA) and vancomycin-intermediate or vancomycin-resistant
Granuloma inguinale	
Haemophilus influenzae infection, invasive	Streptococcal disease, Group A, invasive or toxic shock
Hantavirus pulmonary syndrome	*Streptococcus pneumoniae* infection, invasive, in children <5 years of age
Hemolytic uremic syndrome (HUS)	Syphilis
Hepatitis A	Tetanus
Hepatitis B (acute and chronic)	Toxic substance-related illness
Hepatitis C (acute and chronic)	Trichinosis (Trichinellosis)
Hepatitis, other acute viral	Tuberculosis (TB), active disease
Human immunodeficiency virus (HIV) infection	Tuberculosis infection in children <4 years of age
Legionellosis	Tularemia
Leprosy (Hansen disease)	Typhoid/paratyphoid fever
Listeriosis	Unusual occurrence of disease of public health concern
Lyme disease	Vaccinia, disease or adverse event
Lymphogranuloma venereum	*Vibrio* infection
Malaria	Viral hemorrhagic fever
Measles (Rubeola)	Yellow fever
Meningococcal disease	Yersiniosis

Table 2. Ten-Year Trend in Number of Reported Cases of Notifiable Diseases in Virginia, 2003-2012

Disease	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	5-year Average
AIDS	793	774	626	589	599	638	*	*	*	*	*
Amebiasis	20	25	42	45	53	42	20	14	17	29	29.2
Anthrax	0	0	0	0	0	0	0	0	0	0	0.0
Arboviral infection	31	7	5	5	5	3	8	20	20	51	11.2
Botulism, foodborne	0	0	0	0	1	0	0	0	0	0	0.2
Botulism, non-foodborne	1	3	1	0	0	3	4	1	2	2	2.0
Brucellosis	2	1	1	0	0	0	5	0	0	0	1.0
Campylobacteriosis	882	668	618	669	665	669	770	778	805	764	737.4
Chancroid	0	0	0	1	0	0	0	0	0	1	0.0
Chickenpox (Varicella)	682	1,240	1,834	1,959	1,582	1,489	773	548	549	505	988.2
Chlamydia trachomatis infection	19,439	21,635	22,668	24,081	24,528	31,205	30,904	30,799	36,317	35,016	30,750.6
Cholera	0	0	0	0	0	0	0	1	1	0	0.4
Creutzfeldt-Jakob disease (CJD)^	0	0	0	1	1	0	0	0	0	0	0.2
Cryptosporidiosis	56	66	77	71	90	81	86	109	140	144	101.2
Cyclosporiasis	3	1	3	0	2	2	1	1	2	1	1.6
Diphtheria	0	0	0	0	0	0	0	0	0	0	0.0
Ehrlichiosis/Anaplasmosis	12	8	13	8	39	65	72	93	131	148	80.0
E. coli infection, Shiga toxin-producing	63	62	111	168	165	241	156	149	123	81	166.8
Giardiasis	426	563	602	514	582	432	503	512	290	272	463.8
Gonorrhea	9,062	8,565	8,346	6,474	6,267	10,336	7,791	7,401	6,521	6,894	7,663.2
Granuloma inguinale	0	0	0	0	0	0	0	0	0	0	0.0
Haemophilus influenzae infection, invasive	68	56	61	69	80	92	88	85	108	101	90.6
Hantavirus pulmonary syndrome	0	0	0	0	0	0	0	0	0	0	0.0
Hemolytic uremic syndrome	1	1	1	2	1	2	2	2	3	3	2.0
Hepatitis A	141	140	93	64	89	51	42	52	30	49	52.8
Hepatitis B, acute	227	303	146	78	144	130	110	97	84	84	113.0
Hepatitis C, acute	15	15	13	9	8	8	10	13	25	76	12.8
HIV disease*****	797	875	833	914	836	844	1429*	1,194	1,085	1,105	1,167.0
Influenza	18,765	3,404	15,942	16,107	8,416	24,580	40,614	2,467	18,153	19,146	18,846.0
Influenza-associated deaths in children~	1	1	2	3	3	3	8	0	5	1	3.8
Kawasaki syndrome	11	16	19	6	2	3	3	2	–	–	2.0
Lead - elevated blood levels in children******	643	703	527	515	394	307	389	350	274	201	342.8
Legionellosis	110	56	55	68	61	66	67	79	93	76	73.2
Leprosy (Hansen disease)	0	0	0	1	1	0	0	1	1	0	0.6
Listeriosis	18	27	17	20	16	17	16	13	15	18	15.4
Lyme disease	202	216	274	357	959	933	908	1,245	1,023	1,110	1,013.6
Lymphogranuloma venereum	0	1	2	0	0	0	0	0	0	0	0.0
Malaria	60	59	44	55	65	49	61	67	78	65	64.0
Measles	0	0	0	0	0	1	1	3	7	0	1.0

Table 2. Ten-Year Trend in Number of Reported Cases of Notifiable Diseases in Virginia, 2003-2012 (continued)

Disease	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	5-year Average
Meningococcal disease	28	24	35	22	23	24	18	21	18	5	20.8
Monkeypox	0	0	0	0	0	0	0	0	0	0	0.0
Mumps	1	11	2	117	27	9	9	13	13	7	14.2
Ophthalmia neonatorum	10	8	18	11	5	10	7	7	8	11	7.4
Pertussis	219	400	363	221	128	198	222	384	399	625	266.2
Plague	0	0	0	0	0	0	0	0	0	0	0.0
Poliovirus infection, including poliomyelitis	0	0	0	0	0	0	0	0	0	0	0.0
Psittacosis	1	0	0	0	0	0	0	0	0	0	0.0
Q fever	0	0	2	4	4	2	1	2	3	0	2.4
Rabies in animals	542	474	495	637	730	620	564	573	618	562	621.0
Rabies in humans	1	0	0	0	0	0	1	0	0	0	0.2
Rubella, including congenital rubella syndrome	0	0	0	0	0	0	0	2	0	0	0.4
Salmonellosis	1,175	1,196	1,172	1,089	1,249	1,165	1,095	1,210	1,208	1,144	1,185.4
Severe acute respiratory syndrome (SARS)	1	0	0	0	0	0	0	0	0	0	0.0
Shigellosis	451	167	134	120	200	310	198	145	107	91	192.0
Smallpox	0	0	0	0	0	0	0	0	0	0	0.0
Spotted fever rickettsiosis, including RMSF	34	45	121	114	123	155	53	145	231	461	141.4
Staphylococcus aureus infection, invasive (MRSA)	-	-	-	-	253	1,524	1,124	1,201	1,304	1,294	1,081.2
Staphylococcus aureus infection, VISA or VRSA	0	0	0	0	1	0	0	1	2	2	0.8
Streptococcal disease, Group A, invasive or TSS	111	74	110	132	162	150	174	191	192	168	173.8
Streptococcus pneumoniae infection, invasive***	27	35	37	50	52	52	47	59	33	36	48.6
Syphilis, early	156	224	291	351	407	500	529	553	502	593	498.2
Tetanus	0	1	1	0	0	0	0	0	0	1	0.0
Toxic shock syndrome (Staphylococcal)	3	2	1	0	1	0	0	2	-	-	0.6
Toxic substance-related illness	213	321	324	415	434	356	342	298	273	317	340.6
Trichinosis (Trichinellosis)	0	1	1	0	0	1	0	0	2	2	0.6
Tuberculosis	332	329	355	332	309	292	273	268	221	235	272.6
Tularemia	4	0	0	0	3	1	0	1	6	2	2.2
Typhoid fever	16	11	20	20	21	19	12	11	9	10	14.4
Vaccinia, disease or adverse event	0	0	0	0	0	1	0	0	0	0	0.2
Vibrio infection	26	20	25	32	33	29	29	40	30	41	32.2
Viral hemorrhagic fever	0	0	0	0	0	0	0	0	0	0	0.0
Yellow fever	0	0	0	0	0	0	0	0	0	0	0.0
Yersiniosis	3	10	18	10	10	14	11	13	10	8	11.6

^ Condition is reportable only in individuals < 55 years of age.

\- Not a reportable disease at this time.

***** Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

~ Condition is reportable only in children < 18 years of age.

****** Condition is reportable only in children < 16 years of age.

******* Condition is reportable only in children < 5 years of age.

Table 3. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Age Group, Virginia, 2012

Disease	<1 year		1-9 years		10-19 years		20-29 years		30-39 years		40-49 years		50-59 years		60+ years		Unk.
Population:	101,446		922,806		1,059,168		1,157,814		1,068,855		1,178,930		1,130,115		1,477,470		
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	
Amebiasis	0	0.0	5	0.5	0	0.0	8	0.7	4	0.4	5	0.4	3	0.3	4	0.3	0
Arboviral infection	0	0.0	3	0.3	4	0.4	7	0.6	7	0.7	7	0.6	5	0.4	18	1.2	0
Campylobacteriosis	16	15.8	106	11.5	58	5.5	101	8.7	101	9.4	120	10.2	109	9.6	152	10.3	1
Chickenpox (Varicella)	37	36.5	240	26.0	140	13.2	42	3.6	24	2.2	16	1.4	4	0.4	2	0.1	0
Chlamydia trachomatis infection	11	10.8	9	1.0	10,404	982.3	20,291	1,752.5	3,244	303.5	767	65.1	221	19.6	35	2.4	34
Cryptosporidiosis	2	2.0	12	1.3	12	1.1	26	2.2	19	1.8	15	1.3	16	1.4	42	2.8	0
Ehrlichiosis/Anaplasmosis	0	0.0	6	0.7	5	0.5	7	0.6	11	1.0	18	1.5	34	3.0	67	4.5	0
E. coli infection, Shiga toxin-producing	1	1.0	26	2.8	21	2.0	11	1.0	4	0.4	7	0.6	5	0.4	6	0.4	0
Giardiasis	3	3.0	43	4.7	18	1.7	56	4.8	32	3.0	45	3.8	42	3.7	33	2.2	0
Gonorrhea	0	0.0	5	0.5	1,707	161.2	3,916	338.2	827	77.4	294	24.9	118	10.4	24	1.6	3
Haemophilus influenzae infection, invasive	3	3.0	9	1.0	0	0.0	10	0.9	4	0.4	8	0.7	7	0.6	59	4.0	1
Hemolytic uremic syndrome	0	0.0	2	0.2	1	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Hepatitis A	0	0.0	3	0.3	5	0.5	9	0.8	3	0.3	8	0.7	11	1.0	10	0.7	0
Hepatitis B, acute	0	0.0	0	0.0	0	0.0	9	0.8	31	2.9	30	2.5	7	0.6	7	0.5	0
Hepatitis C, acute	0	0.0	0	0.0	9	0.8	24	2.1	21	2.0	16	1.4	5	0.4	1	0.1	0
HIV disease*	2	2.0	1	0.1	52	4.9	355	30.7	275	25.7	230	19.5	139	12.3	51	3.5	0
Lead - elevated blood levels in children**	14	13.8	184	19.9	3	0.5	-	-	-	-	-	-	-	-	-	-	0
Legionellosis	0	0.0	0	0.0	0	0.0	2	0.2	5	0.5	13	1.1	20	1.8	36	2.4	0
Listeriosis	1	1.0	0	0.0	1	0.1	1	0.1	0	0.0	2	0.2	2	0.2	11	0.7	0
Lyme disease	1	1.0	176	19.1	210	19.8	98	8.5	110	10.3	139	11.8	147	13.0	228	15.4	1
Malaria	0	0.0	3	0.3	10	0.9	7	0.6	12	1.1	14	1.2	15	1.3	4	0.3	0
Measles	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Meningococcal disease	0	0.0	0	0.0	0	0.0	2	0.2	0	0.0	0	0.0	2	0.2	1	0.1	0
Mumps	0	0.0	0	0.0	1	0.1	1	0.1	1	0.1	2	0.2	1	0.1	1	0.1	0
Pertussis	83	81.8	198	21.5	174	16.4	19	1.6	27	2.5	40	3.4	35	3.1	45	3.0	4
Q fever	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Salmonellosis	94	92.7	234	25.4	111	10.5	135	11.7	113	10.6	113	9.6	122	10.8	221	15.0	1
Shigellosis	0	0.0	26	2.8	13	1.2	16	1.4	12	1.1	8	0.7	6	0.5	10	0.7	0
Spotted fever rickettsiosis, including RMSF	0	0.0	10	1.1	44	4.2	34	2.9	54	5.1	81	6.9	102	9.0	136	9.2	0
Staphylococcus aureus infection, invasive (MRSA)	17	16.8	10	1.1	17	1.6	48	4.1	69	6.5	132	11.2	225	19.9	773	52.3	3
Streptococcal disease, Group A, invasive or TSS	5	4.9	10	1.1	9	0.8	3	0.3	12	1.1	10	0.8	38	3.4	80	5.4	1
Streptococcus pneumoniae, invasive***	18	17.7	18	4.4	-	-	-	-	-	-	-	-	-	-	-	-	0
Syphilis, early	0	0.0	0	0.0	31	2.9	242	20.9	148	13.8	114	9.7	49	4.3	9	0.6	0
Tuberculosis	2	2.0	7	0.8	11	1.0	36	3.1	45	4.2	39	3.3	42	3.7	53	3.6	0
Typhoid fever	0	0.0	4	0.4	3	0.3	1	0.1	1	0.1	1	0.1	0	0.0	0	0.0	0
Vibrio infection	0	0.0	3	0.3	9	0.8	5	0.4	4	0.4	5	0.4	5	0.4	10	0.7	0

- Not reportable at this age.

***** Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

****** Condition is reportable only in children < 16 years of age. Rates are based on 0-15 year old population.

******* Condition is reportable only in children < 5 years of age. Rates are based on 0-4 year old population.

Table 4. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Race, Virginia, 2012

Disease	Total	Black		White		Other		Unk.
Population:	8,096,604	1,664,318		5,873,838		558,448		
		N	Rate	N	Rate	N	Rate	N
Amebiasis	29	0	0.0	5	0.1	0	0.0	24
Arboviral infection	51	2	0.1	22	0.4	0	0.0	27
Campylobacteriosis	764	34	2.0	337	5.7	15	2.7	378
Chickenpox (Varicella)	505	62	3.7	277	4.7	36	6.4	130
Chlamydia trachomatis infection	35,016	15,948	958.2	7,328	124.8	1,934	346.3	9,806
Cryptosporidiosis	144	18	1.1	86	1.5	3	0.5	37
Ehrlichiosis/Anaplasmosis	148	3	0.2	69	1.2	0	0.0	76
E. coli infection, Shiga toxin-producing	81	11	0.7	46	0.8	5	0.9	19
Giardiasis	272	21	1.3	77	1.3	8	1.4	166
Gonorrhea	6,894	4,638	278.7	891	15.2	182	32.6	1,183
Haemophilus influenzae infection, invasive	101	16	1.0	74	1.3	4	0.7	7
Hemolytic uremic syndrome	3	0	0.0	3	0.1	0	0.0	0
Hepatitis A	49	2	0.1	24	0.4	3	0.5	20
Hepatitis B, acute	84	11	0.7	47	0.8	3	0.5	23
Hepatitis C, acute	76	2	0.1	54	0.9	0	0.0	20
HIV disease*	1,105	630	37.9	322	5.5	138	24.7	15
Lead - elevated blood levels in children**	201	44	11.3	61	5.4	12	9.5	84
Legionellosis	76	20	1.2	42	0.7	0	0.0	14
Listeriosis	18	2	0.1	10	0.2	2	0.4	4
Lyme disease	1,110	25	1.5	620	10.6	24	4.3	441
Malaria	65	31	1.9	7	0.1	3	0.5	24
Measles	0	0	0.0	0	0.0	0	0.0	0
Meningococcal disease	5	0	0.0	4	0.1	0	0.0	1
Mumps	7	1	0.1	3	0.1	2	0.4	1
Pertussis	625	23	1.4	341	5.8	10	1.8	251
Q fever	0	0	0.0	0	0.0	0	0.0	0
Salmonellosis	1,144	108	6.5	542	9.2	18	3.2	476
Shigellosis	91	11	0.7	32	0.5	5	0.9	43
Spotted fever rickettsiosis, including RMSF	461	15	0.9	148	2.5	2	0.4	296
Staphylococcus aureus infection, invasive (MRSA)	1,294	282	16.9	637	10.8	16	2.9	359
Streptococcal disease, Group A, invasive or TSS	168	18	1.1	96	1.6	2	0.4	52
Streptococcus pneumoniae, invasive***	36	7	5.6	20	5.8	3	7.2	6
Syphilis, early	593	333	20.0	208	3.5	52	9.3	0
Tuberculosis	235	50	3.0	88	1.5	97	17.4	0
Typhoid fever	10	0	0.0	2	0.0	6	1.1	2
Vibrio infection	41	4	0.2	20	0.3	1	0.2	16

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

** Condition is reportable only in children < 16 years of age. Rates are based on 0-15 year old population.

*** Condition is reportable only in children < 5 years of age. Rates are based on 0-4 year old population.

Table 5. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Sex, Virginia, 2012

Disease	Total	Female		Male		Unk.
Population:	8,096,604	4,120,439		3,976,165		
		N	Rate	N	Rate	N
Amebiasis	29	8	0.2	20	0.5	1
Arboviral infection	51	24	0.6	27	0.7	0
Campylobacteriosis	764	344	8.3	411	10.3	9
Chickenpox (Varicella)	505	252	6.1	252	6.3	1
Chlamydia trachomatis infection	35,016	24,708	599.6	10,263	258.1	45
Cryptosporidiosis	144	79	1.9	63	1.6	2
Ehrlichiosis/Anaplasmosis	148	54	1.3	94	2.4	0
E. coli infection, Shiga toxin-producing	81	38	0.9	42	1.1	1
Giardiasis	272	103	2.5	168	4.2	1
Gonorrhea	6,894	3,741	90.8	3,146	79.1	7
Haemophilus influenzae infection, invasive	101	55	1.3	46	1.2	0
Hemolytic uremic syndrome	3	1	0.0	2	0.1	0
Hepatitis A	49	30	0.7	19	0.5	0
Hepatitis B, acute	84	31	0.8	53	1.3	0
Hepatitis C, acute	76	35	0.8	41	1.0	0
HIV disease*	1,105	221	5.4	884	22.2	0
Lead - elevated blood levels in children**	201	99	12.3	101	12.1	1
Legionellosis	76	25	0.6	49	1.2	2
Listeriosis	18	11	0.3	7	0.2	0
Lyme disease	1,110	533	12.9	573	14.4	4
Malaria	65	25	0.6	40	1.0	0
Measles	0	0	0.0	0	0.0	0
Meningococcal disease	5	3	0.1	2	0.1	0
Mumps	7	5	0.1	2	0.1	0
Pertussis	625	346	8.4	275	6.9	4
Q fever	0	0	0.0	0	0.0	0
Salmonellosis	1,144	610	14.8	516	13.0	18
Shigellosis	91	40	1.0	50	1.3	1
Spotted fever rickettsiosis, including RMSF	461	165	4.0	296	7.4	0
Staphylococcus aureus infection, invasive (MRSA)	1,294	513	12.5	760	19.1	21
Streptococcal disease, Group A, invasive or TSS	168	72	1.7	93	2.3	3
Streptococcus pneumoniae, invasive***	36	13	5.2	23	8.8	0
Syphilis, early	593	60	1.5	533	13.4	0
Tuberculosis	235	106	2.6	129	3.2	0
Typhoid fever	10	4	0.1	6	0.2	0
Vibrio infection	41	8	0.2	32	0.8	1

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

** Condition is reportable only in children < 16 years of age. Rates are based on 0-15 year old population.

*** Condition is reportable only in children < 5 years of age. Rates are based on 0-4 year old population.

Table 6. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Health Planning Region, Virginia, 2012

Disease	Total		Northwest Region		Northern Region		Southwest Region		Central Region		Eastern Region	
Population:	8,096,604		1,252,989		2,295,340		1,353,994		1,376,969		1,817,312	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Amebiasis	29	0.4	4	0.3	20	0.9	0	0.0	1	0.1	4	0.2
Arboviral infection	51	0.6	16	1.3	21	0.9	3	0.2	2	0.1	9	0.5
Campylobacteriosis	764	9.4	143	11.4	237	10.3	142	10.5	121	8.8	121	6.7
Chickenpox (Varicella)	505	6.2	74	5.9	173	7.5	124	9.2	68	4.9	66	3.6
Chlamydia trachomatis infection	35,016	432.5	3,914	312.4	5,375	234.2	4,377	323.3	8,048	584.5	13,302	732.0
Cryptosporidiosis	144	1.8	11	0.9	58	2.5	27	2.0	12	0.9	36	2.0
Ehrlichiosis/Anaplasmosis	148	1.8	48	3.8	13	0.6	34	2.5	37	2.7	16	0.9
E. coli infection, Shiga toxin-producing	81	1.0	21	1.7	24	1.0	18	1.3	11	0.8	7	0.4
Giardiasis	272	3.4	48	3.8	115	5.0	29	2.1	33	2.4	47	2.6
Gonorrhea	6,894	85.1	505	40.3	677	29.5	984	72.7	1,933	140.4	2,795	153.8
Haemophilus influenzae infection, invasive	101	1.2	19	1.5	17	0.7	26	1.9	19	1.4	20	1.1
Hemolytic uremic syndrome	3	0.0	2	0.2	0	0.0	1	0.1	0	0.0	0	0.0
Hepatitis A	49	0.6	8	0.6	23	1.0	10	0.7	7	0.5	1	0.1
Hepatitis B, acute	84	1.0	7	0.6	7	0.3	41	3.0	18	1.3	11	0.6
Hepatitis C, acute	76	0.9	27	2.2	2	0.1	34	2.5	8	0.6	5	0.3
HIV disease*	1,105	13.6	80	6.4	362	15.8	98	7.2	243	17.6	322	17.7
Influenza	19,146	236.5	4,300	343.2	3,492	152.1	5,858	432.6	3,498	254.0	1,998	109.9
Lead - elevated blood levels in children**	201	12.2	33	13.0	31	6.1	35	14.6	61	22.3	41	11.1
Legionellosis	76	0.9	17	1.4	14	0.6	13	1.0	16	1.2	16	0.9
Listeriosis	18	0.2	1	0.1	9	0.4	1	0.1	4	0.3	3	0.2
Lyme disease	1,110	13.7	378	30.2	411	17.9	224	16.5	48	3.5	49	2.7
Malaria	65	0.8	12	1.0	45	2.0	0	0.0	5	0.4	3	0.2
Measles	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Meningococcal disease	5	0.1	2	0.2	0	0.0	2	0.1	0	0.0	1	0.1
Mumps	7	0.1	2	0.2	3	0.1	0	0.0	0	0.0	2	0.1
Pertussis	625	7.7	214	17.1	123	5.4	71	5.2	85	6.2	132	7.3
Q fever	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Rabies in animals ~	562	-	145	-	92	-	187	-	80	-	58	-
Salmonellosis	1,144	14.1	202	16.1	238	10.4	183	13.5	207	15.0	314	17.3
Shigellosis	91	1.1	9	0.7	47	2.0	2	0.1	14	1.0	19	1.0
Spotted fever rickettsiosis, including RMSF	461	5.7	98	7.8	37	1.6	120	8.9	153	11.1	53	2.9
Staphylococcus aureus infection, invasive (MRSA)	1,294	16.0	201	16.0	204	8.9	304	22.5	252	18.3	333	18.3

Table 6. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Health Planning Region, Virginia, 2012 (continued)

Disease	Total		Northwest Region		Northern Region		Southwest Region		Central Region		Eastern Region	
Population:	8,096,604		1,252,989		2,295,340		1,353,994		1,376,969		1,817,312	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Streptococcal disease, Group A, invasive or TSS	168	2.1	39	3.1	33	1.4	22	1.6	43	3.1	31	1.7
Streptococcus pneumoniae, invasive***	36	7.1	5	6.7	13	7.9	4	5.6	7	8.5	7	6.0
Syphilis, early	593	7.3	32	2.6	168	7.3	43	3.2	149	10.8	201	11.1
Tuberculosis	235	2.9	14	1.1	142	6.2	15	1.1	30	2.2	34	1.9
Typhoid fever	10	0.1	1	0.1	7	0.3	1	0.1	1	0.1	0	0.0
Vibrio infection	41	0.5	3	0.2	7	0.3	4	0.3	11	0.8	16	0.9

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

** Condition is reportable only in children < 16 years of age. Rates are based on 0-15 year old population.

~ Population rate is not applicable for rabies in animals

*** Condition is reportable only in children < 5 years of age. Rates are based on 0-4 year old population.

Table 7. Number of Reported Cases of Selected Diseases by Quarter of Onset, Virginia, 2012

Disease	Total	Prior to 2012		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
		N	%	N	%	N	%	N	%	N	%
Amebiasis	29	1	3.4	8	27.6	5	17.2	5	17.2	10	34.5
Arboviral infection	51	1	2.0	1	2.0	0	0.0	40	78.4	9	17.6
Campylobacteriosis	764	10	1.3	121	15.8	247	32.3	240	31.4	146	19.1
Chickenpox (Varicella)	505	12	2.4	153	30.3	120	23.8	118	23.4	102	20.2
Chlamydia trachomatis infection	35,016	0	0.0	9,545	27.3	8,203	23.4	8,629	24.6	8,639	24.7
Cryptosporidiosis	144	7	4.9	44	30.6	33	22.9	36	25.0	24	16.7
Ehrlichiosis/Anaplasmosis	148	3	2.0	9	6.1	83	56.1	46	31.1	7	4.7
E. coli infection, Shiga toxin-producing	81	0	0.0	14	17.3	21	25.9	30	37.0	16	19.8
Giardiasis	272	9	3.3	67	24.6	66	24.3	77	28.3	53	19.5
Gonorrhea	6,894	0	0.0	1,885	27.3	1,522	22.1	1,688	24.5	1,799	26.1
Haemophilus influenzae infection, invasive	101	1	1.0	30	29.7	31	30.7	15	14.9	24	23.8
Hemolytic uremic syndrome	3	0	0.0	0	0.0	2	66.7	1	33.3	0	0.0
Hepatitis A	49	0	0.0	11	22.4	15	30.6	15	30.6	8	16.3
Hepatitis B, acute	84	5	6.0	12	14.3	27	32.1	25	29.8	15	17.9
Hepatitis C, acute	76	2	2.6	17	22.4	26	34.2	19	25.0	12	15.8
HIV disease*	1,105	0	0.0	283	25.6	307	27.8	267	24.2	248	22.4
Influenza	19,146	0	0.0	1,343	7.0	671	3.5	204	1.1	16,928	88.4
Legionellosis	76	1	1.3	7	9.2	21	27.6	31	40.8	16	21.1
Listeriosis	18	2	11.1	5	27.8	3	16.7	6	33.3	2	11.1
Lyme disease	1,110	86	7.7	128	11.5	394	35.5	353	31.8	149	13.4
Malaria	65	0	0.0	14	21.5	13	20.0	24	36.9	14	21.5
Measles	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Meningococcal disease	5	0	0.0	0	0.0	2	40.0	0	0.0	3	60.0
Mumps	7	0	0.0	3	42.9	2	28.6	0	0.0	2	28.6
Pertussis	625	31	5.0	105	16.8	200	32.0	181	29.0	108	17.3
Q fever	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Salmonellosis	1,144	20	1.7	180	15.7	287	25.1	422	36.9	235	20.5
Shigellosis	91	0	0.0	21	23.1	17	18.7	37	40.7	16	17.6
Spotted fever rickettsiosis, including RMSF	461	13	2.8	23	5.0	232	50.3	173	37.5	20	4.3
Staphylococcus aureus infection, invasive (MRSA)	1,294	17	1.3	323	25.0	320	24.7	373	28.8	261	20.2
Streptococcal disease, Group A, invasive or TSS	168	0	0.0	75	44.6	34	20.2	28	16.7	31	18.5
Streptococcus pneumoniae, invasive**	36	1	2.8	9	25.0	7	19.4	7	19.4	12	33.3
Syphilis, early	593	0	0.0	121	20.4	124	20.9	108	18.2	240	40.5
Typhoid fever	10	0	0.0	1	10.0	3	30.0	2	20.0	4	40.0
Vibrio infection	41	1	2.4	2	4.9	8	19.5	26	63.4	4	9.8

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

** Condition is reportable only in children < 5 years of age.

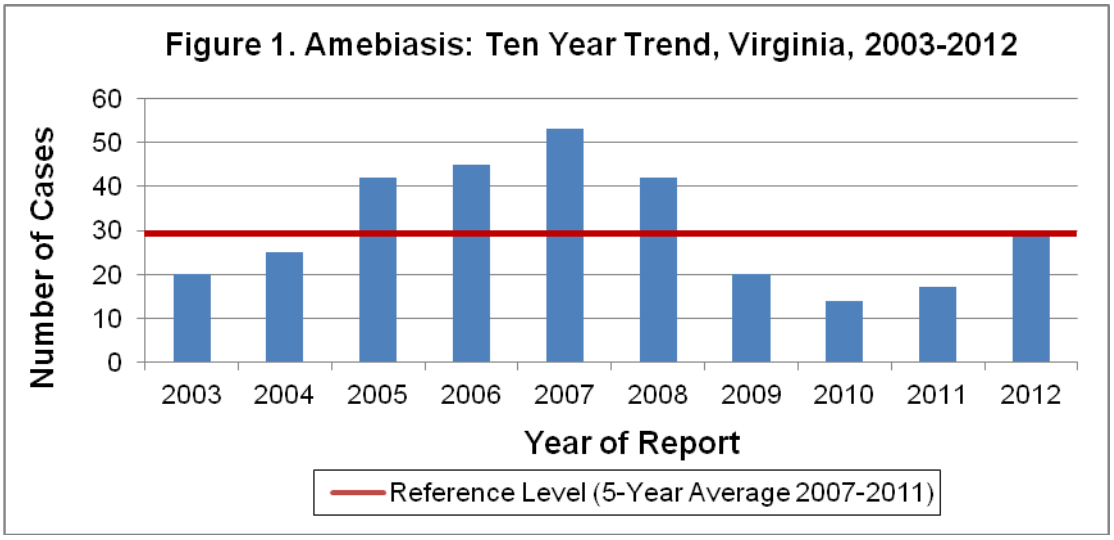
DESCRIPTIVE EPIDEMIOLOGY

OF

REPORTABLE DISEASES

Amebiasis

Agent: *Entameoba histolytica* (parasite)
Mode of Transmission: Ingestion of food or water contaminated with amebic cysts or by fecal-oral contact with an infected person.
Signs/Symptoms: Most infections are asymptomatic. Symptomatic infections include diarrhea, which may become severe, bloody or contain mucus; lower abdominal pain; weight loss; fever; and chills. Diarrhea may alternate with periods of constipation. Symptoms may become chronic.
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, and before preparing and eating food.
Other Important Information: Amebiasis can affect anyone, but it is most common in people who live in tropical areas with poor sanitary conditions. In the United States, it is mainly seen in people who travel to or emigrate from these tropical areas or in people living in institutions with poor sanitary conditions. Invasive amebiasis is mostly a disease of young adults and is rare in children under five years of age.



Twenty-nine cases of amebiasis were reported in Virginia during 2012. This is 71% higher than the seventeen cases reported in 2011, but similar to the ten-year average of 29.2 cases per year. While more cases were reported in 2012 than 2011, there has been a general decrease from the peak in 2007 (Figure 1). One factor contributing to the overall decline is a change in the national surveillance case definition that occurred in 2008. This change required that individuals with laboratory-confirmed infection also be symptomatic for their illness to be counted for surveillance purposes.

Among cases reported in 2012, the 20-29 year age group had the highest incidence rate (0.7 per 100,000). No cases were reported in the less than one year and 10-19 year age groups. Because information on race was missing for 83% of reported cases, no statement can be made about the distribution of amebiasis by race. Rates were higher in males (0.5 per 100,000) than females (0.2 per 100,000).

Twenty cases were reported in the northern health planning region, giving it the highest incidence rate of disease (0.9 per 100,000). The northwest and eastern health planning regions each reported four cases, with rates of 0.3 per 100,000 and 0.2 per 100,000, respectively. The central region reported one case (0.1 per 100,000), and no cases were reported from the southwest health planning region. While cases occurred throughout the year, the highest proportions were observed during the first and fourth quarters.

Anthrax

Agent: *Bacillus anthracis* (spore-forming bacteria)
Mode of Transmission: By direct contact with contaminated animal products; ingestion of contaminated, undercooked meat; and inhalation of spores during risky industrial practices (e.g., processing wool or hides) or through an intentional bioterrorism release.
Signs/Symptoms: There are three recognized forms of anthrax. The form that develops depends on the route of exposure. Cutaneous anthrax occurs when the bacteria enter a cut or abrasion on the skin and presents as a skin lesion that often develops a black scab. Intestinal anthrax occurs after the ingestion of contaminated meat and presents as abdominal distress (e.g., nausea, vomiting, diarrhea, fever). Inhalation anthrax occurs when the bacteria are inhaled; the symptoms are initially nonspecific, (e.g., fever, cough, chest pain), but progress to respiratory distress and death if untreated.
Prevention: Contact with infected animals and animal products should be minimal. A vaccine is available to immunize high-risk individuals, such as laboratorians who work with *B. anthracis* or military personnel.
Other Important Information: Person-to-person transmission is very rare. The incubation period, or time from exposure to onset of symptoms, ranges from 1 to 60 days. Anthrax is classified as a potential bioweapon because it can cause serious public health problems, be spread across a large area, and require extensive planning to protect the public's health.

No cases of anthrax were reported in Virginia during 2012. The last reported cases occurred in 2001. In that year, two Virginia residents were reported with inhalation anthrax from an intentional release of *Bacillus anthracis* spores through a letter received by the U.S. Postal Service. Both individuals were exposed at their workplace and both survived. Those were the first reported cases of anthrax in Virginia since 1970.

Arboviral Infection

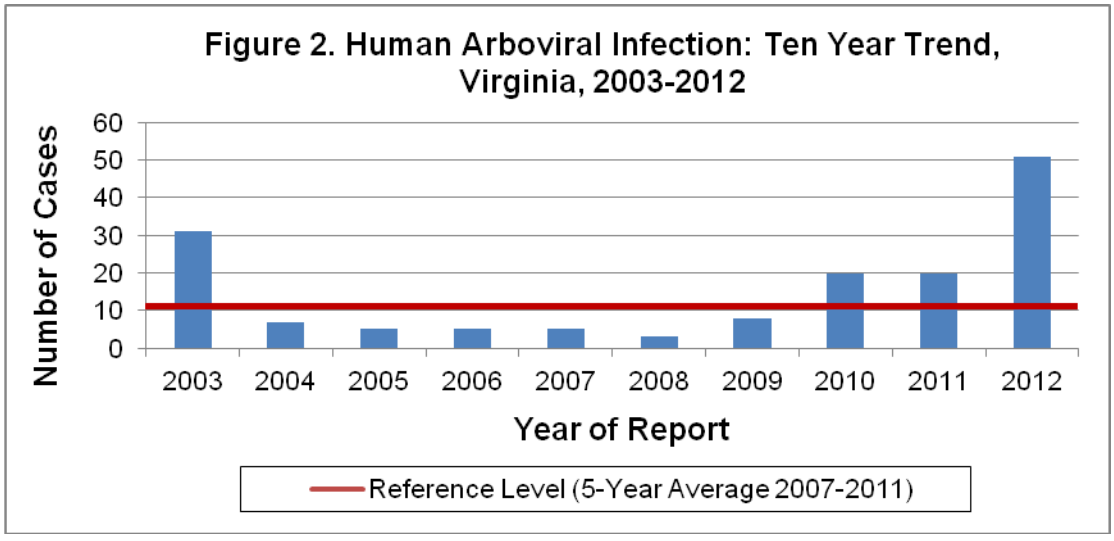
Agent(s): In Virginia, the agents of arboviral infection, from most to least common, are the mosquito-borne West Nile virus (WNV), LaCrosse encephalitis (LAC) virus, St. Louis encephalitis (SLE) virus and Eastern equine encephalitis (EEE) virus. Other arboviral agents causing illness in Virginians include the imported dengue virus and chikungunya virus, which typically infect travelers to endemic regions of the tropics and subtropics. Powassan (POW) virus, which is a tick-borne encephalitis virus, was recently discovered in Virginia.

Mode of Transmission: Most commonly through the bite of an infected mosquito. WNV may also be transmitted by blood products via transfusion or transplanted organs from infected donors, or by cuts or punctures with contaminated scalpels or needles and, more rarely, through inhalation or ingestion of dust or particles from infected bird feces.

Signs/Symptoms: Severity of symptoms differs depending on the particular virus and characteristics of the infected person. Most infections are asymptomatic. Mild cases may appear as fever with headache. More severe disease can cause encephalitis (i.e., inflammation of the brain) or meningitis (i.e., inflammation of the lining of the brain and spinal cord) and may lead to permanent neurological impairment or death.

Prevention: Minimize bites by avoiding areas infested by mosquitoes or ticks, and, when in those areas, use mosquito or tick repellents on skin and wear long-sleeved, light-colored clothing with pants legs tucked into socks. Additional control measures include maintaining screens on all open windows and doors and eliminating or regularly dumping all containers that could hold water and breed mosquitoes, including buckets, birdbaths and discarded tires. After visiting tick habitats, a person should thoroughly check all body surfaces for ticks and, if found, carefully remove attached ticks as soon as possible.

Other Important Information: WNV and SLE infections are more likely to cause severe disease in persons over the age of 50, but the majority of infections are asymptomatic. LAC is seen primarily in individuals less than 16 years of age. EEE has a high fatality rate and is more likely to affect children under the age of 15 and adults over the age of 50.



Human

The fifty-one human arboviral infections reported in 2012 is significantly higher than the five-year average of 11.2 cases per year (Figure 2). In 2012, 30 of the arboviral infections were caused by West Nile virus. Additional infections with endemic arboviruses included one case of La Crosse encephalitis and one case of Eastern equine encephalitis. The remaining eighteen cases were imported arboviral infections, including 17 cases of dengue fever from tropical countries, and one case of European tick borne encephalitis (TBE).

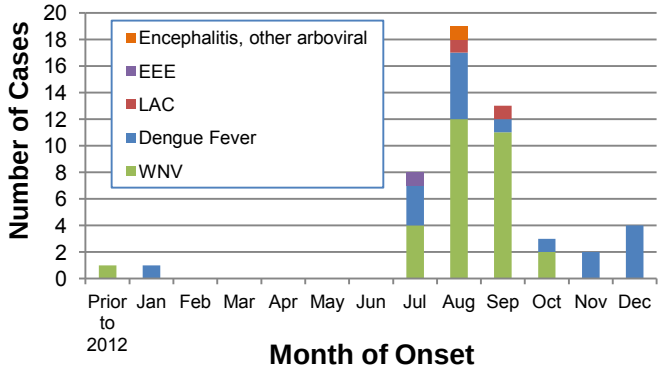
WNV activity in 2012 was greater than in any previous year in Virginia. The 30 WNV cases identified in 2012 were a six-fold increase from the five-year average of five cases per year. Seventeen of the 30 WNV cases were in male patients. All of the cases occurred in adults ranging from 28 to 84 years of age. By region, the highest incidence of WNV occurred in the northwest region (0.8 per 100,000), followed by the northern region (0.5 per 100,000). Incidence rates in the remaining regions ranged from 0.1 to 0.3 per 100,000. Twenty-one of the 30 cases occurred in urban areas. Historically, most of Virginia's WNV infections diagnosed since 2002 have occurred in urban sections of northern Virginia. Three deaths were attributed to WNV infection during 2012. The deaths occurred in an elderly female from the northwest region and two elderly males from the northern and eastern regions.

The two LAC cases reported in 2012 occurred in children age 10 years and younger. Both cases occurred in the southwest region. The single EEE case was in a young school-aged child in the eastern region.

All 17 of imported cases of dengue fever occurred in travelers returning from dengue endemic countries in the American tropics and south Asia. Cases ranged from 7 to 71 years of age and ten of the 17 cases were seen in females. The single case of European tick-borne encephalitis occurred in a male traveler who had returned from the Czech Republic. Due to cross-reactivity of the different Flaviviruses on blood tests, this patient was initially diagnosed with WNV. However, with further laboratory testing and information on travel history, the illness was determined to be TBE.

The majority of WNV infections occurred in August and September, which is the peak of WNV transmission season in Virginia (Figure 3). The LAC cases had onsets in August and September, while the EEE case occurred in July. Onset dates for the imported dengue fever cases occurred mostly in July, August and December. However, since these infections were acquired out

Figure 3. Human Arboviral Infection: Month of Onset, Virginia, 2012



of the country, any seasonality would be based on the travel patterns and seasonality of the illness in the endemic countries of origin.

Animal

Zoonotic surveillance for WNV and EEE is conducted each year by a limited number of jurisdictions in northern Virginia, the Richmond area, and Hampton Roads. These surveillance programs test for the presence of arboviruses in mosquitoes and sentinel chickens. Sentinel chicken flocks are maintained only in the Hampton Roads area. Veterinary records are also searched for equine cases of arboviral infection statewide. No mosquito/zoonotic testing programs are in place for LAC or SLE viruses.

In 2012, a total of 406,594 mosquitoes were tested for WNV. These mosquitoes were tested as "pools" (i.e., batches of up to 100 mosquitoes). Of the 11,385 pools tested for WNV, 400 (4%) were positive, indicating that each of these pools contained at least one WNV positive mosquito. This is a higher proportion than 2011 when 2% of the pools tested positive for WNV. Of the 400 positive pools from 2012, 357 were collected from northern Virginia, 12 from central Virginia, and 31 from Hampton Roads. In 2012, one WNV infection was seen in a horse in the northwestern region. Sentinel chicken testing revealed 26 WNV positive chickens in the Hampton Roads area.

In Virginia, surveillance for EEE is conducted only in the Hampton Roads area. In 2012, there was a significant increase in zoonotic EEE activity in this area. Of the 262,314 mosquitoes (5,694 pools) tested in that region, 152 pools (3%) tested positive for EEE. By comparison, of the 39,909 mosquitoes (855 pools) tested in that region in 2011, only one pool (<1%) was positive for EEE. In addition, 40 sentinel chickens tested positive for EEE in the Hampton Roads area in 2012, while only 10 tested positive in 2011.

Botulism

Agent: Neurotoxin produced by *Clostridium botulinum* (spore-forming, anaerobic bacteria)
Mode of Transmission: For foodborne botulism, ingestion of food that contains toxin and has not been sufficiently heated to inactivate the toxin. For non-foodborne botulism, ingestion of food contaminated with spores that then germinate, multiply, and produce toxin in the intestine (also known as intestinal botulism); or contamination of wounds by ground-in soil or gravel or from improperly treated open fractures (also known as wound botulism). *C. botulinum* is not transmitted from person to person.
Signs/Symptoms: Both foodborne and non-foodborne botulism can result in descending, flaccid paralysis which can lead to cessation of breathing and death unless respiration is aided. Additional distinguishing symptoms of foodborne botulism, which usually begin 12-36 hours after the toxin is ingested, but might be delayed for up to several days after exposure, include fatigue, weakness, vertigo, and sometimes diarrhea and vomiting. Intestinal botulism, formerly known as infant botulism, is characterized by constipation, weakness, loss of appetite, poor feeding or sucking, an altered cry and loss of head control. Symptoms of wound botulism are similar to those associated with foodborne botulism.
Prevention: For prevention of foodborne botulism, all canned and preserved food should be properly processed and prepared. Boiling food for 10 minutes will destroy the toxin. To prevent non-foodborne botulism, honey and corn syrup should not be given to children younger than 12 months of age because *C. botulinum* spores have been identified in these foods. Also, all wounds should be maintained properly and medical attention should be sought when wounds become infected.
Other Important Information: Botulism is a condition that requires rapid reporting to the local health department. Botulism antitoxin, released by public health authorities, is effective in reducing the severity of symptoms if administered early. Botulism is listed by CDC as a potential bioweapon because an aerosolized or foodborne botulinum-toxin weapon could cause widespread, severe disease and would require rapid public health response to control.

Foodborne

No cases of foodborne botulism were reported in Virginia during 2012. The most recent case in Virginia occurred in 2007 in an adult female. The five-year average is less than one case per year.

Non-Foodborne (including intestinal and wound botulism)

Two cases of non-foodborne botulism were reported in Virginia during 2012, matching the previous five-year average of 2.0 cases per year. Both of the 2012 cases occurred in female infants and were classified as intestinal botulism. One case was reported from the central region and the other from the southwest region. No risk factors were identified for either infant. While type A or type B neurotoxin account for the majority of all intestinal botulism cases, one of the 2012 cases was the first recognized case caused by toxin type F in Virginia. Infant formula was the suspected source of toxin in this case but was never definitively proven.

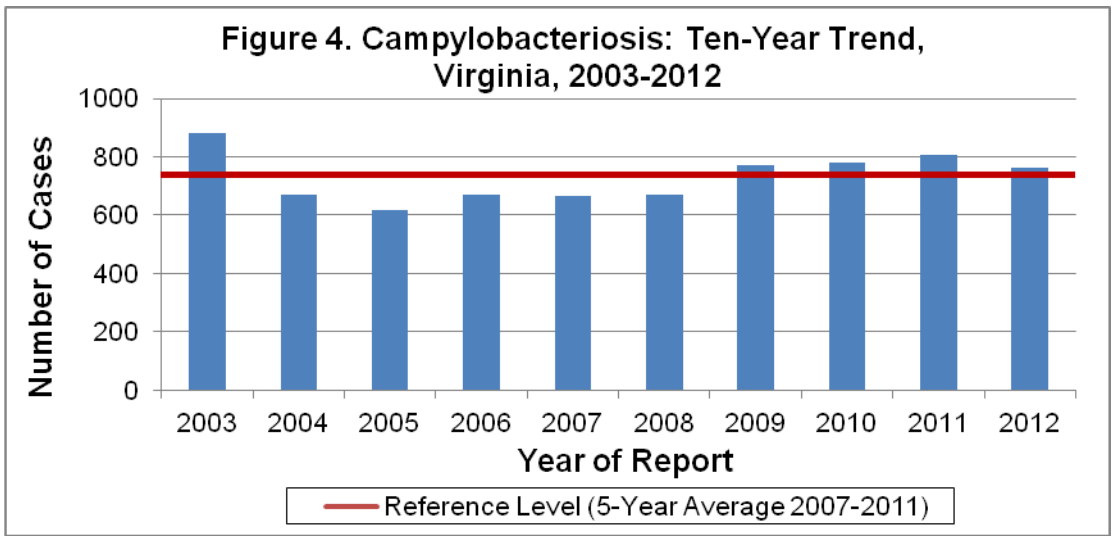
Brucellosis

Agent: *Brucella* species (bacteria)
Mode of Transmission: Through ingestion of unpasteurized milk or milk products most commonly, but also may be transmitted by contamination of skin wounds with infected animal tissue or body fluids and by inhalation of the organism.
Signs/Symptoms: Intermittent or irregular fever, headache, chills, sweating, and muscle pain.
Prevention: Unpasteurized dairy products, especially milk, cheese, or ice cream, should not be consumed. Barrier precautions, such as wearing rubber gloves, should be used when handling animal tissue. Laboratory workers should take proper infection control precautions when handling samples known to contain or suspected of containing *Brucella*.
Other Important Information: Considered an occupational disease of those working with infected animals, especially farm workers, veterinarians, and abattoir workers. *Brucella* is listed by the CDC as a potential bioterrorism agent because the organism may be relatively easily disseminated, may cause moderate injury or death, and may need enhanced surveillance for detection.

No cases of brucellosis were reported in 2012. The only cases of brucellosis reported in Virginia in the past five years were five cases diagnosed in 2009. Of these, four persons reported consuming a cheese product imported from Mexico. A definitive exposure was not provided for the remaining case. The five-year average for brucellosis is 1.0 case per year.

Campylobacteriosis

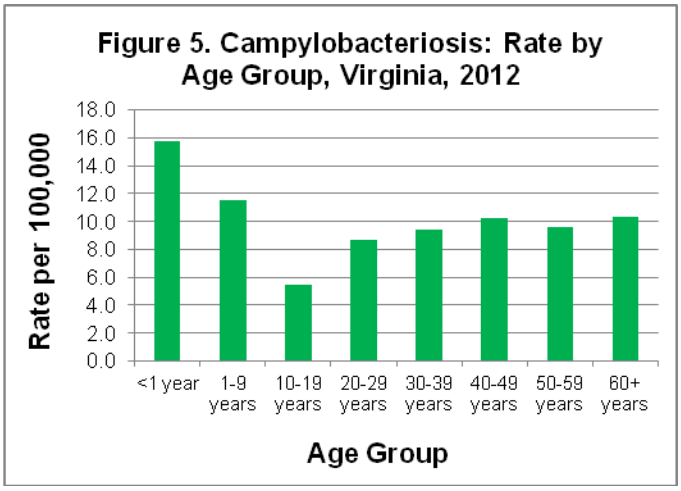
Agent: *Campylobacter* species (bacteria)
Mode of Transmission: Ingestion of undercooked meat, particularly poultry; ingestion of contaminated food, water, or raw milk; and direct contact with fecal material from infected animals or people.
Signs/Symptoms: Include diarrhea (frequently with bloody stools), abdominal pain, malaise, fever, nausea, or vomiting. In neonates and young infants, bloody diarrhea without fever may be the only manifestation of illness. Many infections are asymptomatic. Rarely, complications can develop, including reactive arthritis, febrile convulsions, or Guillain-Barré Syndrome; bacteremia may occur in children.
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, after handling animals or their feces, and before preparing and eating food. Pasteurization of milk and chlorination of water supplies are also important. All foods containing eggs and meats, particularly poultry, should be cooked thoroughly.
Other important information: In 2012, a change was implemented in the case definition for campylobacteriosis. This change requires a positive lab culture for case confirmation. Given the increasing popularity of non-culture based testing methods, fewer cases of campylobacteriosis may be confirmed in the future.



There were 764 cases of campylobacteriosis reported in Virginia in 2012. This is a 5% decrease from the 805 cases reported in 2011, and a 4% increase from the five-year average of 737.4 cases per year (Figure 4).

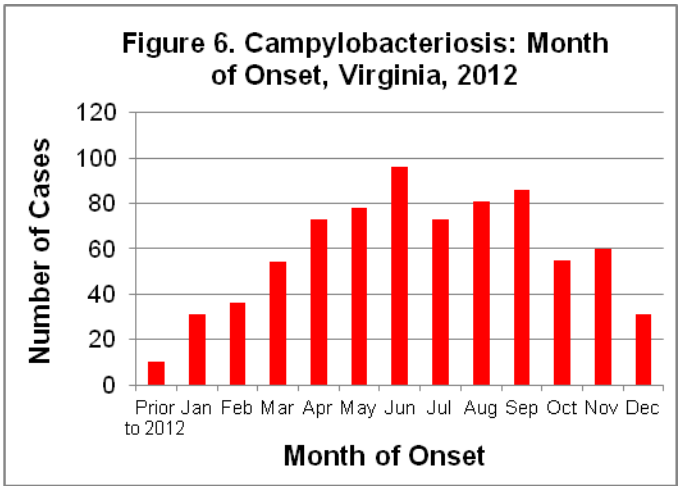
Nationally, rates of *Campylobacter* infection are highest in children younger than four years of age. In Virginia, the highest rates are consistently seen in the less than one year age group (Figure 5). This remained true in 2012, with the highest incidence rate (15.8 per 100,000) in this age group, followed by 11.5 per 100,000 in the 1-9 year age group. The lowest rate was observed in the 10-19 year age group (5.5 per 100,000).

Race information was missing for 49% of reported cases. For cases with race information available, incidence in the white population (5.7 per 100,000) was more than twice the rate in the "other" race population (2.7 per 100,000), and almost three times the rate in the black population (2.0 per 100,000). The incidence rate among males was higher than among females (10.3 and 8.3 per 100,000, respectively).



By region, the highest incidence of campylobacteriosis occurred in the northwest region (11.4 per 100,000), followed closely by the southwest (10.5 per 100,000) and northern regions (10.3 per 100,000). Rates were lowest in the central and eastern regions (8.8 and 6.7 per 100,000, respectively).

While cases occurred throughout the year, onsets occurred more often in the warmer months, with 64% of cases occurring from April to September (Figure 6). The only *Campylobacter* outbreak reported during 2012 occurred among a group of travelers returning from Mexico. Among Virginia residents, one death attributable to campylobacteriosis was reported in 2012. The death occurred in an adult male from the eastern region.



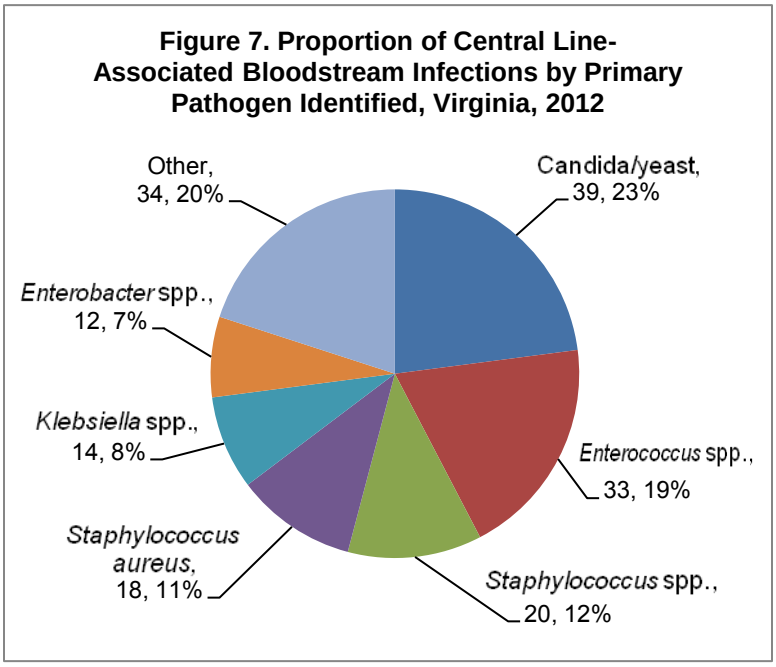
Central Line-Associated Bloodstream Infection (CLABSI)

Agent: Bacteria, virus, or fungus
Mode of transmission: A CLABSI is a central line-associated bloodstream infection. A central line is a flexible tube that is inserted near the patient's heart or into one of the large veins or arteries that can be used to give fluids or medications or measure the amount of fluid in the body. Because a central line is located in a blood vessel, any introduction of an infectious agent during central line insertion, maintenance, or removal may lead to a bloodstream infection.
Signs/symptoms: A positive blood culture and fever, chills, low blood pressure, and/or redness or tenderness at the central line insertion site. For patients less than one year of age, symptoms may also include fever, hypothermia, apnea (suspension of breathing), and/or bradycardia (slow heart rate).
Prevention: To prevent CLABSIs, healthcare providers should follow CDC infection prevention guidelines, including removal of unnecessary central lines and compliance with recommended practices for hand hygiene, central line insertion, and central line maintenance.
Other important information: Hospitals are required to provide information on CLABSIs occurring in adult intensive care units to the Virginia Department of Health via the Centers for Disease Control and Prevention's online surveillance system, the National Healthcare Safety Network (NHSN). Hospitals have reported these data since July 2008. Reports of hospital-specific CLABSI data are available from the VDH Healthcare-Associated Infections Program upon request.

In 2012, 170 central line-associated bloodstream infections occurred among 184,031 central line days in Virginia hospital adult intensive care units (ICUs), yielding a standardized infection ratio (SIR) of 0.49. This is a 23% decrease from the SIR of 0.64 observed in 2011 and was significantly lower than the SIR of 1 observed in the baseline population of hospitals in the United States. When compared with the U.S. reference value of 1, the SIR value of 0.49 can be interpreted as indicating that 51% fewer CLABSIs were observed in Virginia adult ICUs than were predicted based on the national experience. In Virginia, approximately one in three (31%, n=53) persons with CLABSI died, and the infection was noted as contributing to the death in 21% (n=11) of the fatalities.

The mean age of CLABSI cases in 2012 was 62 years (range: 20-100) and 55% were male. The largest proportion of CLABSIs occurred in medical/surgical intensive care units (25%), followed by cardiothoracic intensive care units (17%), medical intensive care units (16%) and trauma intensive care units (9%).

Figure 7. Proportion of Central Line-Associated Bloodstream Infections by Primary Pathogen Identified, Virginia, 2012



Several pathogens can be present in a CLABSI, but of greatest interest is the primary pathogen, the one noted to be most responsible for causing the infection. In 2012, six primary pathogens were responsible for 80% of CLABSIs and included Candida/yeast, *Enterococcus* species, *Staphylococcus* species (excluding *S. aureus), Staphylococcus aureus, Klebsiella* species, and *Enterobacter* species (Figure 7). Other primary pathogens included bacteria such as *Acinetobacter* species, *Citrobacter* species, *E. coli, Proteus mirabilis*, *Pseudomonas* species, *Serratia* species, *Stenotrophomonas maltophilia*, and *Streptococcus* species.

In 2012, 39% of *S. aureus* CLABSIs were methicillin-resistant and 61% of the *Enterococcus* species CLABSIs were vancomycin-resistant. No carbapenem-resistant *Klebsiella pneumoniae* or *E. coli* CLABSIs were reported in 2012. Six carbapenem-resistant *K. pneumoniae* CLABSIs have been reported to VDH through NHSN since CLABSI reporting began in July 2008.

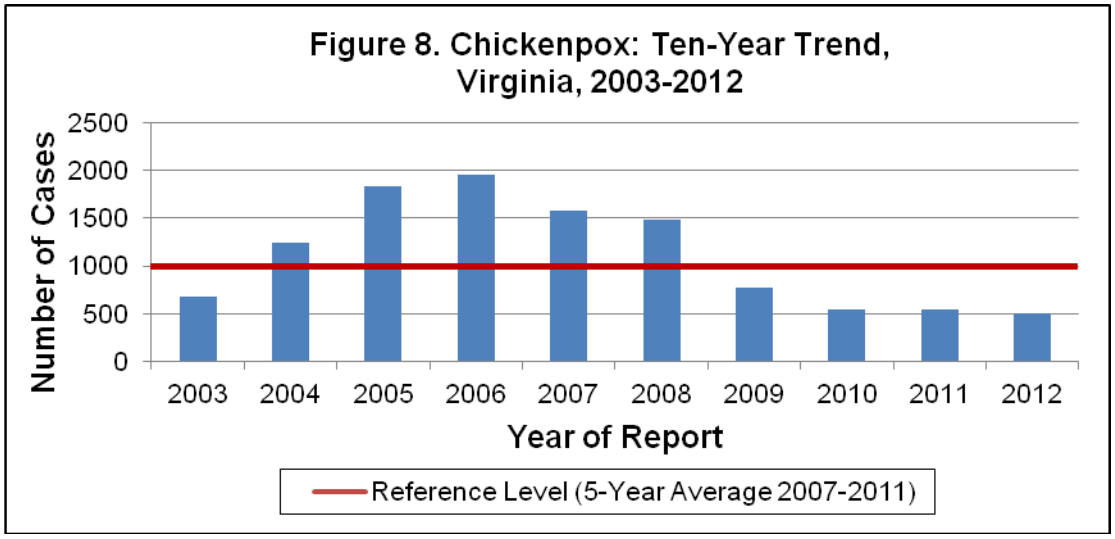
Chancroid

Agent: *Haemophilus ducreyi* (bacteria)
Mode of Transmission: Sexual transmission through skin-to-skin contact with open sores; transmission not related to sexual contact is rare. Auto-inoculation to non-genital sites from open sores is also possible.
Signs/Symptoms: Appearance of one or more sores or raised bumps on the genital organs. Sores are surrounded by a narrow red border and become filled with purulent secretion, and eventually rupture, leaving a painful open lesion. The sore is soft to the touch, which is why the term soft chancre is frequently used to describe the chancroid ulcer. In 50% of untreated cases, the chancroid bacteria infect the lymph nodes in the groin.
Prevention: Preventive measures include adhering to safe sexual practices and abstaining from sexual relations with an infected partner until the infection is cured.
Other Important Information: Chancroid is common in tropical countries. In the U.S., it usually occurs in discrete outbreaks. This disease is a cofactor for HIV transmission, as are genital herpes and syphilis. High rates of HIV infection among patients who have chancroid are seen in the United States and other countries.

One case of chancroid was reported in Virginia during 2012. The infection was reported in an adult female from the eastern region. Previously, the last reported case occurred in 2006.

Chickenpox (Varicella)

Agent: Varicella-zoster virus (VZV)
Mode of Transmission: Person-to-person transmission by direct contact or through droplet or airborne spread of vesicle fluid or respiratory secretions from an infected person.
Signs/Symptoms: Acute onset of fever and generalized, pruritic, vesicular rash typically consisting of 250-500 lesions. Successive crops of lesions appear first on the head and progress to the trunk and extremities. Lesions can appear on the scalp, armpit, and mucous membranes of the mouth, respiratory tract, and eye.
Prevention: Administration of vaccine should occur for children starting at age 12 months followed by a second dose at age 4-6 years.
Other Important Information: The disease is highly transmissible; susceptible household contacts have an 80-90% risk of becoming infected. In healthy children, acute varicella is generally mild and self-limited, but severe complications may occur, especially in adults. Herpes zoster, or shingles, occurs when latent VZV reactivates and causes recurrent disease.



The 505 cases of chickenpox reported in Virginia during 2012 represent an 8% drop from the 549 cases reported in 2011, and a 49% decrease from the five-year average of 988.2 cases per year (Figure 8). The decline in the number of cases in recent years mirrors nationwide trends and may be attributed to implementation of the recommendation for a second dose of vaccine. Varicella vaccine was licensed in 1995, and in 1999 vaccination became a requirement for entry into school and daycare in Virginia for all children born on or after January 1, 1997. However, outbreaks of chickenpox continued to occur despite high vaccination coverage, as a single dose of vaccine was found to be only 70-90% effective in preventing infection. As a result, recommendations for a second dose of varicella vaccine, to be administered before kindergarten entry, were published in June 2007, and the school entry requirement was updated to include a second dose in 2010.

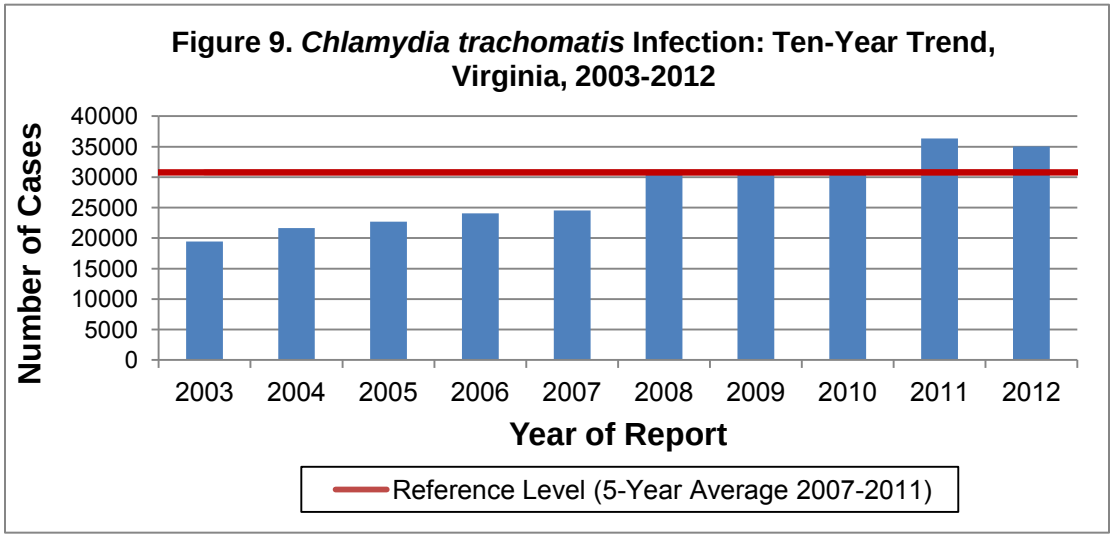
The vast majority of cases occurring in 2012 (83%) were reported in young children and teens, which is consistent with historical data. Incidence was highest in children less than one year of age (36.5 per 100,000), followed by children 1-9 years of age and adolescents age 10-19 years (26.0 and 13.2 per 100,000, respectively). The other age groups had lower incidence rates, ranging from 0.1 to 3.6 cases per 100,000, confirming that this disease occurs primarily in children and adolescents. Race was not provided for 26% of the reported cases. Among cases where race was known, incidence in the "other" race population was highest (6.4 per 100,000), followed by rates in the white and black populations (4.7 and 3.7 per 100,000, respectively). The rate in males was only slightly higher than the rate in females (6.3 and 6.1 per 100,000, respectively).

By region, the highest incidence occurred in the southwest region (9.2 cases per 100,000); incidence in all other regions ranged from 3.6 to 7.5 cases per 100,000. Cases occurred throughout the year. Traditionally in the U.S., the highest incidence has occurred between March and May, although the seasonality of chickenpox is less apparent since vaccination became common.

Five outbreaks were attributed to chickenpox in 2012, the same number as the previous year. An average of 11.8 cases was reported per outbreak, and all outbreaks involved school-aged children. With the exception of 2012, the number of chickenpox outbreaks reported each year has continued to decline. Seven outbreaks were reported in 2010, down from 15 in 2009 and 24 in 2008, further indicating that the two-dose vaccination schedule is helping reduce the occurrence of illness in young children. While breakthrough infections have continued in vaccinated individuals, on average, the illness in vaccinated individuals is much milder (i.e., less than 50 skin lesions, low or no fever, and a shorter duration of illness).

Chlamydia trachomatis Infection

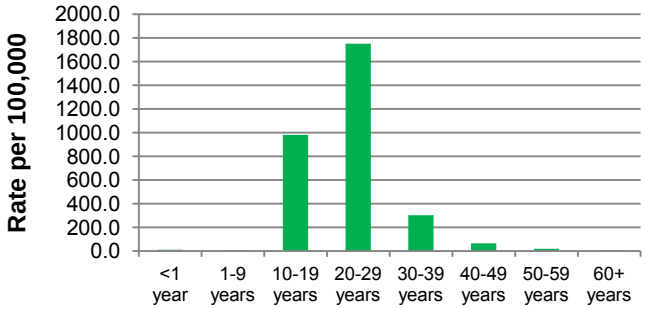
Agent: *Chlamydia trachomatis* (bacteria)
Mode of Transmission: Person-to-person via sexual transmission, or from the genital tract of an infected mother to her infant during birth.
Signs/Symptoms:
Men: Urethritis, with discharge, itching, and burning upon urination.
Women: Cervical inflammation with discharge, fluid buildup, and easily induced vaginal bleeding. Untreated *Chlamydia* can lead to pelvic inflammatory disorder and infertility.
Infants: Infections of the eyes and respiratory tract.
Prevention: Preventive measures include adhering to safe sexual practices; screening of young women less than 25 years of age; and presumptive treatment for *Chlamydia* infection among people who are exposed.
Other Important Information: Approximately 70% of infected women are asymptomatic.



During 2012, a total of 35,016 cases of *C. trachomatis* infection (432.5 cases per 100,000) were reported in Virginia (Figure 9). This represents a 4% decrease from the 36,317 cases reported in 2011, but is higher than the five-year average of 30,750.6 cases per year. Nationwide, the number of reported cases of *C. trachomatis* infection continues to rise and it remains the most frequently reported, bacterial sexually transmitted infection in the United States. The Centers for Disease Control and Prevention attributes the national increase in reported cases to increased screening, expanded use of more sensitive tests and more complete national reporting. Despite improvements in reporting, the true number of annual infections remains undercounted due to a variety of factors, including the commonly asymptomatic nature of *C. trachomatis* infections, presumptive treatment for persons diagnosed with other sexually transmitted infections (e.g., gonorrhea) and screening programs targeted to sexually active females and male partners of infected women. Although it is expected that more females will be tested than males due to current screening criteria, detection of disease among males continues to increase. The incidence of reported infections among males in Virginia rose from 88.1 per 100,000 in 2001 to 258.1 per 100,000 in 2012.

In 2012, the highest incidence rate was observed in the 20-29 year age group (1,752.5 per 100,000), followed by the 10-19 year age group (982.3 per 100,000) (Figure 10). Among the 11 reported infections in the less than one year age group, all were ophthalmic (eye) infections due to perinatal exposure (see the Ophthalmia Neonatorum section of this report). Information on race was missing for 28% of reported cases. Among cases where race was known, incidence in the black population (958.2 per 100,000) was almost eight times the rate in the white population (124.8 per 100,000) and almost three times the rate in the "other" race population (346.3 per 100,000). The rate of *C. trachomatis* infection diagnosed in females (599.6 per 100,000) was more than two times the rate in males (258.1 per 100,000), which may be largely explained by more frequent screening in women.

Figure 10. *Chlamydia trachomatis* Infection: Rate by Age Group, Virginia, 2012



Since 2001, the highest *C. trachomatis* infection rates have been detected in the eastern region (732.0 per 100,000 in 2012). The second highest rate in 2012 occurred in the central region (584.5 per 100,000), while the lowest rate was seen in the northern region (234.2 per 100,000).

Cholera

Agent: *Vibrio cholerae* (serogroup O1 and O139)
Mode of Transmission: Epidemics and pandemics are strongly linked to the consumption of unsafe water and food, poor hygiene, inadequate water treatment, poor sanitation, and crowded living conditions. Conditions leading to epidemics exist in many developing countries where cholera is either endemic or a recurring problem in a large number of areas. The disease is unlikely to spread directly from one person to another.
Signs/Symptoms: Sudden onset of profuse, painless watery stools, often described as rice-water stool, provoked by an enterotoxin that affects the small intestine. Nausea and profuse vomiting occur early in the course of illness. In untreated cases, rapid dehydration, acidosis, circulatory collapse, hypoglycemia in children and renal failure can rapidly lead to death. In most cases infection is asymptomatic or causes mild diarrhea.
Prevention: Safe drinking water and proper sanitation are the keys to cholera prevention. When traveling in countries where cholera is present, only thoroughly cooked hot foods or fruits/vegetables that are peeled just before eating should be eaten, and only bottled beverages or water that has been boiled or treated with chlorine be used for drinking, brushing teeth, or cleaning food preparation surfaces. Hands should be washed thoroughly with soap after using the bathroom and before preparing or eating food. Seafood should be cooked thoroughly before it is eaten. Existing oral cholera vaccines are not available in the U.S. and are not recommended for most travelers.
Other Important Information: In severely dehydrated cases, death may occur within a few hours and the case-fatality rate may exceed 50%. With proper and timely rehydration, this rate can be less than 1%.

No cases of cholera were reported in Virginia in 2012. One travel-associated case had been reported each year in 2010 and 2011. No cases of cholera were reported in Virginia from 1995 to 2009.

Creutzfeldt-Jakob Disease (CJD)

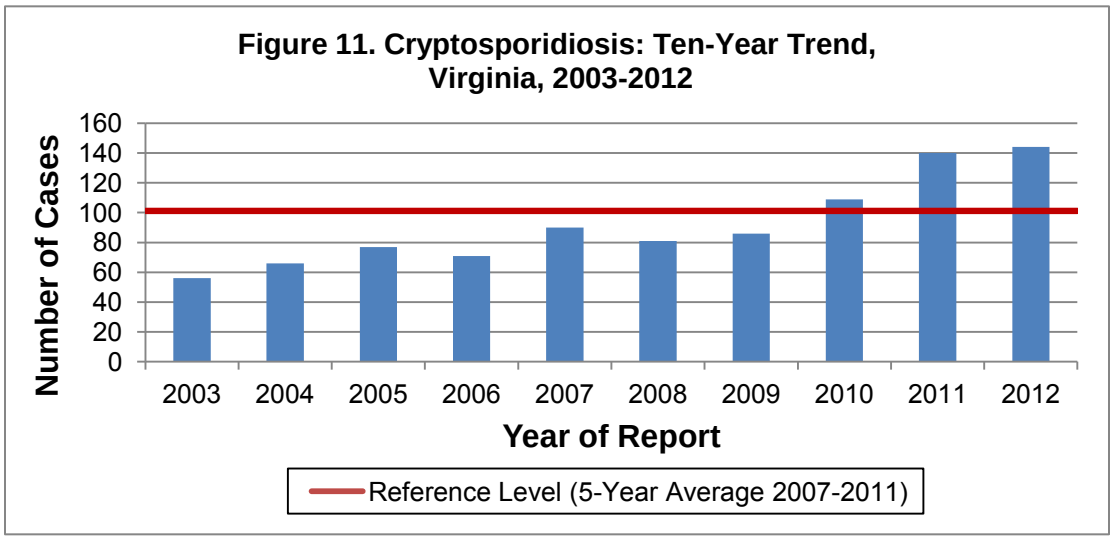
Agent: Believed to be caused by a prion protein
Mode of Transmission: The majority of CJD cases (80%-90%) are sporadic CJD, with no known source. A small percentage of cases (5%-15%) may be due to heredity (familial CJD) or exposure to organ tissue contaminated with the prion (iatrogenic CJD). Classic CJD includes sporadic CJD, familial CJD, and iatrogenic CJD. A form of the disease, variant Creutzfeldt-Jakob disease (vCJD), is thought to be transmitted through ingestion of beef from cattle with bovine spongiform encephalopathy (BSE, commonly referred to as mad cow disease).
Signs/Symptoms: Symptoms may begin with confusion, and they rapidly progress to a wide range of neurological signs and symptoms, including loss of coordination and dementia.
Prevention: Organ and tissue transplants from infected individuals should be avoided. For protection against vCJD, the federal government has regulations in place to prevent the spread of BSE in the United States.
Other Important Information: vCJD occurs in younger individuals, while classic CJD occurs more often in older individuals and has a slower progression. In Virginia, CJD is reportable when it occurs in persons under 55 years of age.

No cases of Creutzfeldt-Jakob disease in persons less than 55 years of age were reported in Virginia during 2012. The last reported case occurred in 2007 in a white male in the 30-39 year age group, and the infection was determined to be classic CJD. The individual died as a result of this condition. There have been six cases of classic CJD infection diagnosed in Virginia residents less than 55 years of age since 1998.

The only case of vCJD ever diagnosed in a Virginia resident occurred in 2006. Based on the patient's history, it was determined that the infection most likely occurred from contaminated cattle products consumed as a child when living in Saudi Arabia. It was the third case of vCJD reported in a U.S. resident. The two previously reported cases were born and raised in the United Kingdom, where they were believed to have been infected.

Cryptosporidiosis

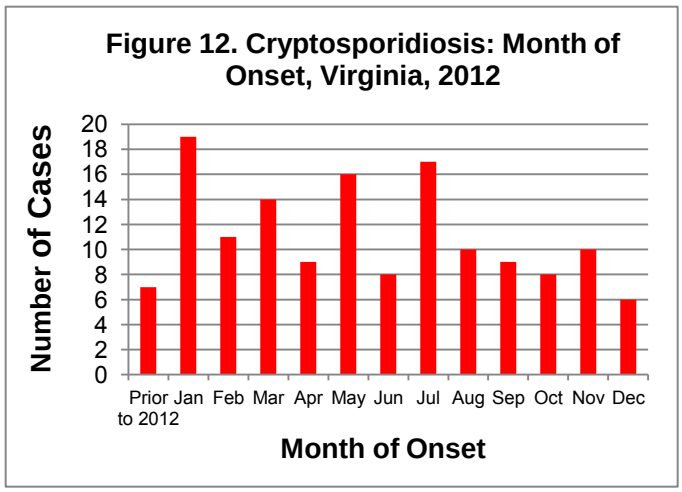
Agent: *Cryptosporidium parvum* (parasite)
Mode of Transmission: Occurs via the fecal-oral route and can include person-to-person, animal-to-person, foodborne, and waterborne transmission. Animals such as cattle, sheep, and goats have tested positive for the parasite and are an important reservoir, contributing to both direct transmission and contamination of water supplies. *Cryptosporidium* oocytes may be excreted from infected individuals for up to several months after diarrhea has resolved. Oocytes can remain infectious for 2-6 months after being excreted. The oocytes are very resistant to chemicals used to purify drinking water and disinfect recreational water (e.g., chlorine in pools).
Signs/Symptoms: Profuse watery diarrhea with nausea, cramping, and abdominal pain. The diarrhea may be preceded by anorexia and vomiting in children. Intestinal infections are typically self-limiting. Immunocompromised persons have a higher risk of poor outcomes, including death. Asymptomatic infections are common.
Prevention: Preventive measures include careful hand hygiene after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, after handling animals or their feces, and before preparing and eating food. People with diarrhea should not enter public recreational water. Water purification methods, including boiling water or filtration, should be considered when drinking water from natural streams, lakes, springs, or any unknown source.



In 2012, there were 144 cases of cryptosporidiosis reported in Virginia. This is similar to the 140 cases reported in 2011, and represents an increase of 42% over the five-year average of 101.2 cases per year (Figure 11). The general upward trend in reported cryptosporidiosis cases during the past decade in Virginia mirrors a national pattern.

In 2012, the highest incidence rates were observed in the 60 year and older age group (2.8 per 100,000). The other age groups had incidence rates from 1.1 to 2.2 cases per 100,000. Race was not reported for 26% of cases in 2012. Among cases with race information available, the rate was highest among the white population (1.5 cases per

100,000), followed by the black population (1.1 cases per 100,000) and the "other" race group (0.5 cases per 100,000). The rate of infection was slightly higher in females than males (1.9 and 1.6 per 100,000, respectively).



By health planning region, the highest rate was reported from the northern region (2.5 per 100,000). The other regions had incidence rates ranging from 0.9 to 2.0 per 100,000, with both the central and northwest regions having the lowest rate. Nationally, a higher number of illnesses is typically seen during the summer months and is consistent with increased recreational water exposure, including public pools. This seasonal pattern was not observed in Virginia in 2012. Instead, there was substantial month-to-month variation, with the highest number of cases occurring in January (Figure 12). Among Virginia cases in 2012, the most frequently reported risk factor was contact with animals (44 cases, 31%). Other frequently reported risk factors included travel prior to illness onset (23%), recreational water exposure (14%), and immunodeficiency (7%).

Cyclosporiasis

Agent: *Cyclospora cayetanensis* (parasite)
Mode of Transmission: Can be foodborne or waterborne. *Cyclospora* are resistant to chlorination. Direct person-to-person transmission has not been documented.
Signs/Symptoms: Profuse watery diarrhea commonly occurs, along with nausea, vomiting, anorexia, substantial weight loss, abdominal bloating or cramping and prolonged fatigue. Fever occurs in approximately half the patients.
Prevention: Fresh produce should be washed thoroughly before it is consumed.
Other Important Information: *C. cayetanensis* is known to be endemic in many resource-limited countries and has been reported as a cause of traveler's diarrhea. Most outbreaks reported in the U.S. have been associated with the consumption of imported fresh produce.

One case of cyclosporiasis was reported during 2012, which is similar to the five-year average of 1.6 cases per year. The case occurred in an adult male from the northwest region who became ill shortly after international travel to southeast Asia.

Diphtheria

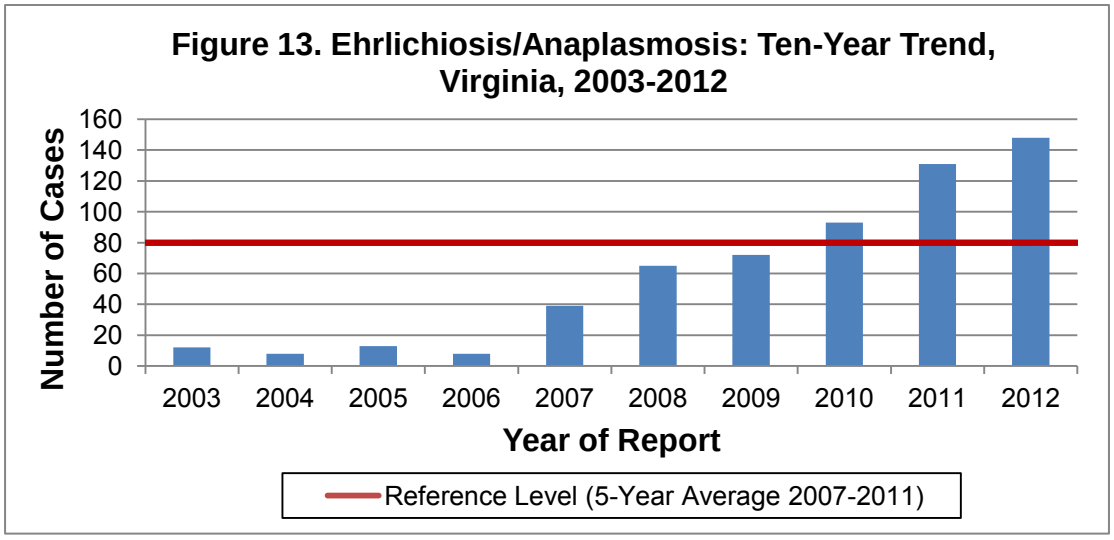
Agent: Toxin secreted by strains of the bacterium *Corynebacterium diphtheriae*
Mode of Transmission: Person-to-person transmission via respiratory droplets. Rarely, transmission may occur from contact with skin lesions or articles soiled with discharges from the lesions of infected persons.
Signs/Symptoms: Sore throat, anorexia, nasal discharge, and formation of a bluish-white, grayish-green, or black adherent membrane in the throat. More severe cases can include swelling of the neck and airway passages.
Prevention: Diphtheria vaccine is available as part of the diphtheria/tetanus/pertussis (DTaP) vaccine for children and the combination tetanus/diphtheria/pertussis (Tdap) vaccine for adolescents and adults. One dose of Tdap should be given at 11 to 12 years of age with booster doses of tetanus/diphtheria (Td) every ten years thereafter.
Other Important Information: The overall case-fatality rate for diphtheria is 5%-10%, with higher death rates in young children and those over 40 years of age.

No cases of diphtheria were reported in Virginia during 2012. The last reported case occurred in 1989. Nationally, one case of diphtheria was reported in 2012; the most recent case before that occurred in 2003.

Ehrlichiosis/Anaplasmosis

Agent(s): Bacteria belonging to the family *Anaplasmataceae*. *Ehrlichia chaffeensis* infects monocytes (a type of white blood cell involved with immune function) and causes an illness called human monocytic ehrlichiosis (HME). *E. ewingii* infects granulocytes (a different category of white blood cells) and causes a disease referred to as an *E. ewingii* infection. *Anaplasma phagocytophilum* also infects granulocytes, causing an illness called human granulocytic anaplasmosis (HGA).
Mode of Transmission: Transmitted to humans through the bite of an infected tick. *E. chaffeensis* and *E. ewingii* may infect adult and nymph stage lone star ticks. *Anaplasma phagocytophilum* may infect nymph stage and adult blacklegged ticks (deer ticks). Transmission of these pathogens occurs when an infected tick bites a person and feeds (i.e., remains attached) on that person for a period of more than 24 hours.
Signs/Symptoms: Illness symptoms commonly include the sudden onset of fever, accompanied by one or more of the following symptoms: headache, body aches, nausea, vomiting and rash. In cases of ehrlichiosis, a rash may occur in up to 30 % of adults and 60% of children; rashes are less common in cases of anaplasmosis. Patients may exhibit signs of thrombocytopenia (low blood platelet count) and leucopenia (low white blood cell count) and elevated liver function tests. Severe forms of illness can result in meningitis/encephalitis, bleeding disorders, difficulty breathing, organ damage and death. Persons with weakened immune systems are prone to develop more severe disease.
Prevention: Common practice should include minimizing tick bites by recognizing and avoiding the habitats of lone star ticks and blacklegged ticks. These habitats include humid forest environments with undergrowth or heavy leaf litter, and tall weeds and vegetative ground cover along forest margins, tree lines, forest trails and forest clearings. Repellents containing DEET, Picaridin, BioUD, IR3535, or oil of lemon eucalyptus are effective against ticks and should be applied to exposed areas of skin before entering tick habitats. When in tick-prone habitats, light-colored clothing should be worn with pants legs tucked into socks, and permethrin-based repellents should be applied to clothing, socks and shoes. After visiting tick habitats, a person should remove and wash clothing, thoroughly check all body surfaces for ticks and, if found, carefully remove attached ticks as soon as possible.
Other Important Information: Due to the many difficulties associated with diagnosis and testing of Rickettsial diseases, some cases of ehrlichiosis or anaplasmosis may be diagnosed as Rocky Mountain spotted fever (RMSF). Based on tick infection surveys, ehrlichiosis is thought to be more common than RMSF in Virginia.

A total of 148 cases of ehrlichiosis/anaplasmosis were reported in Virginia during 2012. This is a 13% increase from the 131 cases seen in 2011, and an 85% increase from the five-year average of 80.0 cases per year (Figure 13). The considerable increase in reported cases may be due to numerous factors, including increased knowledge of these diseases among healthcare providers, improvements in diagnosis and reporting, and increased tick populations. The increased tick populations result from increased deer populations, particularly in recently developed suburban areas where deer numbers are difficult to control through hunting. Adult lone star ticks and blacklegged ticks both feed



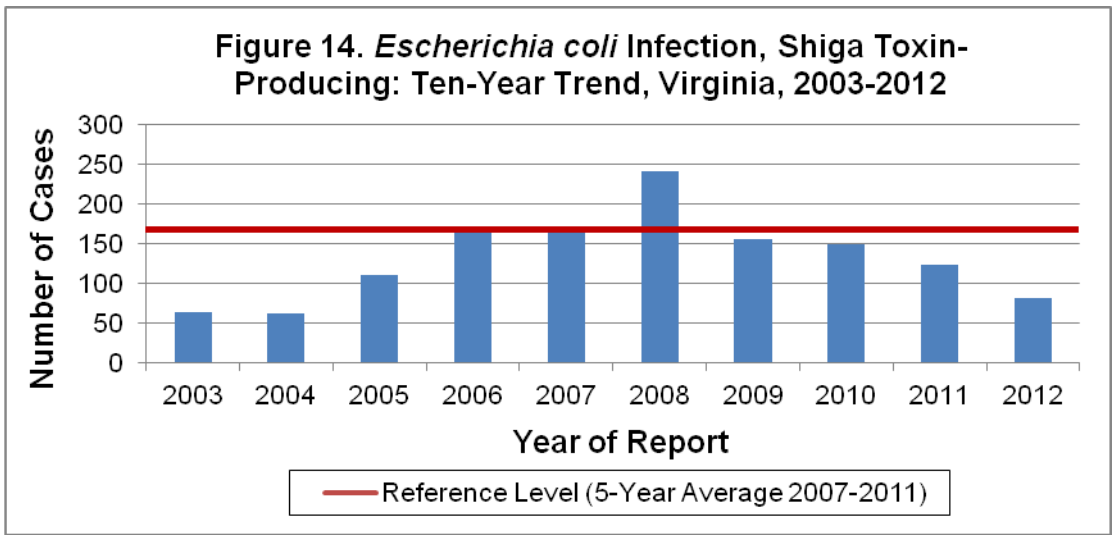
primarily on deer blood for reproduction, and deer also serve as a reservoir for *E. chaffeensis*. Among cases reported in 2012, 123 were specified as HME, 18 were specified as HGA, six were ehrlichiosis/anaplasmosis unspecified, and one was a case of *E. ewingii* infection.

In 2012, ehrlichiosis/anaplasmosis incidence was highest in the 60 year and older age group, with 4.5 cases per 100,000, and second highest in the 50-59 year age group, with 3.0 cases per 100,000. Together, these two age groups accounted for 68% of all identified cases. From the high rates in these groups, incidence generally decreased with age, to no cases in the less than one year age group. This pattern of age distribution, where infections occur predominantly among those over the age of 50 years, is typical for ehrlichiosis and anaplasmosis observed in other endemic areas of the United States. Race information was not provided for 52% of the reported cases. Among cases where race data were provided, incidence in the white population was six times the rate in the black population (1.2 and 0.2 per 100,000, respectively). The rate in males was higher than the rate in females (2.4 and 1.3 per 100,000, respectively).

In 2012, cases were reported from all regions of the state. The highest incidence was seen in the northwest and central regions (3.8 and 2.7 cases per 100,000, respectively). Rates in the remaining regions ranged from 0.9 to 2.5 cases per 100,000. The largest proportion of cases (56%) had symptom onset in the second quarter, and 31% had symptom onset in the third quarter. The second and third quarters represent the spring and summer months, when ticks are most likely to feed. During 2012, no deaths were attributed to *Ehrlichia* or *Anaplasma* infections.

Escherichia coli Infection, Shiga Toxin-Producing

Agent: Shiga toxin-producing *Escherichia coli* (bacteria)
Mode of Transmission: Ingestion of food or water contaminated with human or animal feces, or direct transmission from infected persons or animals. Fomites and contaminated environments may also play a role in transmission.
Signs/Symptoms: Diarrhea, which may be bloody or non-bloody, and severe abdominal cramps with little or no fever. In some people, including children less than five years of age and older adults, the infection can cause a complication called hemolytic uremic syndrome (HUS), in which the red blood cells are destroyed and the kidneys fail.
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, after handling animals or their feces, and before preparing and eating food. All ground beef should be cooked thoroughly to an internal temperature of at least 160°. Raw milk, unpasteurized dairy products, and unpasteurized juices should not be consumed.
Other Important Information: The most virulent serotype in the Shiga toxin-producing pathotype is *E. coli* O157:H7. In the U.S., *E. coli* O157:H7 is the serotype most commonly associated with hemolytic uremic syndrome (HUS). See the section on Hemolytic Uremic Syndrome in this report for more information. Shiga toxin-producing *E. coli* (STEC) infection has been a reportable condition in Virginia since 1999.

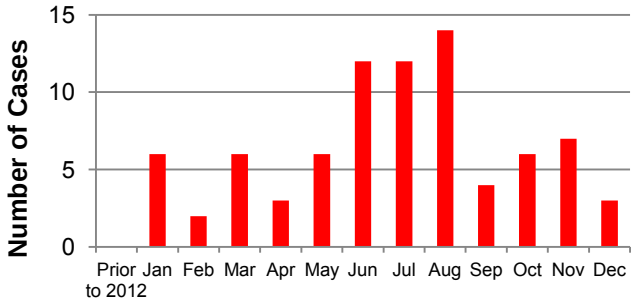


The 81 cases of STEC reported in 2012 represent a 34% decrease from the 123 cases reported in 2011 and a 51% decrease from the five-year average of 166.8 cases per year (Figure 14).

The highest rate of infection was seen in the 1-9 year age group (2.8 per 100,000), followed by the 10-19 year age group (2.0 per 100,000). Other age groups had incidence rates between 0.4 and 1.0 per 100,000. Information on race was not available for 23% of the cases. Among those with race information, the rates were similar among racial groups, ranging from 0.7 to 0.9 per 100,000. Males had a slightly higher incidence of infection than females (1.1 and 0.9 per 100,000, respectively). The northwest and

southwest regions experienced the highest incidence rates (1.7 and 1.3 per 100,000, respectively), while incidence rates in the other regions were between 0.4 and 1.0 case per 100,000.

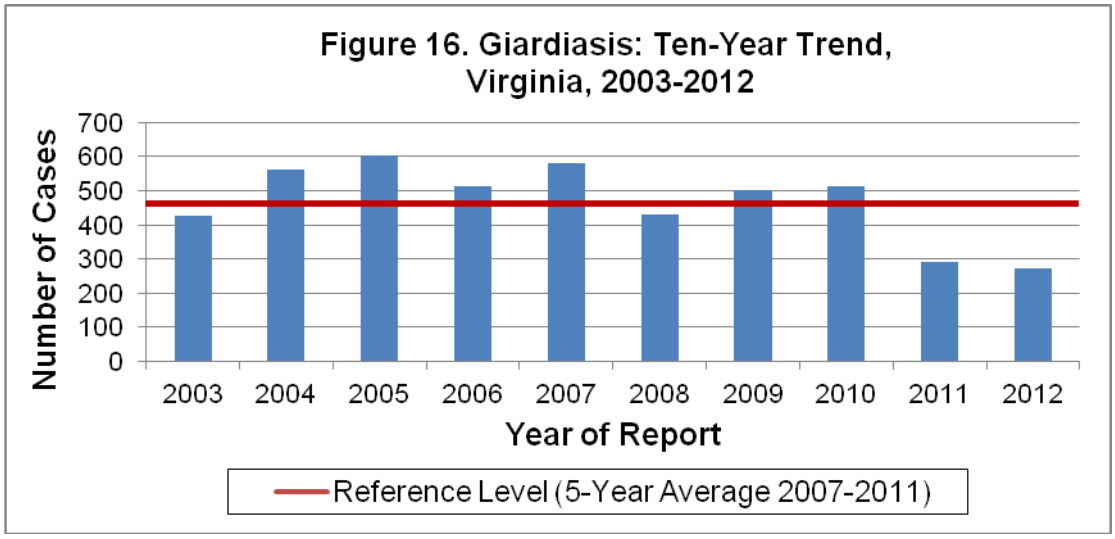
Figure 15. *Escherichia coli* Infection, Shiga Toxin-Producing: Month of Onset, Virginia, 2012



While cases occurred throughout the year, cases peaked during the warmer summer months of June through August (Figure 15). Three outbreaks attributed to *E. coli* infection were reported during 2012. All three outbreaks involved multi-state clusters with Virginia having one case involved in each outbreak. Two of the outbreaks were food-related, while no source was identified for the third outbreak.

Giardiasis

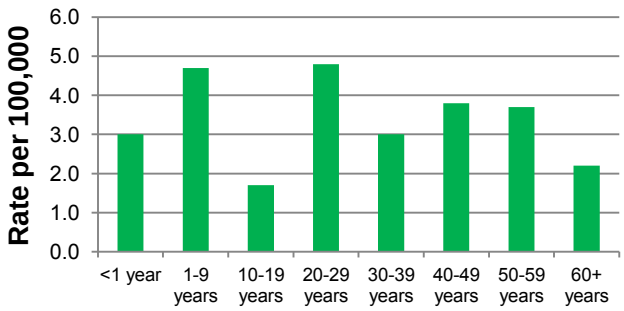
Agent: *Giardia intestinalis* (parasite)
Mode of Transmission: Person-to-person transmission by hand-to-mouth transfer of cysts from the feces of an infected person. Localized outbreaks are more often due to ingestion of cysts in fecally-contaminated drinking and recreational water (e.g., lakes, rivers, springs, ponds, and streams) than from fecally-contaminated food.
Signs/Symptoms: Symptoms may include diarrhea, abdominal pain, bloating, nausea and vomiting. A person may be asymptomatic or develop chronic illness.
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom; after handling animals or their feces; and before preparing and eating food. Recreational water or untreated water from shallow wells, lakes, rivers, springs, ponds or streams should not be consumed. Persons with diarrhea should not swim at recreational water venues.



During 2012, 272 cases of giardiasis were reported in Virginia. When examining the number of cases of giardiasis reported over a ten year period (Figure 16), it becomes evident that the 2003-2010 disease pattern differs significantly from that seen in 2011-2012. The average number of cases reported per year was 516.7 for 2003-2010, but 281.0 for 2011-2012. This decrease can be attributed to a change in case definition. Prior to 2011, surveillance case counts included anyone with a positive laboratory result for *Giardia*. Beginning in 2011, documentation of clinically compatible illness was required in addition to a positive laboratory result for a case to be counted for public health surveillance purposes.

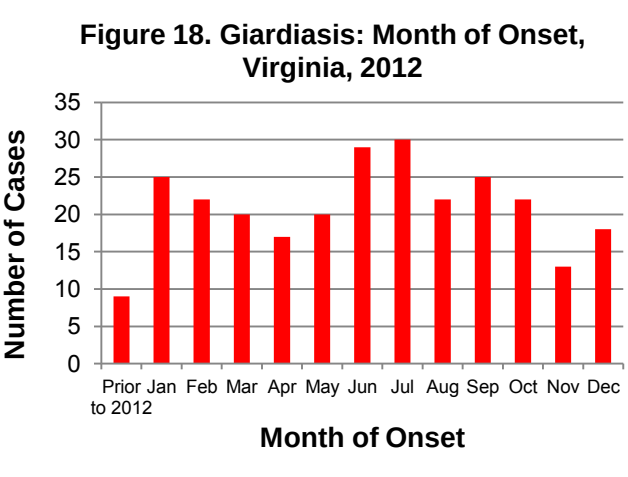
While the 20-29 year age group had the highest incidence with 4.8 cases per 100,000, the 1-9 year age group had a similar rate (4.7 per 100,000) (Figure 17). Incidence rates for infants and those in the 30-39, 40-49, and 50-59 year age groups were in the 3.0 to 3.8 per 100,000 population range, while the rates for 10-19 year olds and persons 60 years of age and older were lowest. Race was not reported for 61% of giardiasis cases in 2012. Among those cases with information on race, rates were very similar in each of the three race categories, ranging from 1.3 to 1.4 cases per 100,000. A higher rate was seen among males (4.2 per 100,000) than females (2.5 per 100,000).

Figure 17. Giardiasis: Rate by Age Group, Virginia, 2012



With 115 cases, the northern region experienced the largest proportion of cases and highest incidence rate (5.0 per 100,000), followed by the northwest region (48 cases, 3.8 per 100,000). The remaining three regions had similar rates, ranging from 2.1 to 2.6 cases per 100,000 population. Cases occurred throughout the year, with a slight peak in June and July (Figure 18).

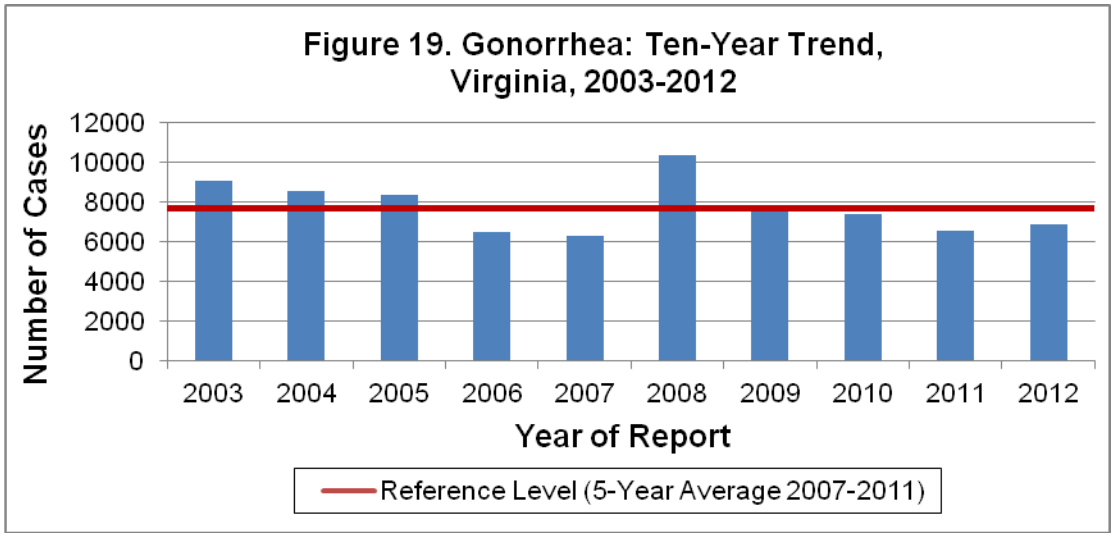
Figure 18. Giardiasis: Month of Onset, Virginia, 2012



While the source of exposure for sporadic cases cannot usually be determined, 113 (42%) of the persons reported to have giardiasis in 2012 had traveled prior to illness onset, 91 (33%) reported contact with an animal, 54 (20%) had recreational water exposure, 42 (15%) knew of similarly ill persons, and 24 (9%) had consumed untreated water. No outbreaks were attributed to *Giardia* during 2012.

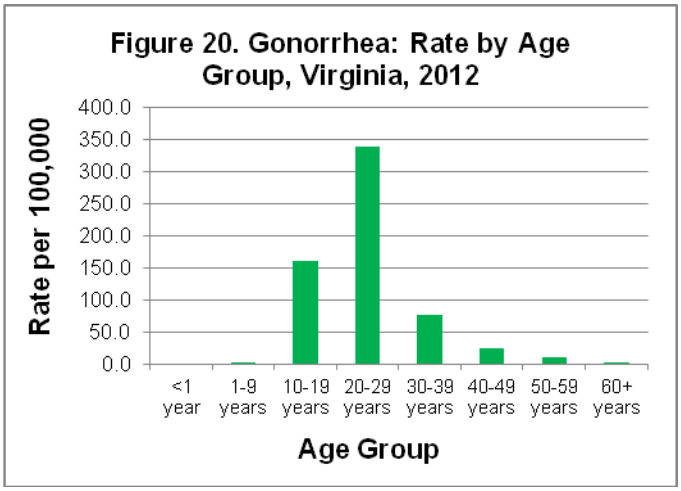
Gonorrhea

Agent: *Neisseria gonorrhoeae* (bacteria)
Mode of Transmission: Sexually transmitted through direct contact with infected areas.
Signs/Symptoms: Infected men can have a burning sensation while urinating and a discharge from the urethra. Infected women are usually asymptomatic, although vaginal discharge or bleeding after intercourse may occur. Untreated gonorrhea among women can lead to pelvic inflammatory disorder and infertility.
Prevention: Preventive measures include safe sexual practices and ensuring that infected sexual contacts are treated.
Other Important Information: The progressive development of antibiotic resistance continues to plague gonorrhea prevention efforts. Antibiotic resistance undermines treatment success, heightens the risk of complications, and facilitates transmission of infection. Since April 2007, the CDC has advised against the use of fluoroquinolones for the treatment of gonorrhea, based on data indicating widespread drug resistance in the United States. Furthermore, as of August 2012, the CDC no longer recommends cefixime (an oral cephalosporin) at any dose as a first-line regimen for treatment of gonococcal infections. The CDC now recommends combination therapy for gonorrhea with ceftriaxone administered intramuscularly and either azithromycin or doxycycline given orally for 7 days.



According to the CDC, gonorrhea is substantially under-diagnosed and underreported, and approximately twice as many new infections are estimated to occur as are reported each year. While approximately 337,000 cases were reported nationally in 2008, the CDC estimates that there were actually 820,000 new infections. In Virginia, the 6,894 cases of gonorrhea reported in 2012 represent a slight (6%) increase from the 6,521 cases reported in 2011, but a 10% decrease from the 5-year average of 7,663.2 cases per year (Figure 19). The annual number of reported cases of gonorrhea in Virginia has varied over the last 10 years. The notably low case counts observed in 2006 and 2007, followed by an elevated number of cases in 2008, were at least partly attributed to changes in data handling and data entry protocols. Because of the substantial under-diagnosis of this

condition, it is not clear whether the general declines observed since 2008 indicate decreases in actual disease incidence or instead are a reflection of reduced diagnosis and screening.



A comparison of age groups indicates that the incidence of gonorrhea is highest in the 20-29 year age group (338.2 per 100,000 population), followed by the 10-19 year age group (161.2 per 100,000 population) (Figure 20). These two age groups have consistently experienced the highest gonorrhea incidence since 1989. Gonorrhea remains the sexually transmitted disease with the most significant racial disparity in Virginia. The rate in the black population (278.7 per 100,000) was 18 times the rate in the white population (15.2 per 100,000), and almost 9 times the rate in the "other" race population (32.6 per 100,000). Gonorrhea incidence rates were higher among females than males (90.8 and 79.1 per 100,000, respectively).

Since 2008, the eastern region has experienced the highest proportion of reported cases, as well as the highest incidence of gonorrhea. In 2012, 2,795 cases were reported from the eastern region (41% of the total statewide), resulting in an incidence rate of 153.8 per 100,000. The central region had the second highest number of reported cases (1,933 or 28%) and incidence rate (140.4 per 100,000). Among the other regions in the state, incidence rates ranged from 29.5 to 72.7 per 100,000.

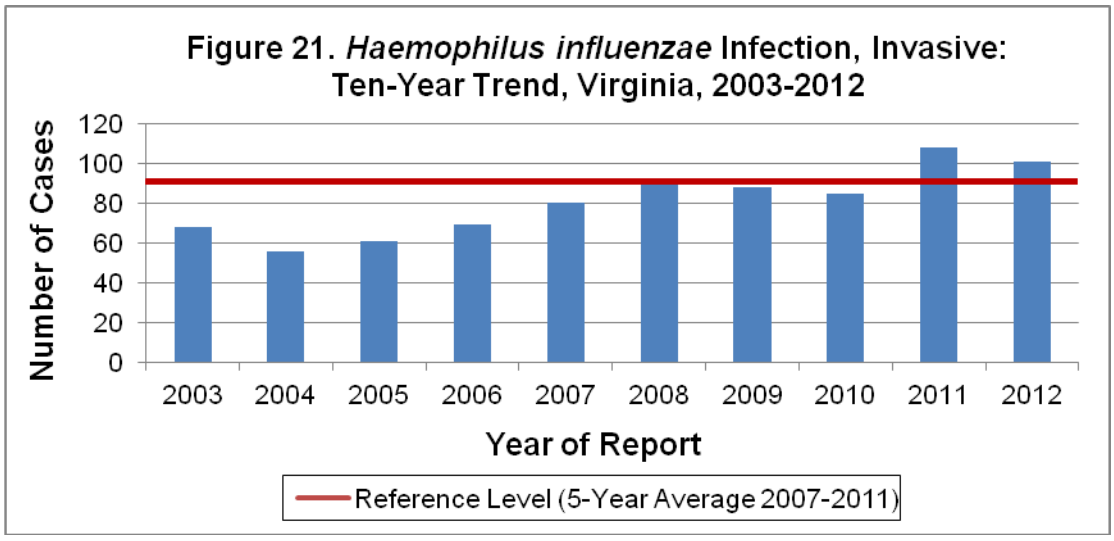
Granuloma Inguinale

Agent: *Calymmatobacterium granulomatis* (bacteria)
Mode of Transmission: Direct contact with lesions, presumably during sexual activity. Young children can become infected by contact with infectious secretions.
Signs/Symptoms: Skin lesions that eventually form fibrous tissue. This is a chronic condition that can lead to destruction of genital organs and spread to other parts of the body through autoinoculation.
Prevention: Sexual partners should be examined, counseled to practice safe sex, and offered antimicrobial therapy, when needed.

No cases of granuloma inguinale were reported in Virginia during 2012. The last reported case occurred in 2001.

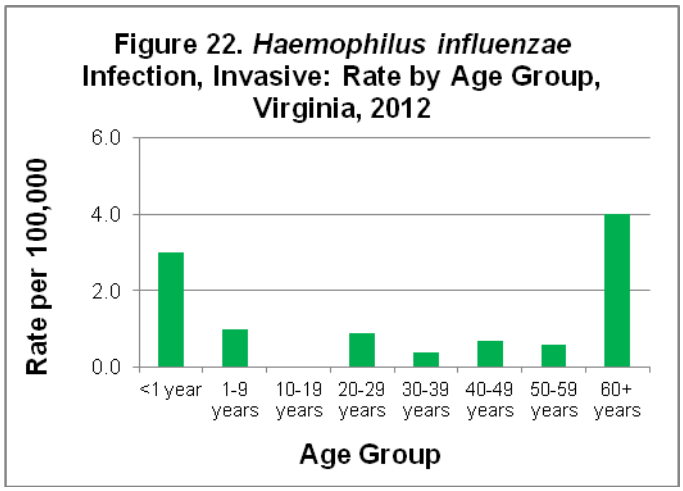
***Haemophilus influenzae* Infection, Invasive**

Agent: *Haemophilus influenzae* (bacteria)
Mode of Transmission: Person-to-person transmission by inhalation of respiratory droplets or direct contact with nose and throat secretions from an infected person or an asymptomatic carrier.
Signs/Symptoms: Inflammation of the lining of the brain and spinal cord (i.e., meningitis), inflammation of the epiglottis which may lead to blockage of upper airway and death, pneumonia, deep skin infection, arthritis, or bloodstream infection.
Prevention: Vaccination with a 3-4 dose series (depending on manufacturer) of conjugate *Haemophilus influenzae* type b (Hib) vaccine beginning at 2 months of age and concluding with a booster at 12 to 15 months of age. If vaccination is delayed, children 7 months of age and older may not require a full series of three or four doses. The total number of doses a child needs to complete the series depends on the child's age at the time the first dose is administered.
Other Important Information: *Haemophilus influenzae* is categorized into two major groupings: encapsulated and non-encapsulated. Encapsulated strains are more virulent and produce a polysaccharide capsule which is further characterized into six antigenically distinct serotypes (types a though f). Nontypable serotype results indicate a non-encapsulated strain. Vaccine is currently only available for one serotype, type b. In the prevaccine era, type b organisms accounted for 95% of all strains that caused invasive disease. Since the licensure of conjugate Hib vaccine in the late 1980s, the incidence of invasive Hib disease in the U.S. has declined by more than 99% compared with the pre-vaccine era.



One hundred one cases of invasive *H. influenzae* infection were reported in Virginia during 2012. This is a 6% decrease from the 108 cases reported in 2011, and an 11% increase from the five-year average of 90.6 cases per year (Figure 21). The general increase in cases that is shown in Figure 21 is thought to be primarily related to the aging population, as most cases occur in older populations. This is supported by the 58% of cases reported in the 60 year and older age group in 2012.

Overall, incidence rates were highest in the youngest and oldest age groups (Figure 22). Children less than one year of age had a rate of 3.0 per 100,000, and adults in the 60 year and older age group had a rate of 4.0 per 100,000. All other age groups had rates ranging from 0.0 to 1.0 per 100,000.



Race information was unknown for 7% of reported cases. Among those for which race information was available, rates were similar in the black and white populations (1.0 and 1.3 per 100,000, respectively). Rates among males and females were also similar (1.2 and 1.3 per 100,000, respectively). Incidence varied only slightly between regions, with the southwest region reporting the highest rate (1.9 per 100,000) and the northern region the lowest (0.7 per 100,000). Cases occurred throughout the year with the highest proportion of cases (31%) occurring in the second quarter and the smallest proportion (15%) in the third quarter. Two outbreaks attributed to *H. influenzae* infection were reported in 2012. Both were reported from the central region and involved nursing homes.

The serotype was identified and reported in 93 (92%) of the cases. One case was confirmed as type b, the serotype addressed by the vaccine. The case occurred in an adult, an age group for which routine vaccination is not recommended. Among all other cases with an identified serotype, 60% were reported to be nontypable from the non-encapsulated strains, 22% were type f, 7% were type e, and 2% were type a.

Among cases reported in 2012, seven deaths were attributed to invasive *H. influenzae* infection. All but one death occurred in persons from the 60 year and older age group.

Hantavirus Pulmonary Syndrome

Agent: Hantavirus family. Several different types of hantaviruses that can cause hantavirus pulmonary syndrome (HPS) have been identified in the United States and each is associated with a different rodent species.
Mode of Transmission: Rodents infected with hantavirus do not become ill but they can transmit the virus to humans when their urine, feces, or saliva are aerosolized and inhaled. While uncommon, other ways in which people may be exposed to the virus are rodent bites and direct contact between contaminated materials and a person's nose or mouth. Person-to-person transmission does not occur.
Signs/Symptoms: Early symptoms include fever and muscle pain, and may also include gastrointestinal complaints, headaches and dizziness. These symptoms may be accompanied by or followed by an abrupt onset of respiratory distress and decreased blood pressure. Respiratory failure and shock follow quickly.
Prevention: Rodents should be excluded from houses and other buildings. Protective measures include disinfecting rodent-contaminated areas with a spray disinfectant solution prior to cleaning. Approved respirators should be used to avoid inhalation of dust when cleaning or removing potentially infected materials particularly in areas of heavy rodent infestation. Contaminated areas should be cleaned with a wet mop and not be vacuumed or swept so as to decrease the likelihood of creating an aerosol containing the virus.
Other Important Information: Although most common in the southwestern part of the country, hantavirus infections can occur anywhere. The most important hantavirus in the United States is the Sin Nombre virus, for which the deer mouse (*Peromyscus maniculatus*) is the primary reservoir.

No cases of hantavirus pulmonary syndrome were reported in Virginia during 2012. The only hantavirus case reported in Virginia occurred in 1993. In 2004, a resident of southwest Virginia died due to HPS following an exposure that occurred in West Virginia. For surveillance purposes, that case was attributed to West Virginia.

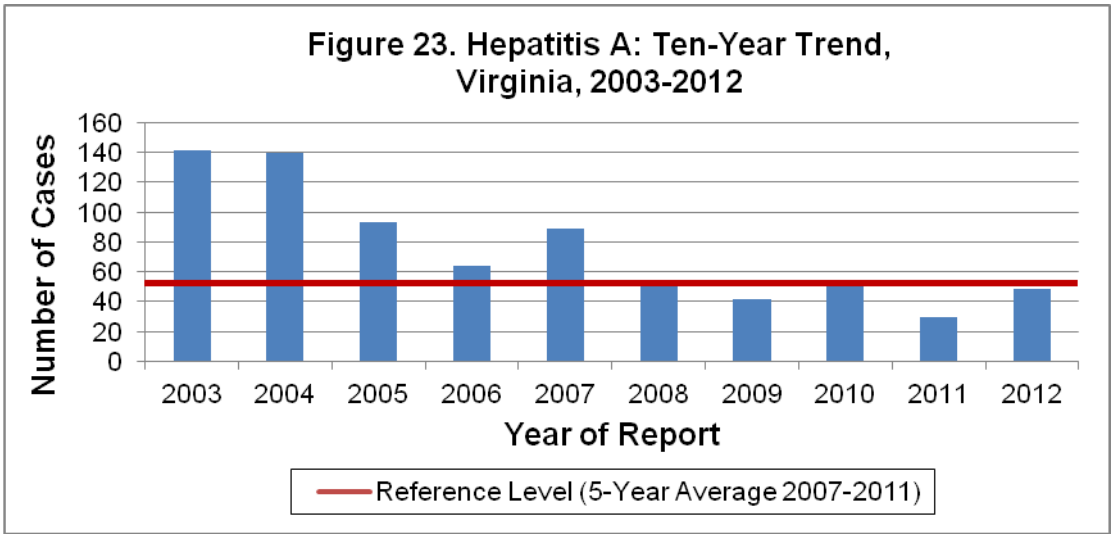
Hemolytic Uremic Syndrome (HUS)

Agent: Serious sequelae associated with infection from Shiga toxin-producing bacteria (*E. coli* or *Shigella). E. coli* O157:H7 is the bacterium most commonly associated with HUS.
Mode of Transmission: Ingestion of food or water contaminated with human or animal feces, or direct transmission from infected persons or animals. Fomites and contaminated environment may also play a role in transmission.
Signs/Symptoms: Classic signs of hemolytic uremic syndrome include red blood cell destruction (hemolytic anemia), low number of platelets (thrombocytopenia), and acute kidney failure. Symptoms include decreased frequency of urination, fatigue, progression to kidney failure, often requiring dialysis, as well as neurological impairment (e.g., stroke or seizures). HUS, if it occurs, develops on average seven days after the first symptoms of infection.
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, after handling animals or their feces, and before preparing and eating food. All ground beef should be cooked thoroughly to an internal temperature of at least 160°. Raw milk, unpasteurized dairy products, and unpasteurized juices should not be consumed. Persons with diarrhea caused by *E. coli* O157:H7 should not use recreational waters for 2 weeks after symptoms have resolved. Outbreaks occurring in child care centers should immediately involve public health assistance to prevent further disease.
Other Important Information: Five to ten percent of persons diagnosed with Shiga toxin-producing *E. coli* infection develop HUS. The syndrome occurs in up to 15% of children with *E. coli* O157:H7 infection. For more information, see the section of this report on *E. coli* Infection, Shiga Toxin-Producing.

Three cases of HUS were reported during 2012. This is similar to the five-year average of 2.0 cases per year. One of the reported cases occurred following an infection with Shiga toxin-producing *E. coli* O157:H7. Of the two remaining cases, one had no bacterial testing performed, while the other tested negative for bacterial pathogens, but was linked to a family member infected with *E. coli* O157:H7. All three illnesses occurred in young school aged children; one was female and two were male. Two cases were reported from the northwest region and the third from the southwest region. Two had illness onset during the second quarter and the other during the third quarter of the year. No deaths occurred as a result of the infection.

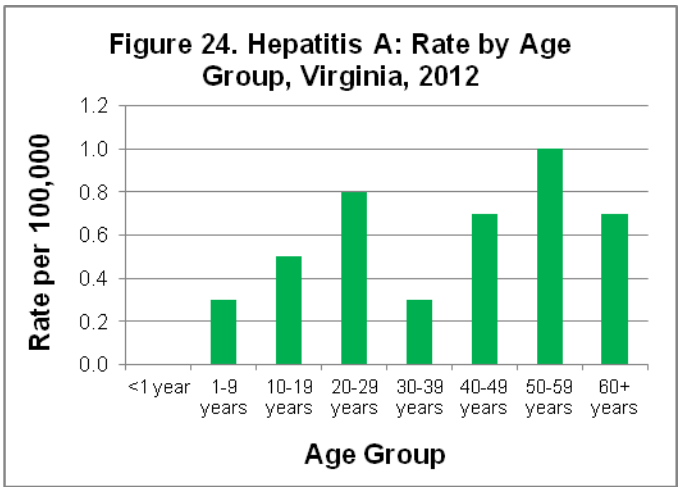
Hepatitis A

Agent: Hepatitis A virus (HAV), a member of the Picornavirus family
Mode of Transmission: HAV is spread when fecal matter enters the mouth, such as by consuming contaminated food or water. Most infections result from close contact with an infected household member or sex partner.
Signs/Symptoms: Fever, malaise, nausea, abdominal discomfort, dark urine, joint pain, and jaundice. In older children and adults, symptoms usually occur for several weeks, though prolonged or relapsing liver disease can last up to six months. Younger children often exhibit no symptoms.
Prevention: Preventive measures include immunization, safe food preparation, and good personal hygiene (e.g., washing hands with soap after using the bathroom, after changing diapers, and before preparing and eating food). Administration of immune globulin (IG) after exposure to hepatitis A can protect against symptomatic infection.
Other Important Information: This is an acute illness only; chronic infection does not occur. A vaccine was first introduced in 1995 and is currently recommended for all children at the age of one year, persons who are at increased risk of infection (i.e., international travelers), and persons who are at increased risk for developing complications from hepatitis A.

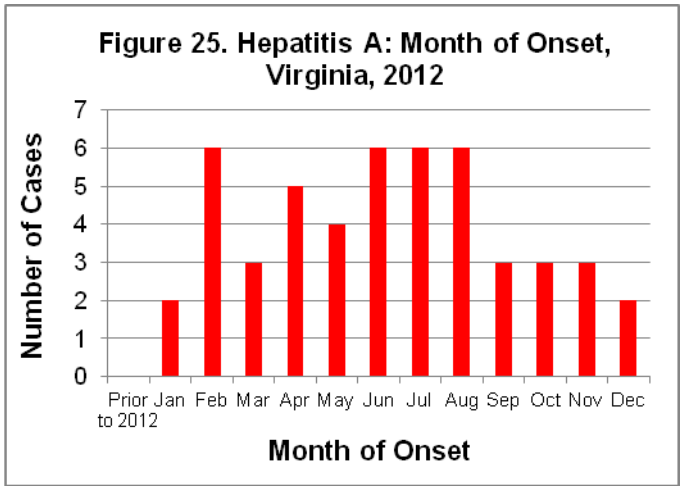


In 2012, 49 cases of hepatitis A were reported in Virginia. This represents a 63% increase from the 30 cases reported in 2011, but is comparable to the five-year average of 52.8 cases per year (Figure 23).

Reported cases ranged in age from three to 94 years. The highest incidence rate occurred in the 50-59 year age group (1.0 per 100,000) and no cases occurred among infants (Figure 24). Rates among the other age groups ranged from 0.3 to 0.8 per 100,000. Race data were available for 59% of cases. Among those cases with race information available, the rate in the "other" and white race groups were similar (0.5 and 0.4 per 100,000, respectively), and were higher than the rate in the black population (0.1 per 100,000). The rate in females (0.7 per 100,000) was slightly higher than the rate in males (0.5 per 100,000).

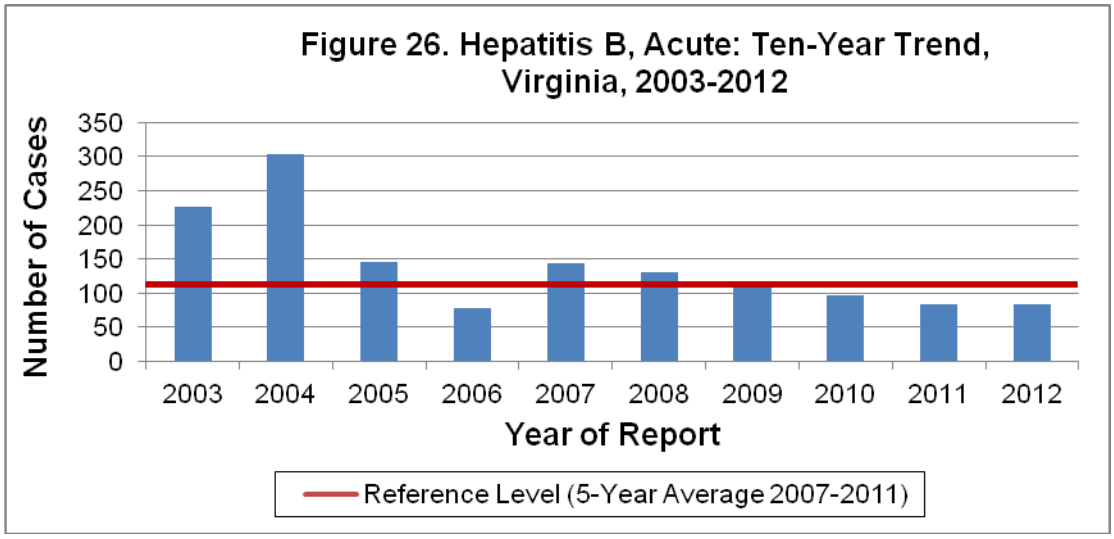


By region, incidence was highest in the northern region (1.0 per 100,000) and lowest in the eastern region (0.1 per 100,000). Cases occurred throughout the year with 62% having onset during the second and third quarters (Figure 25). Risk factors were identified in 43% of the cases, of whom 9% had known exposure to a confirmed hepatitis A case and 48% were associated with travel outside of the country.



Hepatitis B, Acute

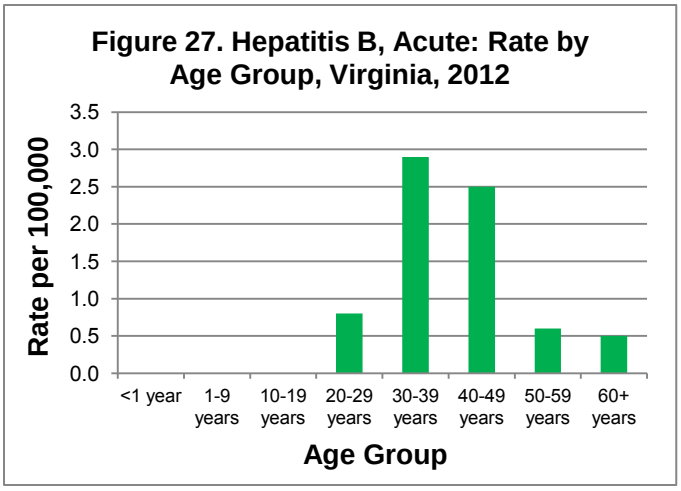
Agent: Hepatitis B virus (HBV), a hepadnavirus
Mode of Transmission: Person-to-person transmission through infected blood or body fluids (e.g., sexual, perinatal, or through the skin by nonsterilized needles or syringes).
Signs/Symptoms: Fever, fatigue, loss of appetite, nausea, abdominal pain, and jaundice. Infection can be asymptomatic. The likelihood of developing symptoms is age-dependent with adults and children over the age of five years being more likely to develop symptoms.
Prevention: Preventive strategies include immunization of people at increased risk of infection; screening of all pregnant women and treatment of children born to women who test positive; routine immunization of infants; routine immunization of adolescents who have not previously been immunized; and screening of donated blood and organs.
Other Important Information: Infection with hepatitis B virus may lead to chronic (i.e., long-term) infection. The risk of chronic infection is inversely related to the age of the patient at the time of infection. Death from liver disease occurs in 15%-25% of those with chronic infection. A nationwide strategy to eliminate hepatitis B infection was initiated in 1991. It included vaccination of infants at birth, prevention of perinatal hepatitis B infections, vaccination of children and adolescents, and vaccination of adults at high risk of infection.



In both 2012 and 2011, 84 cases of acute hepatitis B infection were reported in Virginia. This represents a 26% decrease from the five-year average of 113.0 cases per year (Figure 26), and a substantial reduction from routine incidence of over 500 cases per year in the mid 1980s. The general decrease in reported cases in Virginia reflects a national trend related to the availability of hepatitis B vaccine since 1981 and a strategy initiated in 1991 to eliminate hepatitis B transmission in the United States.

The highest incidence rate was observed in the 30-39 year age group (2.9 per 100,000), followed by the 40-49 year age group (2.5 per 100,000) (Figure 27). As in 2011, no cases were reported in persons under the age of 20 years. Among the 66% of cases for whom information on race was available, incidence rates were similar in the white, black and "other" race populations, ranging from 0.5 to 0.8 per 100,000. A slightly higher rate was observed in males than in

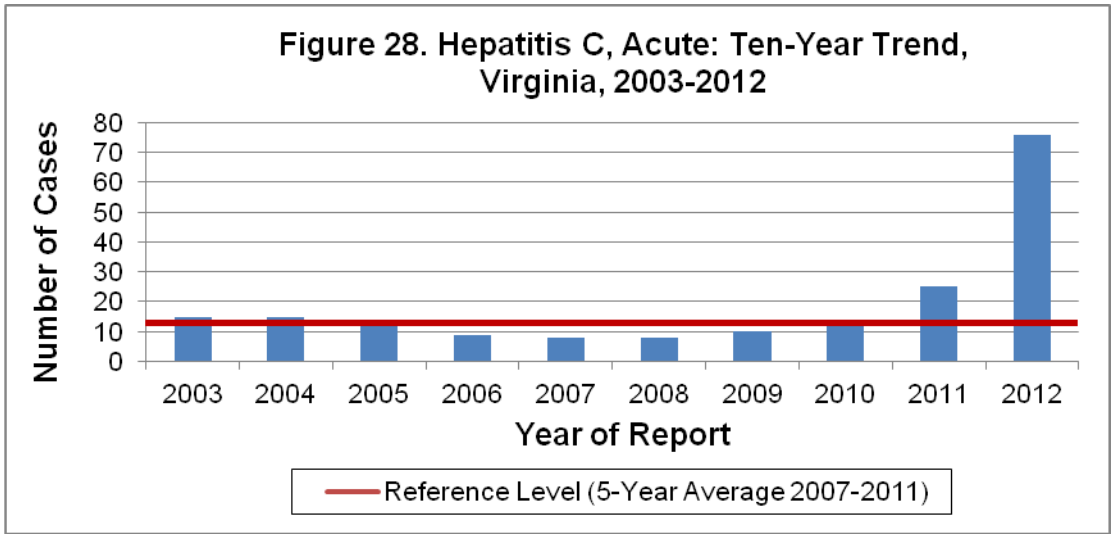
females (1.3 and 0.8 per 100,000, respectively). The rate of 3.0 per 100,000 occurring in the southwest region was ten times the rate of 0.3 per 100,000 observed in the northern region and was notably higher than the rates in the other regions (0.6 to 1.3 per 100,000). A community-wide outbreak associated with injection drug use in the southwest region resulted in a clustering of cases in the second and third quarters of the year. More than 30 acute hepatitis B cases were identified in this outbreak. One additional outbreak of acute hepatitis B was identified in the northwest region; lapses in infection prevention practices associated with blood glucose monitoring resulted in at least three residents in an assisted living facility being infected.



Risk factors were identified in 65% of cases, with multiple risks listed for some individuals. Of those with risk factor information, recreational drug use and contact with a person with confirmed or suspected acute or chronic hepatitis B virus infections were the most frequently reported risk behaviors (36% and 31% of cases, respectively). Two deaths due to acute hepatitis B infection were reported in 2012, both associated with the outbreak in the southwest region.

Hepatitis C, Acute

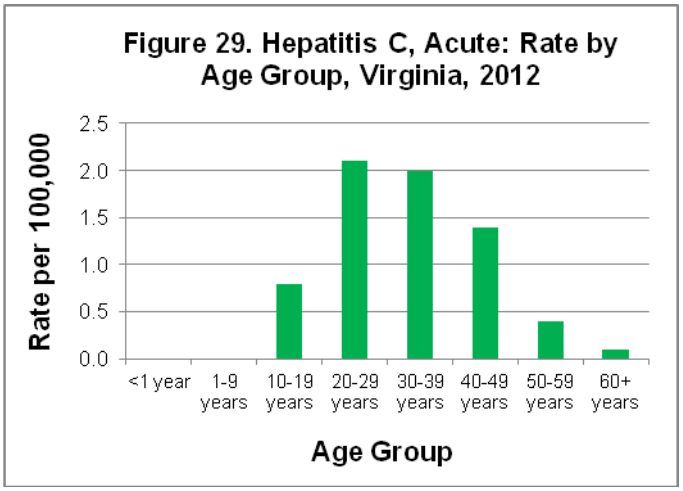
Agent: Hepatitis C virus (HCV), a member of the Flavivirus family
Mode of Transmission: Infection is spread when blood of someone with HCV enters the body of another person. Infection can occur during injection drug use if needles, syringes, or other equipment are shared or during healthcare procedures if needle stick injuries occur. Infrequently, HCV can be spread through sex with a person infected with hepatitis C, through the sharing of personal items contaminated with infectious blood, such as razors or toothbrushes, through healthcare involving invasive procedures, or during delivery if the expectant mother has hepatitis C. Before 1992 when blood screening for HCV became available, receipt of donated blood, blood products, and organs was a common means of transmission, but now is a less common risk factor.
Signs/Symptoms: Fever, fatigue, loss of appetite, nausea, abdominal discomfort, or jaundice.
Prevention: Preventive measures include avoidance of the following: contact with blood; sharing of needles or other equipment used for injecting drugs; sharing of personal items such as razors, toothbrushes, nail clippers, or glucose monitoring equipment; or obtaining a tattoo or body piercing from an unlicensed facility or in an informal setting. Additional preventive measures include practicing safe sexual practices and proper infection control during medical and dental procedures and avoidance of donating blood if infection with HCV is known.
Other Important Information: Approximately 20-30% of new infections cause symptoms. HCV infections become chronic in 75-85% of cases. As people with chronic HCV infection age, they are at higher risk for developing chronic liver disease, cirrhosis, and liver cancer. No vaccine is available to prevent HCV.



Seventy-six cases of acute hepatitis C infection were reported in 2012, which is more than three times the 25 cases reported in 2011, and six times greater than the five-year average of 12.8 cases per year (Figure 28). This increase in part may be attributed to changes in the surveillance case definition such that some cases of illness were counted in 2012 that would not have been counted in previous years. Case definition changes included being able to count a case in a person who tested positive if that person had tested negative within the prior six months, even in the absence of symptoms, and instead of requiring negative tests for

hepatitis A and hepatitis B, it now says those test results must be negative if the tests were conducted.

The incidence rate was highest in the 20-29 and 30-39 year age groups (2.1 and 2.0 per 100,000, respectively) (Figure 29). No cases of hepatitis C infection were reported in children less than 10 years of age. Of the fifty-six cases for which race information was available, fifty-four were reported from the white population (0.9 per 100,000), and two from the black population (0.1 per 100,000). Males had a slightly higher rate for infection with acute hepatitis C than females, with rates of 1.0 and 0.8 per 100,000, respectively.



Incidence rates observed in the southwest and northwest regions (2.5 and 2.2 per 100,000) were more than three rimes the rates observed in the other regions, which ranged from 0.1 to 0.6 per 100,000. Disease onset occurred throughout the year with a slightly lower incidence in the fourth quarter (16%). Risk factor data were available for 29% of the cases, with some individuals reporting more than one risk factor. Among persons providing risk information, 73% reported sexual contact with a known HCV-infected partner and 18% had injected non-prescribed drugs. One death was attributed to acute hepatitis C infection among the 76 cases reported in 2012.

Human Immunodeficiency Virus (HIV) Disease and Acquired Immunodeficiency Syndrome (AIDS)

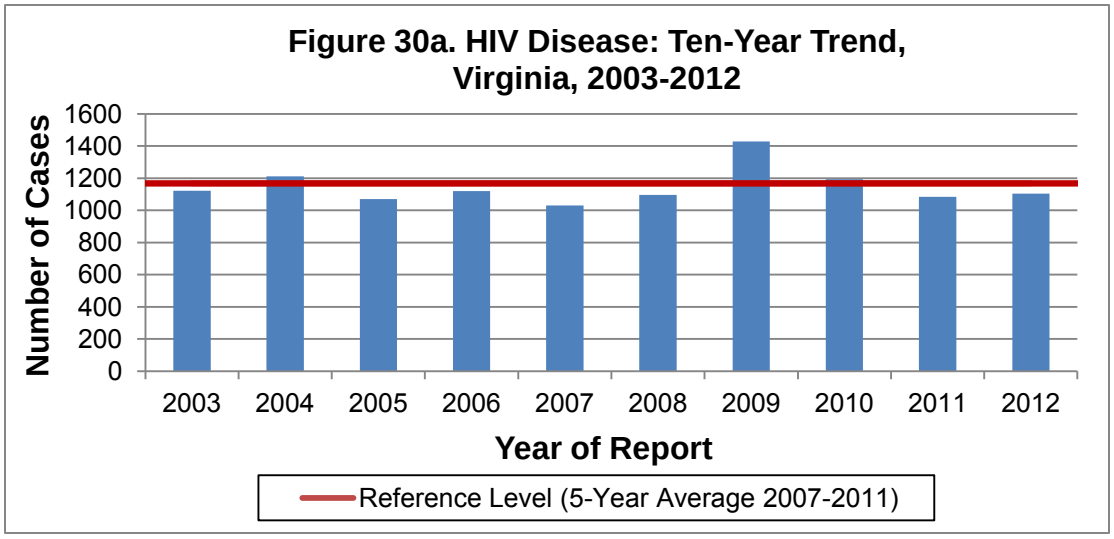
Agent: Human Immunodeficiency Virus (retrovirus)
Mode of transmission: Person-to-person via unprotected intercourse, contact of cut or abraded skin with body secretions carrying the virus, use of contaminated needles, blood transfusions and transplants with organs from infected donors, or from mother-to-child before or during birth or through breastfeeding.
Signs/Symptoms: Initial infection with HIV can cause an acute illness or fever, muscle pain, and sore throat, after which the person can be asymptomatic for several years. Eventually the immune system is affected, causing AIDS.
Prevention: Preventive measures include safe sexual practices; screening of blood and plasma; and among infected mothers, antiretroviral prophylaxis, cesarean delivery before labor, and avoidance of breastfeeding.
Other Important Information: Data analysis methods for HIV/AIDS were changed in 2009. Statistics are now presented for HIV disease instead of for HIV and AIDS, as explained below. Additional information regarding the changes in analytical methods is available at http://www.vdh.virginia.gov/epidemiology/DiseasePrevention/DAta/documents/Technical%20Notes%20and%20Glossary%20of%20Terms_Revised_04-2010.pdf. More detailed epidemiologic analyses of HIV/AIDS, as well as other STDs, is located at http://www.vdh.virginia.gov/epidemiology/DiseasePrevention/DAta/. Rapid tests (which provide results within 30 minutes) are becoming more widely available and are used at various testing sites in Virginia. For more information, call your local health department, or contact the Virginia Department of Health HIV/STD/Viral Hepatitis Hotline at 1-800-533-4148.

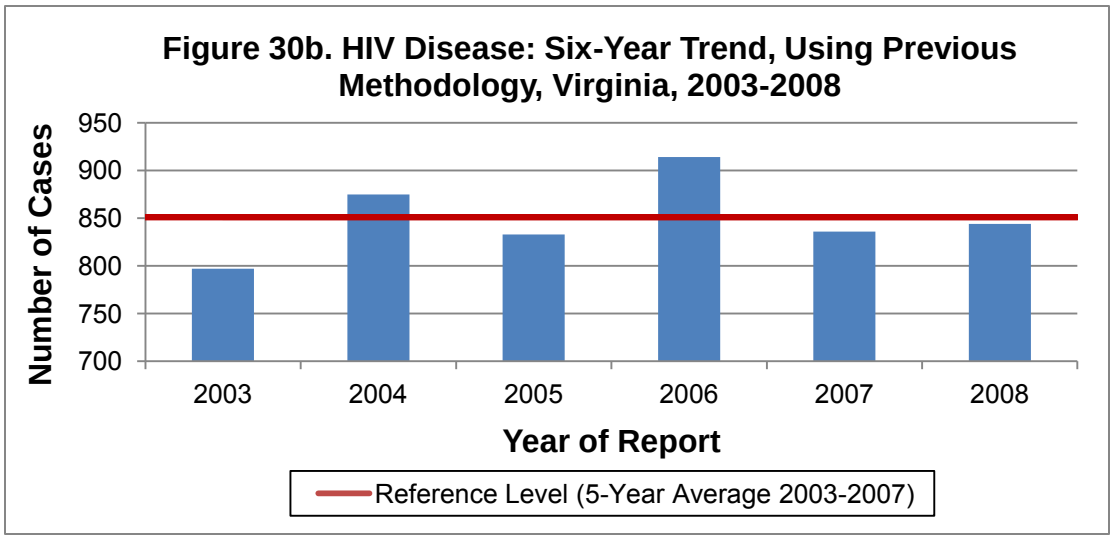
Change in Epidemiologic Analyses of HIV Disease

Beginning in 2009, VDH reassessed the way HIV and AIDS surveillance data were reported in order to better illustrate the epidemic in Virginia. Instead of approaching HIV and AIDS as two separate conditions of the same disease, it was found to be more helpful for epidemiologic and community planning purposes to evaluate all HIV and AIDS cases as one encompassing group: persons diagnosed or living with **HIV disease**. Before 2009, cases that were reported as having an AIDS-defining condition were excluded from the count of newly diagnosed HIV infections. Due to this change in methodology from previous years, those calculations pre-2009 are not comparable to calculations post-2009, where HIV and AIDS are treated as one disease, without considering disease progression. Currently, any case that presents as having HIV or an AIDS-defining condition at the time of diagnosis is considered a newly diagnosed HIV disease case.

Figure 30a displays the trend in HIV disease for the previous 10 years when the current methodology is applied to the entire 2003-2012 period. For comparison, Figure 30b uses the previous methodology to depict the trend for HIV infections from 2003 through 2008, and is comparable to what was presented in earlier reports. Use of the older methodology

will be phased out of this report as time progresses. For a more thorough discussion of the changes in the analysis of HIV and AIDS surveillance data, please refer to the web site address listed above in the Other Important Information section above.





HIV Disease

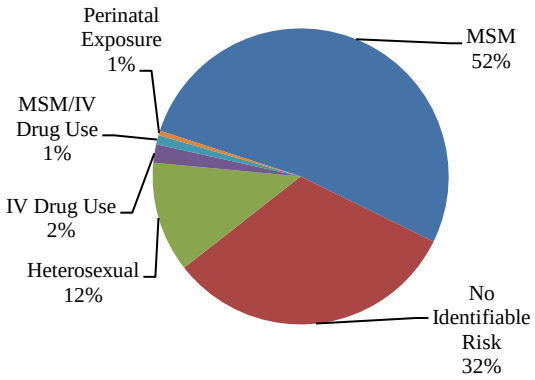
In 2012, 1,105 cases of HIV disease were reported in Virginia, as illustrated in Figure 30a. This is a slight increase (2%) from the 1,085 cases reported in 2011, but reflects the stability of new HIV disease diagnoses over the last several years. The statewide incidence rate of HIV disease was 13.6 per 100,000 in 2012.

The highest HIV disease rates in 2012 occurred in the 20-29 year age group (30.7 per 100,000), followed by the 30-39 and 40-49 year age groups (25.7 and 19.5 per 100,000, respectively). Since 2007, the 20-29 year age group has consistently been reported with

the highest incidence rate. The incidence rate for the black population was 37.9 per 100,000, approximately five times the rate of the white population (5.5 per 100,000) and above the rate of those in the "other" race category (24.7 per 100,000). The "other" race category includes Hispanics, Asian/Hawaiian/Pacific Islanders, American Indian/Alaska Natives, and those cases categorized as multi-racial. The rate for those in the "other" category has increased from the rate of 15.7 per 100,000 in 2011; however, all rates have stayed relatively stable over time. Males have consistently shown higher rates of HIV disease than females across time, and were over four times more likely than females to be diagnosed with HIV disease in 2012 (22.2 and 5.4 per 100,000, respectively). With respect to HIV incidence in Virginia's health regions, the highest rates were observed in the eastern and central regions (17.7 and 17.6 per 100,000, respectfully) and the lowest rate, 6.4 per 100,000, was observed in the northwest region.

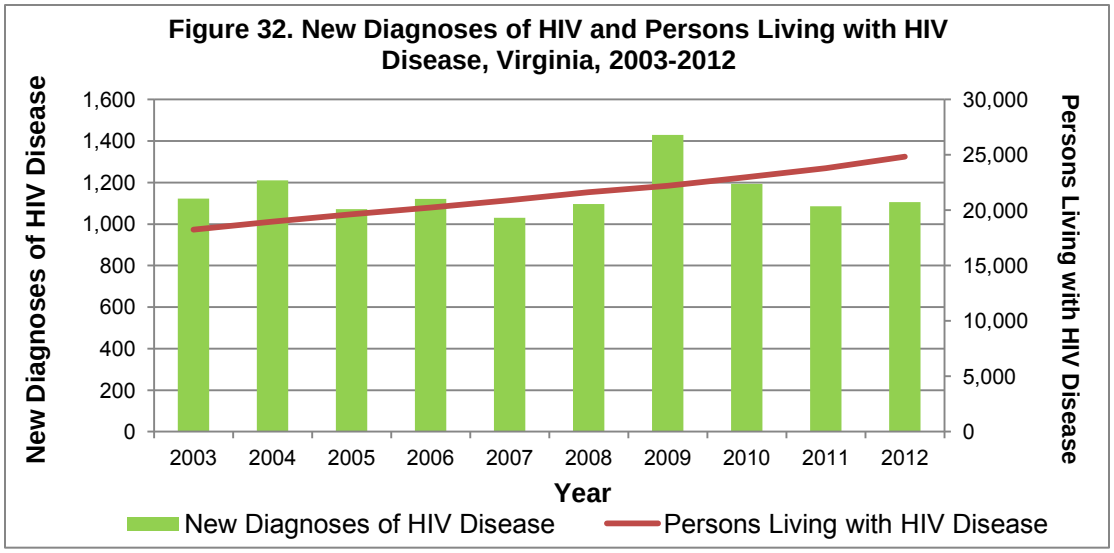
In 2012, the most frequently reported transmission category for HIV disease was among men who have sex with men (MSM), which represented 52% of the cases in Virginia. Among identified MSM cases, 44% were 20-29 years of age and 52% were black. Twelve percent of the cases for 2012 were attributed to heterosexual contact, and 2% to intravenous (IV) drug use; whereas, 32% of new diagnoses did not report or identify a specific risk factor for transmission (Figure 31).

Figure 31. HIV Disease: Mode of Transmission, Virginia, 2012

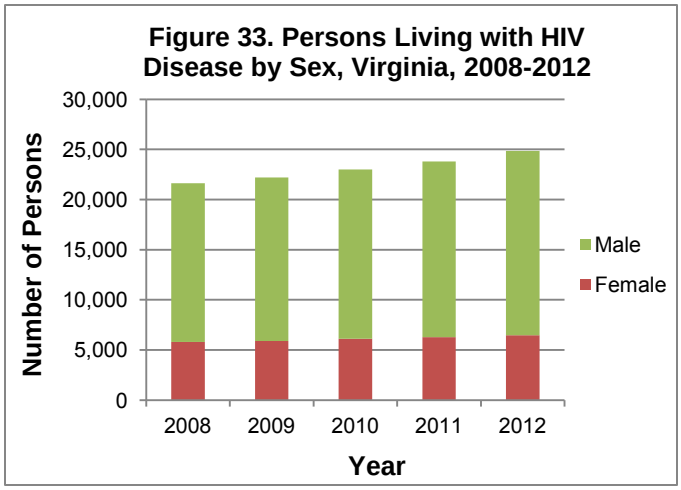


Persons Living with HIV Disease

Due to advances in medical therapies and care strategies, the number of persons living with HIV disease has continued to increase. As of December 31, 2012, 24,848 persons were known to be living with HIV disease in Virginia (Figure 32).



Approximately three-quarters of the prevalent cases are male (Figure 33), 32% are in the 40-49 year age group, 60% are black, 43% are attributed to male-to-male sexual contact, and approximately 59% are living with HIV disease in the eastern and northern regions of the state. Half of those living with HIV disease have also been diagnosed with an AIDS-defining condition.



Influenza

Agent: Influenza virus; Types A, B and (rarely) C cause human disease.
Mode of Transmission: Directly from person-to-person, primarily through inhalation of droplets released through coughing or sneezing. Less commonly, the influenza virus can be transmitted by contact with a contaminated object or surface and then touching one's mouth or nose.
Signs/Symptoms: Fever, headache, muscle pain, fatigue, sore throat and cough; influenza can also lead to pneumonia, especially in those with underlying medical conditions (e.g., lung or heart disease).
Prevention: Annual vaccination is the primary prevention strategy and should be obtained yearly; antiviral medications are sometimes used with high-risk populations (e.g., nursing home residents) to prevent illness or lessen illness severity. Transmission may be reduced by washing hands frequently or using alcohol-based hand-sanitizers; avoiding touching the eyes, nose, and mouth with contaminated hands; and covering the nose and mouth with a tissue or the bend of the elbow when coughing or sneezing.
Other Important Information: The influenza virus changes slightly from year to year (antigenic drift), making it necessary to prepare a new vaccine each year. Periodically, the virus will change to form a completely new subtype (antigenic shift), which can lead to pandemics.

Influenza Surveillance

The three seasonal influenza virus subtypes that predominantly circulated during the 2012-2013 season included A(H3), A/2009 H1N1 (the subtype responsible for the 2009 pandemic), and B.

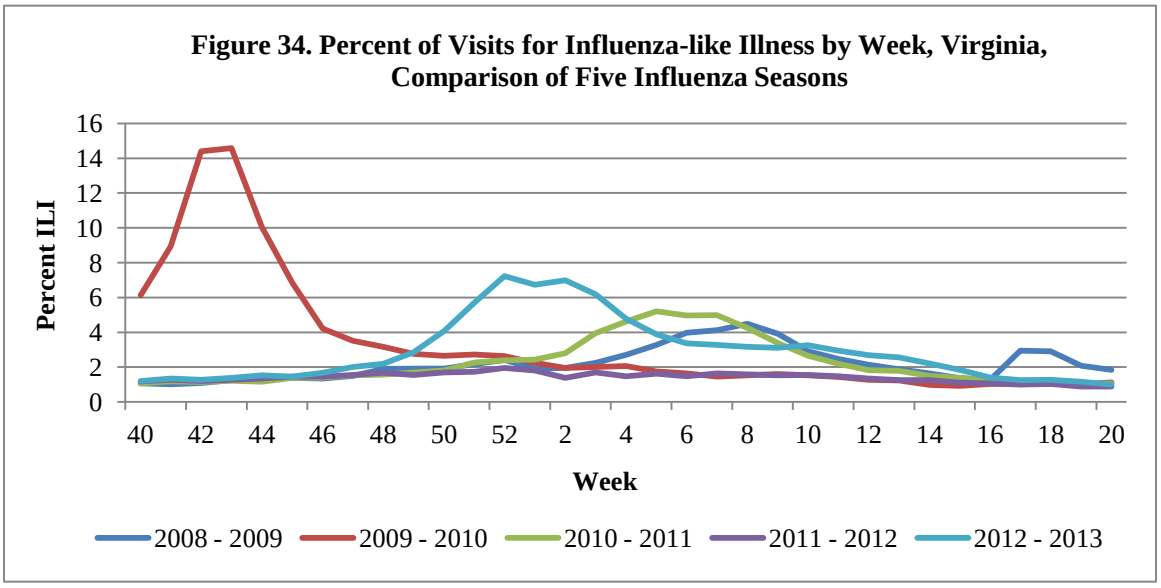
Influenza surveillance is conducted throughout the year in Virginia. However, efforts are most intensively focused during the period of highest disease activity, which normally begins in early October (week 40) and ends in late May (week 20). Surveillance efforts in Virginia do not count every individual with influenza but instead monitor indicators of illness within the community. For the 2012-2013 influenza season, data sources included visits for influenza-like illness to hospital emergency departments and urgent care centers, laboratory reports, evaluations of outbreak investigations, influenza-associated pediatric deaths, and school absenteeism data. These data sources are used to determine weekly influenza levels, provide insight on the severity of illness, and characterize influenza virus subtypes circulating in the community.

Influenza-like Illness Surveillance

The Virginia Department of Health (VDH) receives information regarding patient visits to emergency departments and urgent care facilities for influenza-like illness (ILI) symptoms. ILI symptoms include a complaint of fever and cough or fever and sore throat. Other illnesses may show similar symptoms, but the strategy has proven to be a reliable indicator of influenza activity during flu season. During the 2012-2013 influenza season, 118 emergency department and urgent care facilities provided data to VDH for surveillance monitoring.

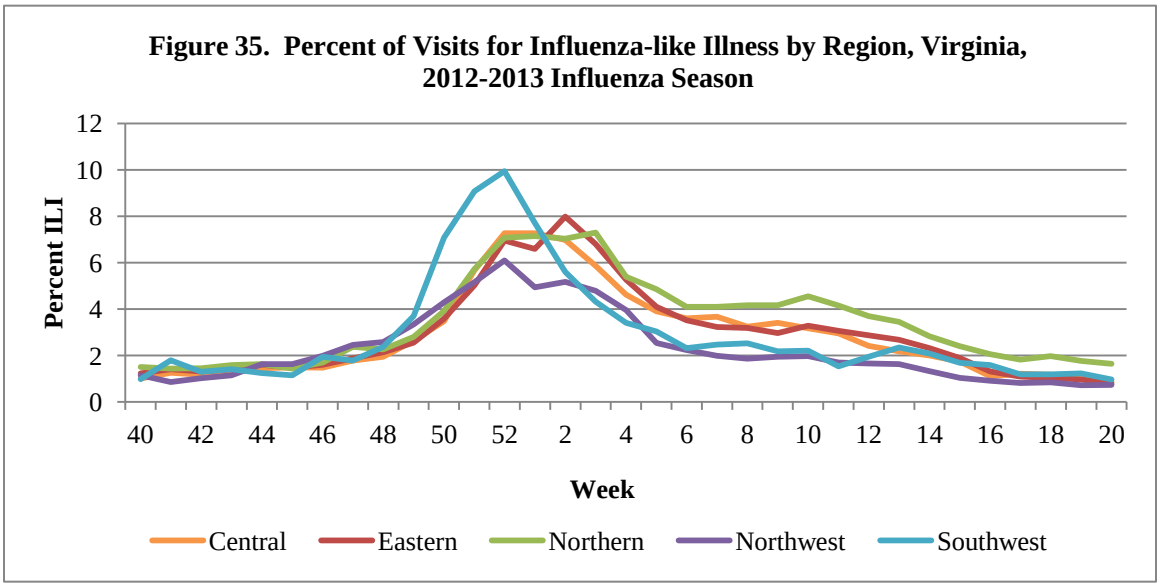
According to the Centers for Disease Control and Prevention (CDC), the 2012-2013 influenza season was a reminder of how unpredictable and severe influenza can be. Influenza activity began early in the United States and was high for 15 weeks. Nationally, the weekly percentage of outpatient visits for ILI, as reported by the U.S. Outpatient ILI Surveillance Network (ILINet), peaked in late December (week 52) at 6.1%. In comparison, the 2011-2012 season peaked at 2.4% in mid-March. The 2012-2013 season was also more severe than recent seasons. Hospitalization rates, especially in older adults,

were the highest recorded since CDC began tracking those data, and deaths attributed to pneumonia and influenza (P & I) were the highest recorded in nearly a decade. In Virginia, the proportion of patient visits for ILI during the 2012-2013 season peaked at 7.2% during the week ending December 29, 2012 (week 52) (Figure 34).



Influenza-like Illness by Region

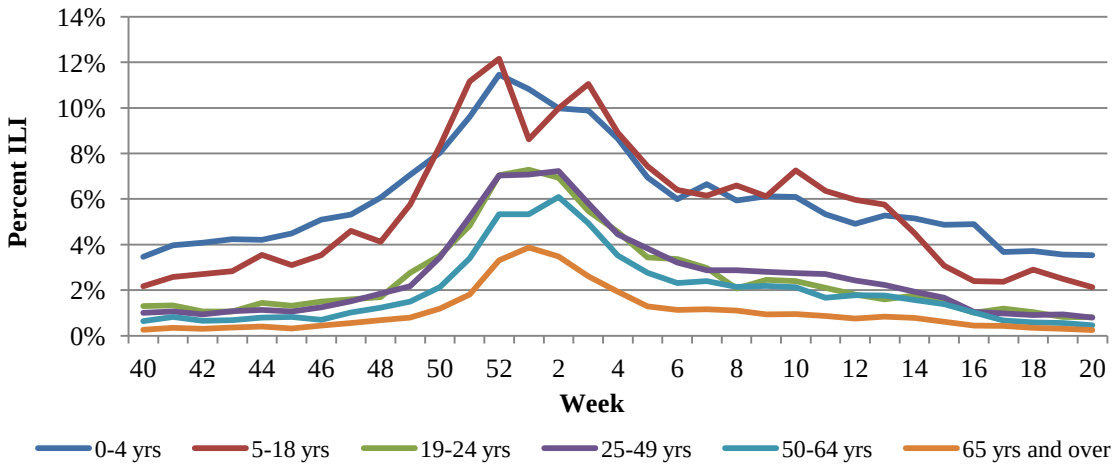
In Virginia, ILI activity varied by region throughout the 2012-2013 season. Peak activity occurred in late December (week 52) in the southwest, central, and northwest health planning regions. The remaining regions followed, peaking in mid-January (Figure 35). The southwest region experienced the highest proportion of visits for ILI (9.9%). The eastern, central, northern, and northwest regions experienced the following peaks: 8.0% (week 2), 7.3% (week 52), 7.3% (week 3), and 6.1% (week 52) respectively.



Influenza-like Illness by Age

Analyzing ILI activity by age provides additional insight into disease patterns. While historically influenza vaccination efforts have often targeted the elderly due to concerns over complications of infection, the youngest age groups show the highest proportions of health care visits to emergency departments and urgent care facilities for ILI. In contrast to previous influenza seasons, the highest proportion of visits due to ILI occurred in the 5-18 year age group. The largest proportion of visits for ILI usually occurs in the 0-4 age group. The smallest proportion of visits for ILI occurred in the 65 years and older age group (Figure 36).

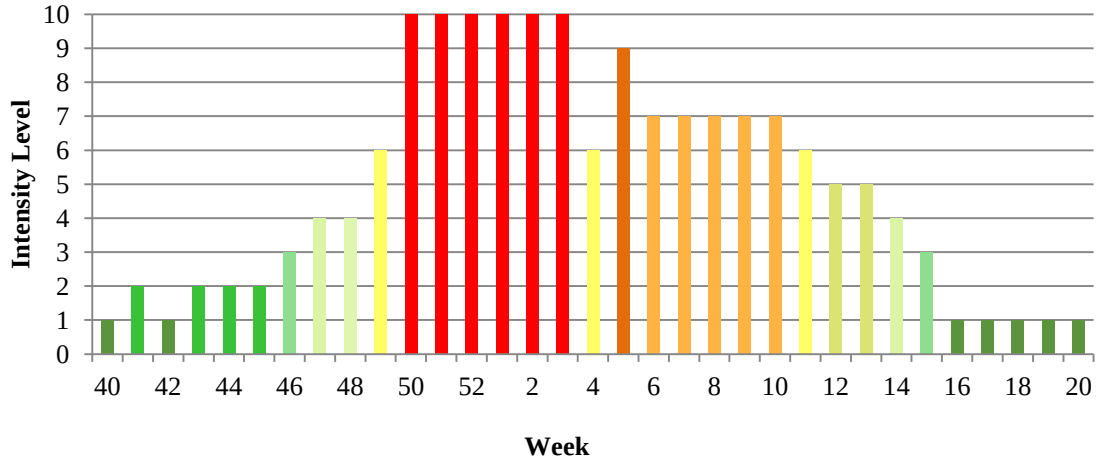
Figure 36. Percent of Visits for Influenza-like Illness by Week by Age, Virginia, 2012-2013 Influenza Season



Influenza Intensity Levels

CDC reported weekly influenza intensity levels (ranging from 1 to 10) each week on a map by state. This measure, introduced during the 2010-2011 season, is calculated by comparing the percent of patient visits due to ILI for that week compared to the average proportion of ILI visits that occurred during a designated baseline period for which there is minimal or no influenza virus circulation. During the 2012-2013 season, influenza intensity slowly increased during the fall and reached high intensity levels in mid-December. The level remained at 10 for a six week period, decreased to moderate in early February and remained there until late March. During the 2011-2012 season, influenza intensity did not reach above a minimal level (levels 1-3). Virginia's intensity levels for the 2012-2013 season are presented by week in Figure 37.

Figure 37. ILINet Activity Indicator, Intensity Level by Week, Virginia, 2012-2013 Influenza Season

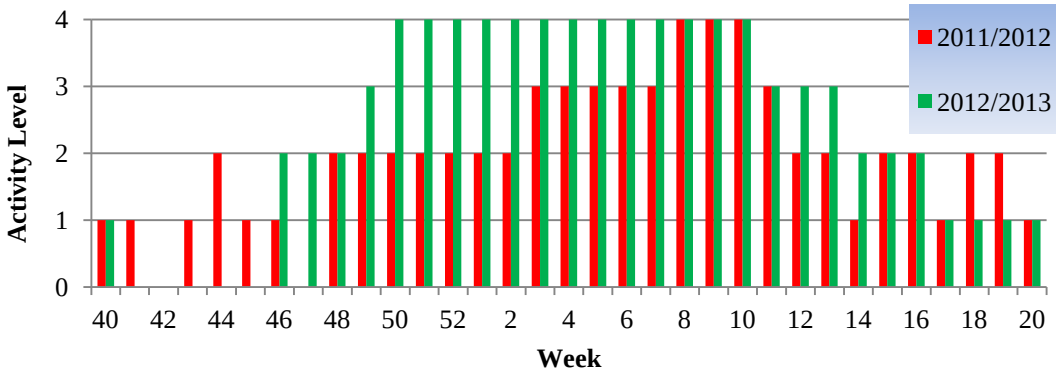


Influenza Activity Levels

Virginia follows CDC guidelines to describe the geographic distribution of influenza activity. The weekly activity level is based on ILI data, laboratory findings, and outbreak occurrences, and is classified into the following categories: no activity, sporadic, local, regional, or widespread. The levels are not indicators of the severity of influenza illness but instead serve as a gauge for the geographic distribution of influenza activity around the state. Six weeks of ILI data, collected during the summer months of July through September, are used to establish baseline thresholds for the five health planning regions. ILI activity is considered elevated when a region exceeds its threshold.

The 2012-2013 influenza season began with a level of sporadic influenza activity in early October, and returned to no activity for five weeks (weeks 41 to 45). The level increased to local in mid November (week 46) and reached widespread in mid-December. The influenza activity level remained widespread for 13 weeks (Figure 38). The prior season, 2011-2012, reported only three weeks of widespread influenza activity. During the 2010-2011 season, influenza activity became widespread in late December (week 51) and stayed at this level for 14 weeks.

Figure 38. Comparison of Weekly Influenza Activity Levels in Virginia for the 2011-2012 and 2012-2013 Influenza Seasons



Data are presented by week, with the first Sunday to Saturday week in January as week 1

Activity Levels: 0 = No Activity 1 = Sporadic 2 = Local 3 = Regional 4 = Widespread

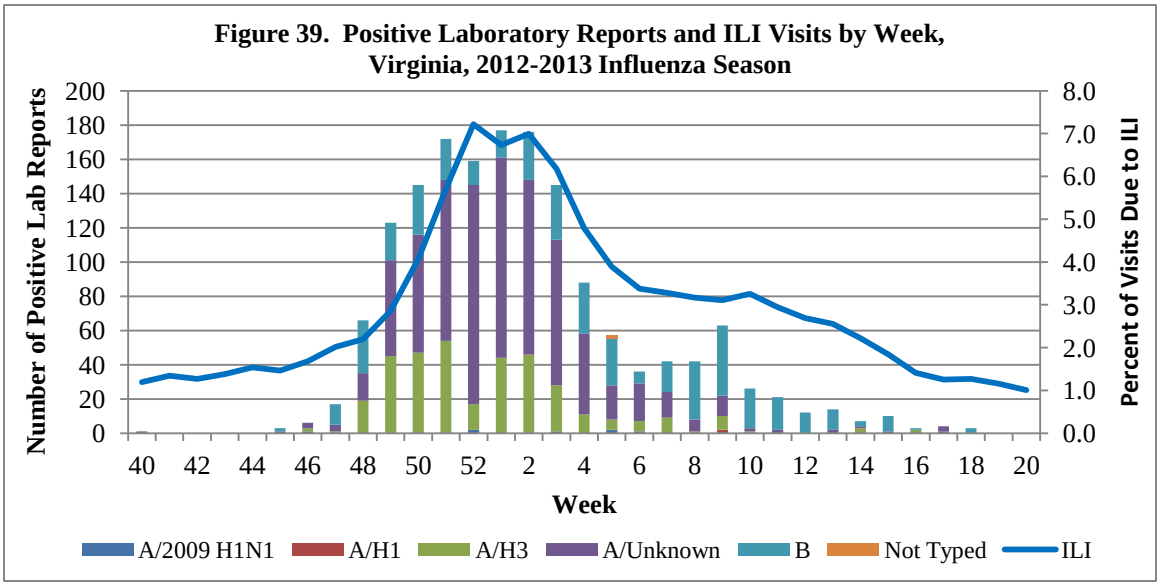
Laboratory Surveillance

Laboratory surveillance for influenza uses findings from three testing procedures: DFA (direct fluorescent antibody), PCR (polymerase chain reaction) and viral culture. Rapid antigen tests are not included. Information comes from specimens submitted by sentinel providers, specimens from outbreaks, influenza reporting by private laboratories, and findings from Virginia facilities participating in the National Respiratory and Enteric Virus Surveillance System (NREVSS).

Sentinel providers include private physicians and medical facilities located throughout the Commonwealth. Statewide representation is achieved through the efforts of health districts to enlist providers from their area. During the influenza season, sentinel providers submit specimens from patients with ILI to the Virginia Division of Consolidated Laboratory Services (DCLS) for analysis. Regular sentinel providers were asked to submit two specimens per month from patients exhibiting influenza-like illness and sentinel providers participating in the Influenza Incidence Surveillance Project (described later) submitted specimens from the first ten patients with ILI each week.

During the season, influenza A(unk), A(H3), 2009 H1N1, and B were all circulating in the state, as shown in Figure 39. It is important to note that A(unk) does not represent a new or unknown strain, but only the inability of the confirmatory tests that were used to distinguish between types of influenza A. The predominant influenza strain circulating in Virginia varied by week and region. Laboratory tests indicated that 72% of positive influenza findings were influenza A (all subtypes) and 28% were influenza B. In comparison, in the previous flu season, 83.2% of viruses were identified as influenza A (all subtypes) and 16.8% as influenza B. As more providers have gained access to quicker, more reliable testing methods such as PCR, the volume of confirmatory testing has significantly increased. During the 2012-2013 season, Virginia received 1,624 confirmatory influenza laboratory reports, compared to 89 during the prior season.

Figure 39. Positive Laboratory Reports and ILI Visits by Week, Virginia, 2012-2013 Influenza Season



Influenza Outbreaks

During the 2012-2013 season, 163 outbreaks of influenza were reported to VDH compared to 17 outbreaks reported during the previous season. Specimens from 127 of these influenza outbreaks tested positive for the influenza virus, confirming 89 (70%) as influenza A-associated, 13 (10%) as influenza B-associated and 25 (20%) as unspecified subtype. The first confirmed outbreak was reported in late October 2012 (week 42) and occurred in a school in the northwest region. During the season, outbreaks were reported from 62 schools (K-12), 29 assisted living facilities, 9 pre-school facilities, two retirement homes, and two other facilities. More than one-third of the influenza outbreaks (36%, n=59) occurred in healthcare facilities, mostly in nursing homes (n=58), with an additional outbreak in a medical facility. By region, the largest percentage (30%, n=49) of outbreaks were reported from the northwest region, followed by the southwest region (25%, n=40), central region (19%, n=31), northern region (14%, n=23), and eastern region (12%, n=20). The number of cases associated with outbreaks ranged from 3 to 200 individuals (median: 25), with a total of 146 reported hospitalizations.

Influenza-associated Deaths

Virginia disease reporting regulations require physicians and directors of medical care facilities to report suspected or confirmed influenza-associated deaths in children less than 18 years of age to allow monitoring of this severe outcome of influenza illness. While one pediatric death occurred during calendar year 2012, this case was counted for surveillance purposes in the 2011-2012 influenza season. Two pediatric influenza-associated deaths were reported to VDH during the 2012-2013 season. Both of these deaths occurred in March 2013; one in a preschool-aged child (0-4 years) from the southwest region and one in a teen (13-17 years) from the northern region. Nationally, the number of pediatric deaths during the 2012-2013 season (158) was the highest since surveillance of pediatric influenza-associated deaths began, with the exception of the 2009 H1N1 pandemic.

School Absenteeism

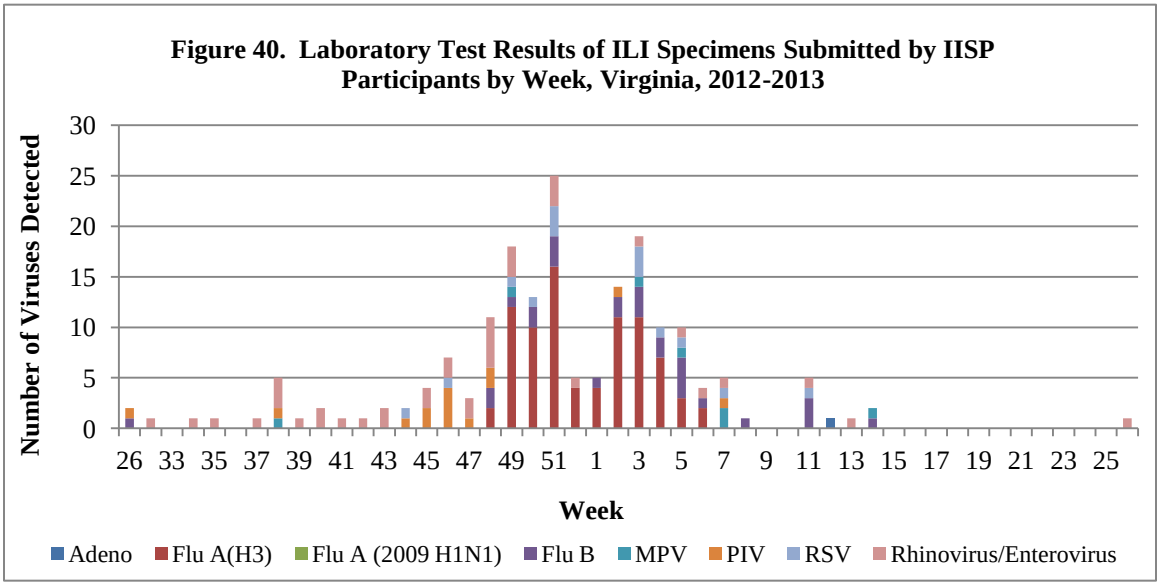
School absenteeism surveillance was added to influenza surveillance in Virginia during the 2009-2010 pandemic season, and continues because of the valuable insights it provides. Information on absenteeism is voluntarily submitted by school divisions on a daily basis and made available to the health districts to identify emerging problems and monitor potential influenza activity in their communities. Centrally, it is evaluated by region and school level (elementary, middle, and high school) for unusual patterns. During the 2012-2013 season, 32 school divisions provided absenteeism data for 860 schools. While school absenteeism provides a general, but not influenza-specific, measure of illness, it was useful for monitoring illness activity and identifying schools with possible outbreaks during the influenza season.

Influenza Incidence Surveillance Project

The Influenza Incidence Surveillance Project (IISP) is a special surveillance activity that was initiated during the 2010-2011 flu season and continued through the 2012-2013 season. The project provided valuable information about the circulating respiratory viruses that cause ILI symptoms. Six participating sentinel providers submitted data each week, by age group, on the number of patients

seen and the number with ILI. Specimens were collected from the first 10 patients seen each week with ILI symptoms and evaluated with a respiratory panel at DCLS. During the 2012-2013 project period, influenza was detected in 60% of the positive specimens (109 out of 184). When influenza was identified, the predominant circulating strain was A(H3) (Figure 40). Rhinovirus/enterovirus was the next most common virus identified, with 21% of positive specimens (n=39).

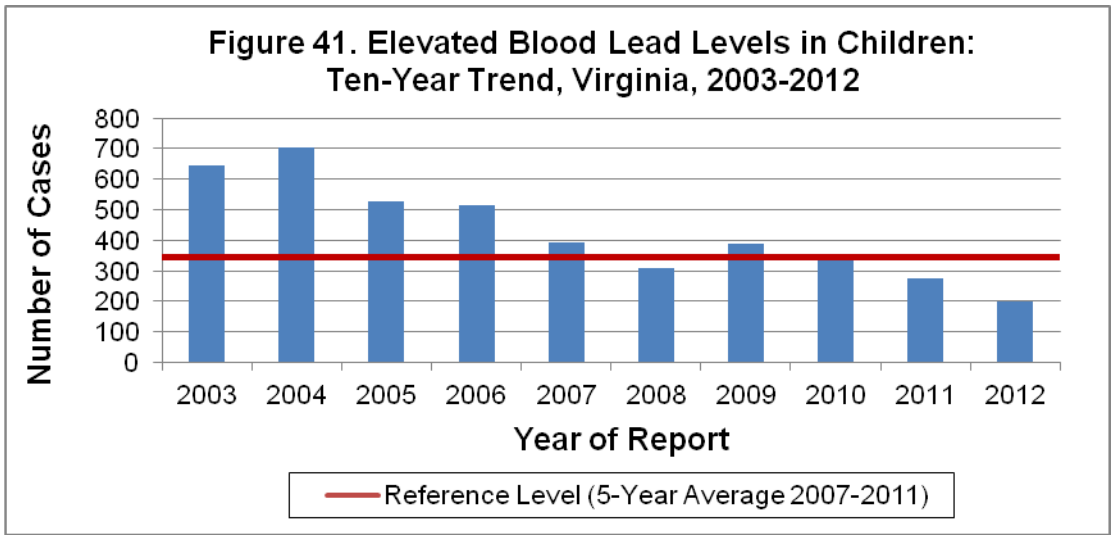
Figure 40. Laboratory Test Results of ILI Specimens Submitted by IISP Participants by Week, Virginia, 2012-2013



Abbreviations noted: Adeno=adenovirus; MPV=metapneumovirus; PIV=parainfluenza; RSV=respiratory syncytial virus

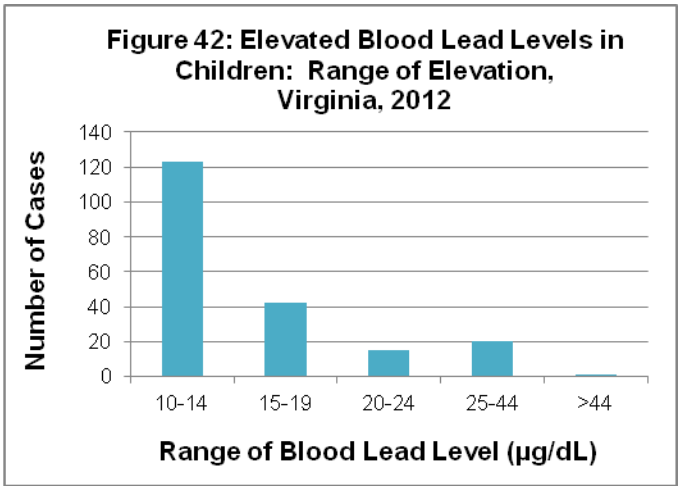
Lead - Elevated Blood Levels in Children

Agent: Lead (metal)
Mode of Transmission: Chewing objects painted with lead paint; ingestion of contaminated dust, soil or water; or using glassware, healthcare products or folk remedies containing lead.
Signs/Symptoms: Even at low levels, lead in children can cause nervous system damage, learning disabilities, behavior problems, muscle weakness, decreased growth, hearing damage, or anemia.
Prevention: Ingestion of lead-contaminated materials and use of lead-containing objects should be avoided. Education of healthcare professionals and parents is important in detecting and reducing lead exposure.
Other Important Information: Elevated blood lead levels at or above 10 micrograms per deciliter (µg/dL) are reportable in children aged 15 years or younger in Virginia. The primary source of lead for children is exposure to deteriorated paint in housing built before 1978. There is a need for increased awareness of additional sources of lead exposures, including improper renovation of older homes; imported toys manufactured with lead paints or components; candies popular among some ethnic groups; traditional Hispanic, Indian, and Middle Eastern folk remedies; and ceramics from foreign countries which use lead glazes.



In 2012, there were 201 newly reported cases of elevated blood lead levels in children. This is a 27% decrease from the 274 cases reported in 2011, and a 41% decrease from the five-year average of 342.8 cases per year (Figure 41). The overall decline in the number of reported cases since 2004 is the result of both lower incidence and better data quality. The continued improvement in reporting of specimen type (e.g., capillary or venous) by physicians and laboratories has enhanced interpretation of test findings, reduced ambiguity, and yielded more accurate information on the number of children with confirmed elevated blood lead levels.

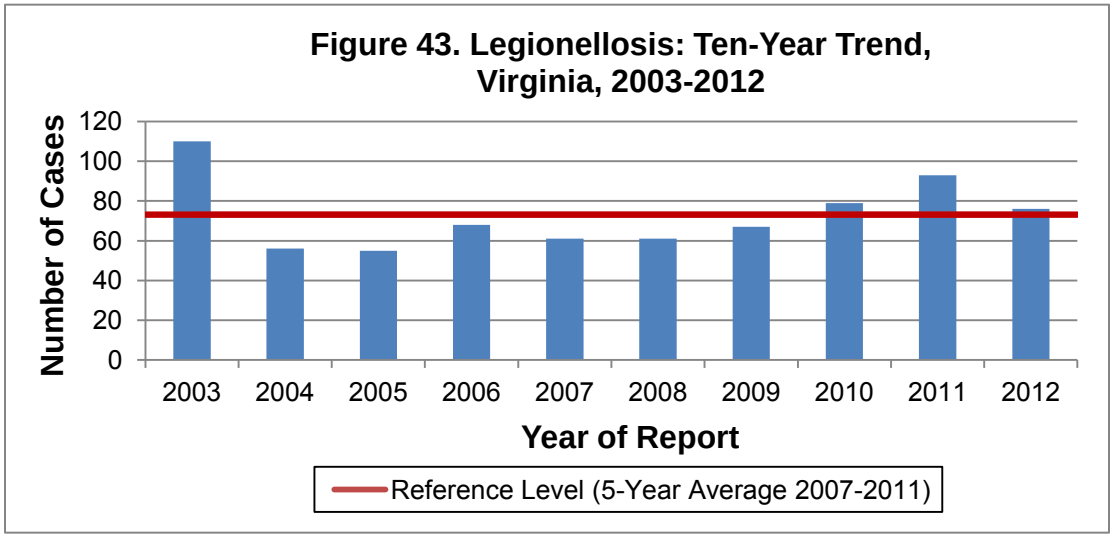
Based on the guidance in place in 2012, blood lead levels in the 10-14 µg/dL range were considered above normal, but only required lead awareness education and follow-up monitoring. Blood lead levels in the 15-19 µg/dL range required nutritional and environmental education, as well as additional testing to ascertain if the blood lead level was increasing or remained elevated. Blood lead levels greater than 20 µg/dL required greater degrees of case management, the initiation of an environmental investigation to identify and eliminate lead hazards, and the possibility of medical intervention. Among the 201 children reported with elevated blood lead levels in 2012, 123 (62%) had confirmed blood lead levels in the 10-14 µg/dL range, 42 (21%) had levels in the 15-19 µg/dL range, 15 (7%) had levels in the 20-24 µg/dL range, 20 (10%) had levels in the 25-44 µg/dL range, and 1 (<1%) had a level above 44 µg/dL (Figure 42).



By age, the majority (91%) of elevated blood lead levels and the highest incidence rate occurred in those aged 1-9 years (184 cases, 19.9 per 100,000), followed by infants (14 cases, 13.8 per 100,000). Rates were lower in 10-15 year olds (0.5 per 100,000). Forty-two percent of reports were missing race data. However, among reports with race information, the black population had an incidence rate two times that of the white population (11.3 versus 5.4 per 100,000, respectively), while the "other" race population had an intermediate incidence rate of 9.5 per 100,000. Females and males had similar incidence rates (12.3 and 12.1 per 100,000, respectively). Geographically, incidence rates ranged from a high of 22.3 per 100,000 in the central region to a low of 6.1 per 100,000 in the northern region, resulting in a statewide incidence rate of 12.2 per 100,000 for children less than sixteen years of age.

Legionellosis

Agent: *Legionella* species (bacteria); most infections in the United States are caused by *Legionella pneumophila*
Mode of Transmission: Inhalation of contaminated aerosolized water (e.g., sprays, mists).
Signs/Symptoms: Infection with *L. pneumophila* causes two distinct illnesses: Legionnaires' disease, characterized by fever, muscle aches, headaches, malaise, cough, and pneumonia with progressive respiratory distress; and Pontiac fever, a milder influenza-like illness without pneumonia characterized by quick onset. Pontiac fever and Legionnaires' disease are referred to as "legionellosis", separately or together.
Prevention: For outbreaks, control measures include disinfection of contaminated water sources by chlorination or superheating of water from 160°-170°F, and appropriate mechanical cleaning.
Other Important Information: Legionellosis is more common among people who are elderly, are immunocompromised, or have underlying lung disease. Virginia has experienced a pattern seen nationally, in which there was an increase in legionellosis cases in 2003, followed by a higher incidence in the post-2003 period than in the pre-2003 period. The cause of this increase is not clearly understood. Factors that may contribute to the higher number of cases in 2003 and later include an increasing population of older persons or persons at high risk for infection and improved diagnosis and reporting of the condition. An additional factor may include CDC's call for more active and timely surveillance of travel-associated legionellosis.

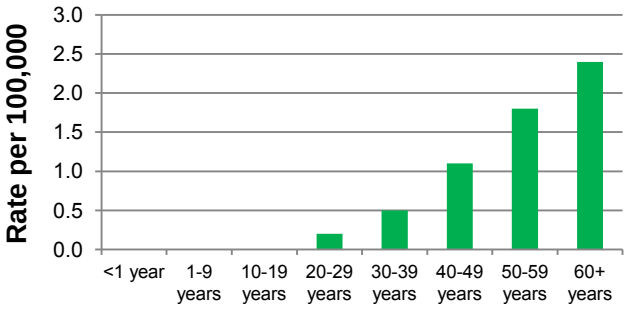


During 2012, 76 cases of legionellosis were reported in Virginia. This represents an 18% decrease from the 93 cases reported in 2011, and a 4% increase from the five-year average of 73.2 cases per year (Figure 43).

Legionellosis incidence is closely associated with age. The highest incidence occurred in the 60 year and over age group (2.4 per 100,000), followed by the 50-59 and 40-49 year age groups (1.8 and 1.1 per 100,000, respectively). No cases were reported among persons younger than 20 years of age (Figure 44). Although information on race was missing for 18% of cases, the available information suggests that incidence was higher in the black population

than the white population (1.2 and 0.7 per 100,000, respectively). Incidence among males was twice the rate among females (1.2 and 0.6 per 100,000, respectively). By region, the highest incidence rate occurred in the northwest region (1.4 per 100,000), followed by the central region (1.2 per 100,000) and the lowest rate was seen in the northern region (0.6 per 100,000). Cases occurred throughout the year, with the smallest proportion in the first quarter of the year (9.2%) and the largest proportion (41%) in the third quarter of the year. Among cases reported in 2012, two deaths were attributed to legionellosis and occurred in males over 40 years of age. One outbreak attributed to *Legionella pneumophila* was reported in 2012. This outbreak involved an out-of-state hotel setting and cases in multiple states. The investigation was led by the health department in the out-of-state jurisdiction. As part of the outbreak, one laboratory-confirmed and two epidemiologically linked cases were reported in Virginia.

Figure 44. Legionellosis: Rate by Age Group, Virginia, 2012



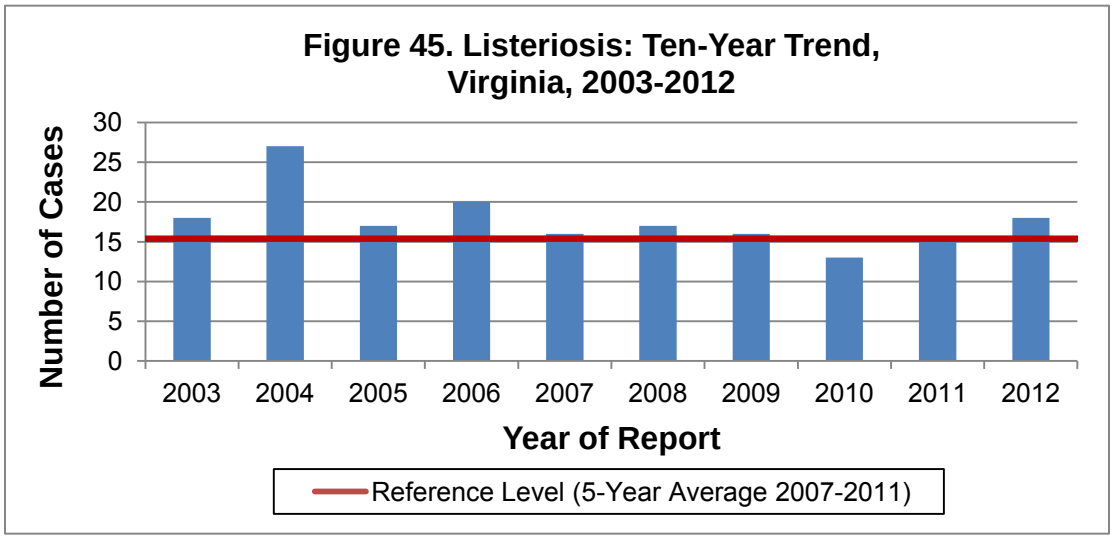
Leprosy (Hansen Disease)

Agent: *Mycobacterium leprae* (bacteria)
Mode of Transmission: Person-to-person transmission, probably through inhaling respiratory droplets that are released when a person with the disease coughs or sneezes.
Signs/Symptoms: A chronic disease with varying symptoms, including skin lesions (tuberculoid leprosy); discolored, flat spots on the skin (lepromatous leprosy); nasal congestion; nosebleeds; and nerve damage. The bacteria that cause this condition grow very slowly and signs and symptoms may take 2-10 years to appear.
Prevention: Early diagnosis and treatment is important. Hand washing when in contact with patients with lepromatous leprosy and disinfection of surfaces contaminated with infectious nasal secretions should be performed until treatment is established.

No cases of leprosy were reported in Virginia during 2012. One case was diagnosed in 2011 in a young adult female who had initially developed symptoms years earlier while she lived in Asia. Since 2000, five cases of leprosy have been diagnosed in Virginia, averaging less than one case every two years.

Listeriosis

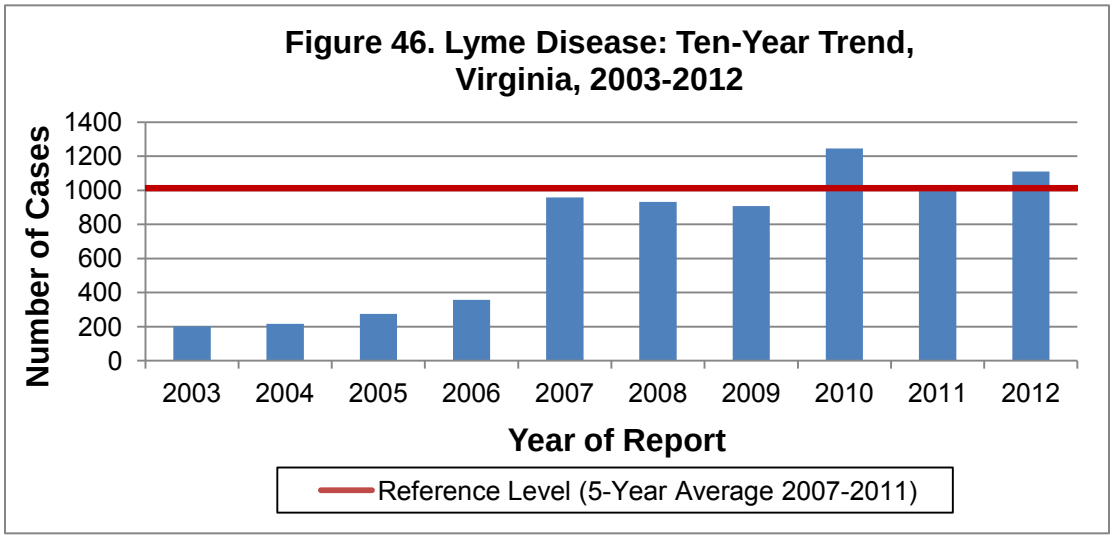
Agent: *Listeria monocytogenes* (bacteria)
Mode of Transmission: Ingestion of contaminated foods or beverages.
Signs/Symptoms: Typically, fever, headache, muscle aches, and sometimes gastrointestinal symptoms, such as nausea, diarrhea, and vomiting. Infection can lead to serious disease, including shock and inflammation of the brain and the fluid surrounding the brain and spinal cord (i.e., meningitis). Among infected pregnant women, miscarriage, stillbirth, premature delivery, or neonatal infection may occur.
Prevention: Preventive measures include safe food preparation (e.g., thoroughly cooking or reheating food from animal sources and washing raw vegetables). High risk foods (e.g., unpasteurized dairy products) should be avoided.
Other Important Information: Persons at higher risk include pregnant women and their unborn babies and newborns, and persons with weakened immune systems.



Eighteen cases of listeriosis were reported in Virginia during 2012. This is slightly higher than both the 15 cases reported in 2011 and the five-year average of 15.4 cases per year (Figure 45). The 60 year and older age group had the most cases in 2012, with 11 (incidence of 0.7 per 100,000), but the highest rate occurred among infants (1 case, 1.0 per 100,000). No cases were reported in the 1-9 and 30-39 year age groups, and one case was reported in each of the 10-19 and 20-29 year age groups. Rates were similar in the black and white populations (0.1 and 0.2 per 100,000, respectively) and among females and males (0.3 and 0.2 per 100,000, respectively). Incidence rates among the regions ranged from a low of 0.1 per 100,000 in both the southwest and northwest regions, to a high of 0.4 per 100,000 in the northern region. Although cases occurred consistently throughout the year, 9 of the 18 cases were reported between August and October. Three cases were associated with pregnancy, two of which were infections confirmed in the mother and one which occurred in a neonate. There were three deaths due to *Listeria* infections among Virginia residents in 2012; all three deaths occurred in females.

Lyme Disease

Agent: *Borrelia burgdorferi* (spirochete bacteria)
Mode of Transmission: Transmitted to humans through the bite of infected nymph or adult blacklegged ticks (formerly known as deer ticks). No other tick species plays a role in Lyme disease transmission in the eastern United States. Infected ticks must bite a person and remain attached for a minimum of 36 hours to be able to transmit the bacteria.
Signs/Symptoms: Initial symptoms include fever, headache, fatigue, joint pains, chills and a characteristic "bulls-eye" skin rash called erythema migrans, or EM rash. If untreated, infection can affect a person's joints, heart or nervous system.
Prevention: Minimize tick bites by avoiding tick habitats such as humid forest environments with dense undergrowth or heavy forest leaf litter, as well as tall weeds and vegetative ground cover along forest margins, tree lines, forest trails and forest clearings. Repellents containing DEET, Picaridin, BioUD, IR3535, or oil of lemon eucalyptus as active ingredients are effective against ticks and should be applied to exposed areas of skin before entering tick habitats. When in tick-prone habitats, light-colored clothing should be worn with pants legs tucked into socks, and permethrin-based repellants should be applied to clothing, socks and shoes. After visiting tick-prone habitats, a person should thoroughly check all body surfaces for ticks and, if found, attached ticks should be carefully removed as soon as possible.
Other Important Information: Lyme disease is diagnosed based on symptoms, physical findings (e.g., rash), and laboratory evidence of infection. The EM rash is the only physical manifestation that is distinctive enough to allow a definitive diagnosis in the absence of laboratory testing. The EM rash causes little or no sensation, and may be missed or overlooked in up to 30% of persons with Lyme disease.

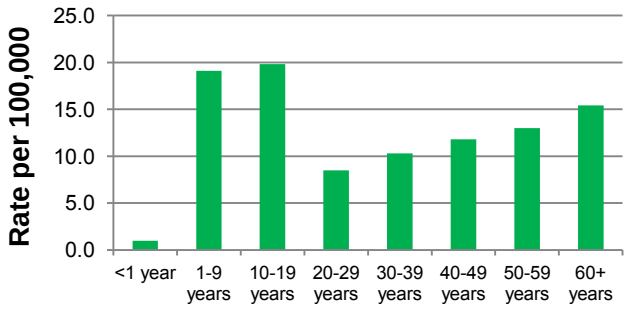


The 1,110 cases reported in 2012 are an 8% increase from the 1,023 cases reported in 2011, and a 9% increase from the five-year average of 1,013.6 cases per year (Figure 46). The dramatic increase in the number of reported Lyme disease cases since 2006 is attributable to an actual increase in Lyme disease occurrence, increased case follow-up by local health departments, and a change from voluntary to mandatory reporting of Lyme-positive findings by laboratories. The increase in incidence beginning in 2007 has occurred primarily in places where new suburban developments have been established on land that was previously

farmland or forest. Suburbanization can enhance the environment for white-tailed deer, which are crucial for tick reproduction, and for white-footed mice, which play an important role in transmission of the Lyme disease agent to ticks. Deer populations increase when deer hunting activities decrease, as forest and farm lands become suburbanized. Suburban development may also bring the human population into more frequent contact with tick habitats.

In 2012, there was a bimodal distribution of cases by age group, with the highest incidence in children in the 10-19 and 1-9 year age groups (19.8 and 19.1 per 100,000, respectively), followed by adults aged 60 years and older (15.4 per 100,000) (Figure 47). This bimodal age distribution for Lyme disease is typical of what is observed in other Lyme-endemic regions of the United States.

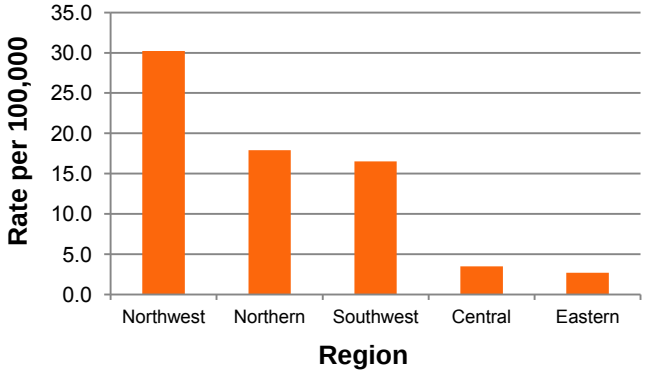
Figure 47. Lyme Disease: Rate by Age Group, Virginia, 2012



Among the 60% of cases for which race was recorded, the white population had the highest incidence (10.6 cases per 100,000), followed by the "other" race population (4.3 per 100,000), and the black population (1.5 per 100,000). Racial differences may be related in part to differences in access to healthcare for diagnosis, variation in exposure to suburban and rural tick habitats, and potentially easier detection of the EM rash in individuals with lighter skin pigmentation. The incidence rate was somewhat higher in males than in females (14.4 and 12.9 per 100,000, respectively).

Cases were reported from all regions of the state; however, the incidence of Lyme disease was highest in the northwest region (30.2 cases per 100,000), followed by the northern region (17.9 per 100,000) and the southwest region (16.5 per 100,000) (Figure 48). Rates in the remaining two regions were much lower and ranged from 2.7 to 3.5 per 100,000, with the eastern region typically having the lowest incidence rate in Virginia. Although Lyme disease cases were reported in every quarter during 2012, there was a seasonal pattern, with 55% of cases occurring in the warmer months of May through August. In 2012, the peak in occurrence was in June and is correlated with the period when the majority of nymph stage black-legged ticks, the primary vectors of Lyme disease, are actively feeding.

Figure 48. Lyme Disease: Rate by Health Planning Region, Virginia, 2012



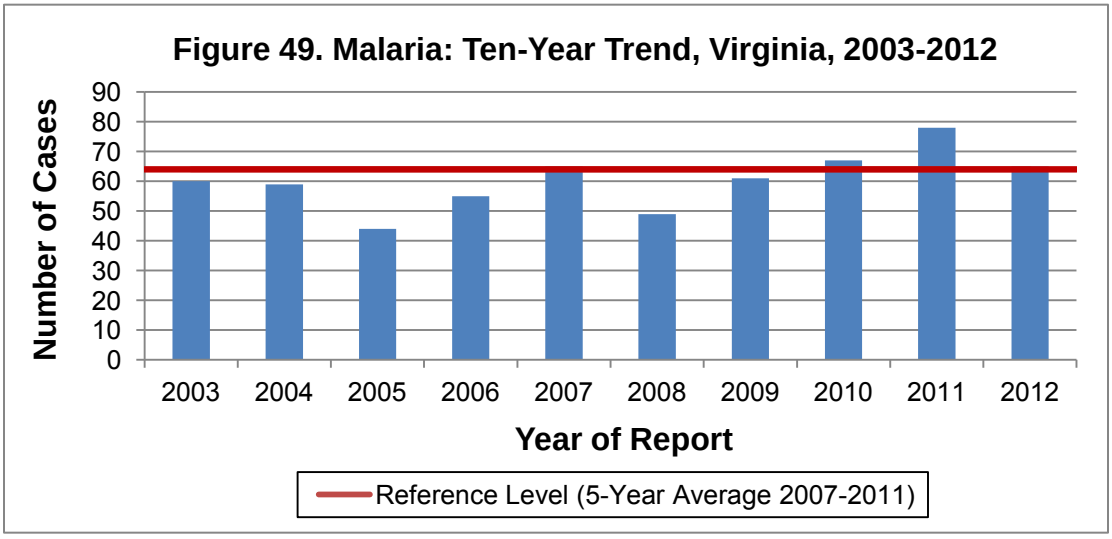
Lymphogranuloma Venereum

Agent: Specific strains of the bacterium *Chlamydia trachomatis*
Mode of Transmission: Sexually transmitted through direct contact with the lesions of an infected person.
Signs/Symptoms: Ulcerative lesions on the penis or vulva which can go unnoticed, and inflammation of the lymph nodes in the genital area; rectal ulcers may also be present. Fever, chills, headache, anorexia, and joint pain may also be present. Some infections are asymptomatic, especially in females.
Prevention: Preventive measures include adhering to safe sexual practices.
Other Important Information: Historically, lymphogranuloma venereum was thought to occur rarely in most developed countries. However, recent outbreaks in Europe and North America, most among men who have sex with men, have demonstrated its reemergence in these areas.

No cases of lymphogranuloma venereum were reported in Virginia in 2012. The last two reported cases occurred in 2005.

Malaria

Agent(s): Four different species of protozoan parasites: *Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale,* and *Plasmodium malariae*
Mode of Transmission: Transmission through the bite of an infected female *Anopheles* mosquito. Transmission might also occur from infected mother to child during pregnancy or delivery, by blood product transfusion or through transplanted organs from infected donors. Humans and certain *Anopheles* mosquito species are the only natural reservoirs for malaria.
Signs/Symptoms: Typically, high fevers, chills, sweats, severe headache, muscle and joint pain, anorexia, nausea, flu-like illness, anemia and an enlarged spleen. *P. falciparum* infections may progress to severe malaria if not treated promptly; symptoms include acute alteration of brain structure and function (i.e., cerebral malaria), severe anemia, jaundice, renal failure and coma.
Prevention: Appropriate medication for malaria prophylaxis should be taken by travelers when traveling to malaria-endemic countries. Anopheline mosquitoes bite only at dusk, dawn or during night-time hours and tend to enter buildings. Control measures include staying in structures with adequate screening and bed nets, and when outdoors, wearing long-sleeved, loose-fitting, light-colored clothing and mosquito repellents.
Other Important Information: Almost all infections reported in Virginia occur in persons who were infected in other countries. Although malaria is not endemic to Virginia, it may be brought to this region by travelers or immigrants with dormant or inapparent infections. Malaria might also arrive in Virginia with infected mosquitoes transported in aircraft or ships arriving from foreign destinations. Two potential mosquito vectors for malaria are present in Virginia: *Anopheles quadrimaculatus* and *An. punctipennis*.



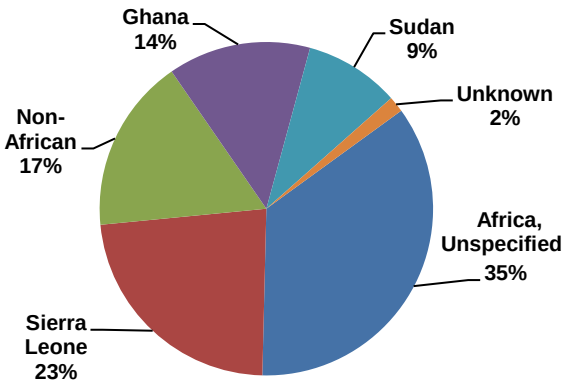
During 2012, 65 cases of malaria were reported in Virginia. This is a 17% decrease from the 78 cases reported in 2011, and similar to the five-year average of 64.0 cases per year (Figure 49).

Incidence rates were highest in the 50-59 and 40-49 year age groups (1.3 and 1.2 per 100,000, respectively). Race was not reported for 37% of cases. Where race was reported, incidence in the black population (1.9 per 100,000) was substantially higher than rates for the "other" race category (0.5 per 100,000) and the white population (0.1 per 100,000). Incidence was higher among males than among females (1.0 and 0.6 per 100,000, respectively). The majority of cases (69%) were reported from the northern region.

Cases occurred throughout the year. Because malaria is almost always acquired outside the United States, observed temporal patterns are related to patterns of travel to endemic countries.

Travel history was not available for one case, but the other cases all reported a history of travel outside of the United States within the two years prior to disease onset. The majority (81%) of those with travel outside the U.S. had visited countries on the African continent. The African countries most frequently referenced in the travel histories of 2012 cases included Sierra Leone (15 cases), Ghana (9 cases) and Sudan (6 cases) (Figure 50). Non-African countries mentioned in travel histories included India (3 cases), Pakistan, (2 cases) Afghanistan (2 cases), and Sri Lanka, Suriname, El Salvador, and Colombia (1 case each).

Figure 50. Malaria: Countries Reported in Travel Histories, Virginia, 2012



The parasitic species of *Plasmodium* were identified in 52 individuals diagnosed with malaria in 2012. Specifically, 71% were infected with *P. falciparum*, 17% were infected with *P. vivax*, 8% were infected with *P. ovale*, and 4% were infected with *P. malariae*. Three individuals were infected with multiple species of *Plasmodium*.

Information on malaria prophylaxis usage was obtained for 54 of the reported cases. Of these, only 25% (16 individuals) reported receiving prophylaxis for malaria, and 7 of the 16 individuals reported missing at least one dose. No deaths were known to be due to malaria in Virginia in 2012.

Measles

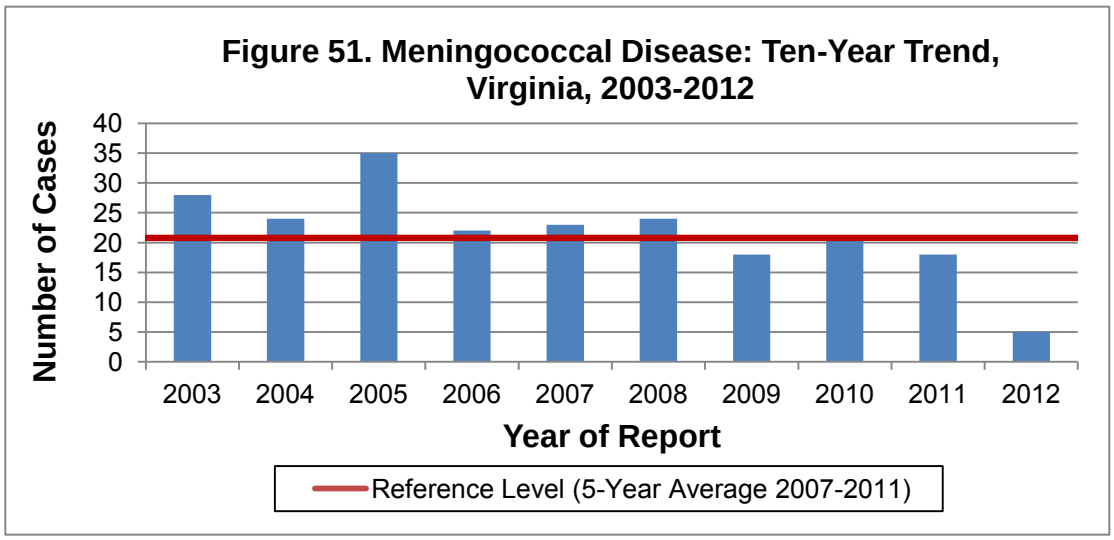
Agent: Measles virus
Mode of Transmission: Primarily person-to-person transmission by inhalation of respiratory droplets or direct contact with nasal or throat secretions of infected people; however, airborne transmission via aerosolized droplet nuclei has been documented.
Signs/Symptoms: Fever, cough, conjunctivitis, coryza, and a typical rash on the third to seventh day after onset of symptoms.
Prevention: Measles vaccine should be given as part of the measles, mumps, and rubella (MMR) series beginning at 12-15 months of age followed by a second dose at age 4-6 years. Infants <12 months of age traveling internationally should be vaccinated with an additional dose if at least 6 months of age.
Other Important Information: Measles is highly communicable, with secondary attack rates greater than 90% among susceptible people who have close contact with the infected person. Measles was declared eliminated from the United States in 2000. Nonetheless, because measles remains endemic in much of the world, importations continue to result in sporadic cases and outbreaks in the United States, which can be costly to control. Most imported cases originate in Asia and Europe and occur both among U.S. citizens traveling abroad and persons visiting the United States from other countries.

No cases of measles were reported in Virginia during 2012, a drop from both the 7 cases reported in 2011, and the previous five-year average of 2.4 cases per year. This marked the first year since 2007 in which no measles cases were reported. Prior to 2011, one case was reported each year in 2008 and 2009 and three cases were reported in 2010.

From 2001 through 2011, a median of 63 measles cases (range: 37–220) and four outbreaks, defined as three or more cases linked in time or place, were reported each year in the United States. Among the 162 cases reported nationally from 2004 through 2008, a total of 110 (68%) were known to have occurred in persons who declined vaccination because of a philosophical, religious, or personal objection. These data illustrate that importations of measles into the United States continue to occur, posing risks for measles among unvaccinated persons. Individuals planning international travel should be aware of their immune status and obtain a vaccination if necessary.

Meningococcal Disease

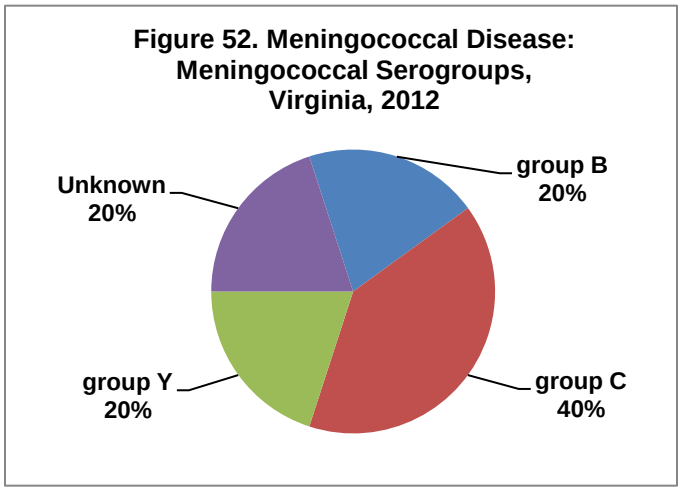
Agent: *Neisseria meningitidis* (bacteria)
Mode of Transmission: Transmission occurs through contact with respiratory droplets from the nose or throat of an infected person (e.g., through coughing or kissing).
Signs/Symptoms: Meningitis is the most common presentation of disease and includes sudden onset of fever, headache, nausea, and often vomiting, stiff neck, sensitivity to light, and confusion. A rash may be present. A bloodstream infection may also occur (without meningitis), leading to abrupt onset of fever and a rash; it is often associated with shock and multi-organ failure. Less commonly, meningococcal disease can lead to pneumonia, arthritis, or middle ear infections.
Prevention: In the United States, there are two vaccines that provide protection against meningococcal disease. The vaccines are protective against four of the five serogroups that cause disease (A, C, Y, and W-135, but not B).
Other Important Information: Crowding, exposure to tobacco smoke, and preceding upper respiratory tract infections increase the risk of disease. Five to ten percent of people carry *N. meningitidis* in their nose without having any symptoms of disease; those who develop disease are usually infected by a carrier who does not have symptoms.



During 2012, five cases of meningococcal disease were reported in Virginia with a statewide incidence rate of 0.1 per 100,000. This represents a 72% decrease from the eighteen cases reported in 2011, and a 76% decrease from the five-year average of 20.8 cases per year (Figure 51). The national incidence rate for 2005-2011 was 0.3 per 100,000 and reflects a continued decline in rates since a peak in the late 1990s.

The 20-29 and 50-59 year age groups both had two cases and an incidence rate of 0.2 per 100,000 each. The 60 year and older age group had the remaining case and an incidence rate 0.1 per 100,000. The four cases for whom race was reported occurred in the white population (0.1 per 100,000 population). Incidence was 0.1 per 100,000 among both males and females. By region, the highest incidence rate was observed in the northwest (2 cases, 0.2 per 100,000), followed by the southwest and eastern regions (0.1 per 100,000). No

cases were reported from the northern or central regions. Two cases occurred during the second quarter of the year, while the remaining three occurred during the fourth quarter.



Of the four cases for which a serogroup was identified, two were group C, one was group B and one was group Y (Figure 52). There was no indication that any of the cases reported with serogroup C or Y had received the meningococcal vaccine. No outbreaks and no deaths attributed to meningococcal disease were reported in 2012.

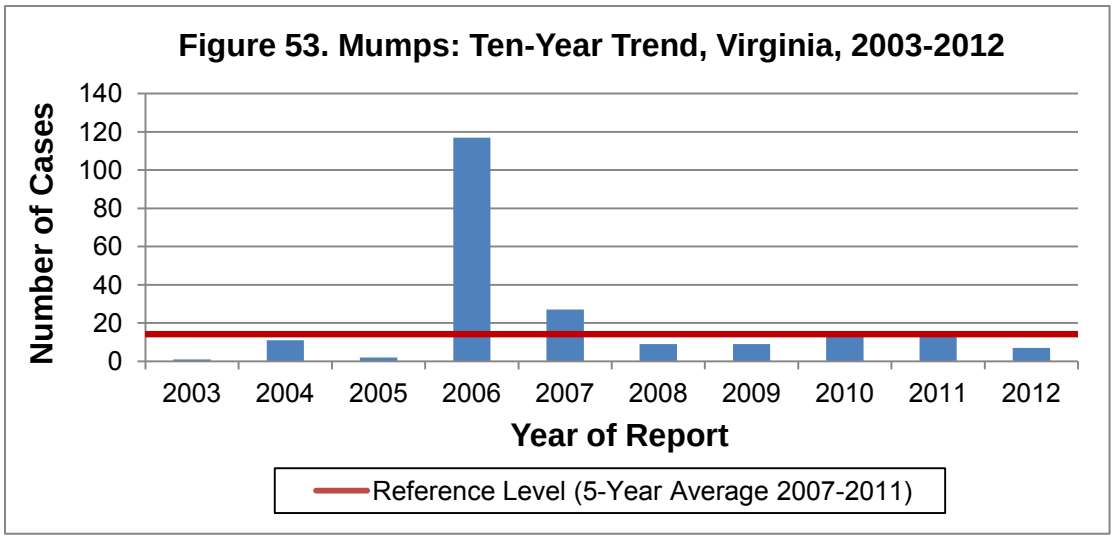
Monkeypox

Agent: Monkeypox virus (genus *Orthopoxvirus*)
Mode of Transmission: Transmission to humans from an infected animal by bite or direct contact with lesions or body fluids. Though less common, infection can be transmitted directly from person to person by respiratory droplets or contact with body fluids of an infected person, or indirectly by contact with virus-contaminated objects, such as bedding.
Signs/Symptoms: Similar to smallpox, though more mild. Initial symptoms include fever, headache, backache, sore throat, cough and swollen lymph nodes. Three days after fever onset, a rash develops.
Prevention: Contact with exotic or wild mammals that originate from areas where monkeypox has occurred should be avoided.
Other Important Information: Monkeypox is a rare disease that occurs primarily in central and western Africa. In 2003, a monkeypox outbreak in the United States was identified among persons exposed to native prairie dogs that had contact with imported African rodents.

Monkeypox became a reportable disease in Virginia in 2004. No cases of monkeypox have ever been reported in Virginia.

Mumps

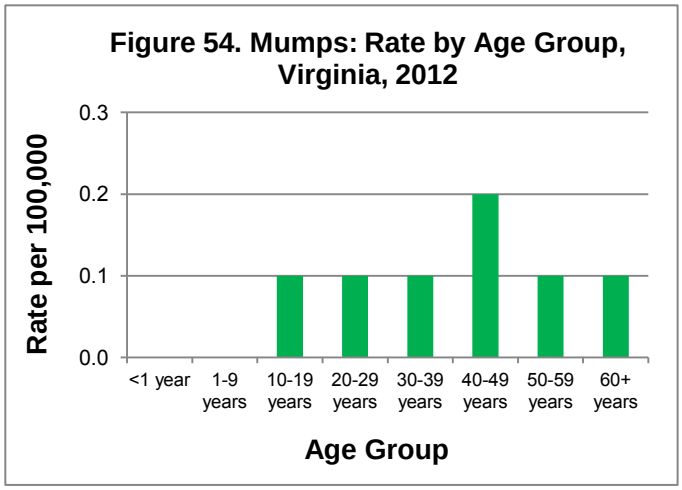
Agent: Mumps (virus)
Mode of Transmission: Person-to-person transmission through respiratory droplets, as well as through direct contact with saliva of an infected person.
Signs/Symptoms: Fever, swelling and tenderness of one or more salivary glands. Mumps infection may present with only nonspecific or primarily respiratory symptoms and as many as 20% of mumps infections are asymptomatic. Serious complications are rare but can occur in the absence of parotitis.
Prevention: Vaccination, preferably as MMR vaccine, should be administered beginning at age 12 months. Two doses of mumps-containing vaccine are recommended for school-aged children, healthcare workers, international travelers, and college students.
Other Important Information: In 2012, the CSTE case definition used to classify reported mumps cases changed, with the "confirmed" criteria becoming more restrictive. However, this did not affect the total number of cases reported in 2012 as both "probable" and "confirmed" cases are included in case counts. In 2009 and 2010, large outbreaks of mumps were documented in populations in New York and Guam, both with high, two-dose vaccination rates. While there is insufficient data to recommend for or against a third dose of mumps-containing vaccine for outbreaks in highly vaccinated populations, a third dose may be considered in specifically identified target populations according to guidance from the CDC.



Seven cases of mumps were reported in Virginia during 2012, a decline from both the 13 cases reported in 2011 and the five-year average of 14.2 cases per year (Figure 53).

Among the 2012 cases, the highest incidence occurred in the 40-49 year age group (0.2 per 100,000) with all other age groups having an incidence of 0.1 per 100,000 or less (Figure 54). Although more cases were reported among females than males (5 versus 2), incidence rates were the same for both sexes (0.1 per 100,000).

Seasonal and regional trends were not apparent as cases occurred in the first, second and fourth quarters of the year and in three out of five regions (northwest, northern and eastern). Among regions, the northwest had the highest incidence (0.2 per 100,000). Other regions experienced rates from 0.0 to 0.1 per 100,000.



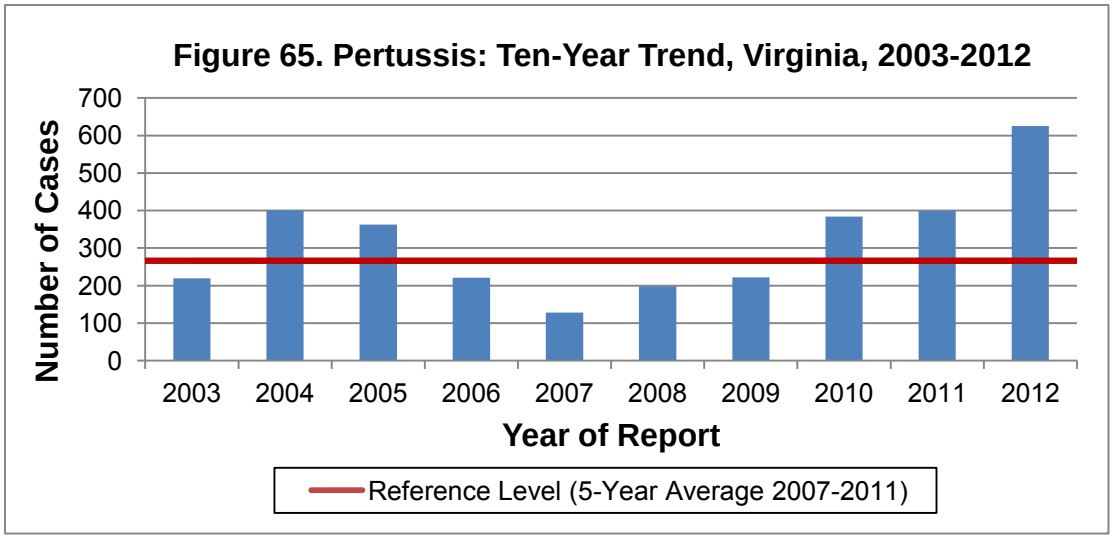
Ophthalmia Neonatorum

Agent: *Chlamydia trachomatis* (bacteria) or *Neisseria gonorrhoeae* (bacteria), although *C. trachomatis* is more common.
Mode of Transmission: Infants are exposed to the organism in the birth canal during childbirth.
Signs/Symptoms: Redness or swelling of one or both eyes beginning five to fourteen days after birth.
Prevention: All pregnant women should be screened for chlamydia and gonorrhea infection, followed with appropriate treatment for infected women and their partner(s). Additionally, a prophylactic agent should be instilled into the eyes of all newborn infants.

Eleven infants were reported with ophthalmia neonatorum in 2012. This is slightly higher than the five-year average of 7.4 cases per year. All of the infections occurring in 2012 were caused by *C. trachomatis.*

Pertussis

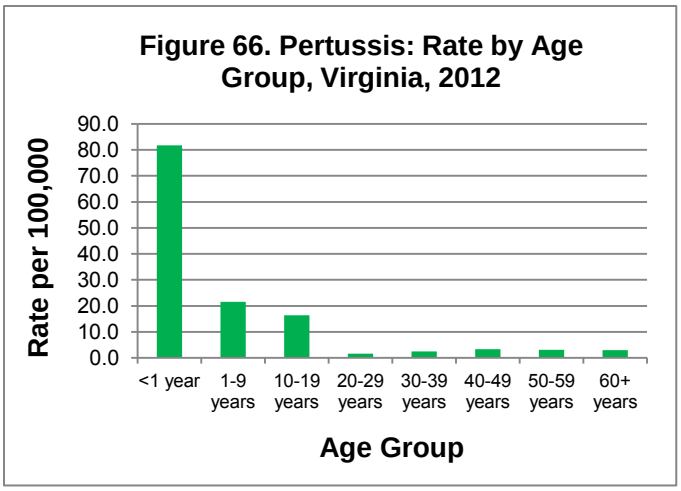
Agent: *Bordetella pertussis* (bacteria)
Mode of Transmission: Person-to-person transmission by contact with respiratory droplets from infected patients.
Signs/Symptoms: Insidious cough that progresses to paroxysmal coughing (i.e., severe, sequential coughs with difficulty inhaling) and may be accompanied by post-cough vomiting.
Prevention: Appropriate vaccine should be administered beginning at 2 months of age.
Other Important Information: Pertussis is also known as whooping cough. Coughing fits can last up to 10 weeks or more. In vaccinated populations, the case-fatality rate is low. When deaths occur, they are generally in children less than six months old who are too young to have been vaccinated.



In 2012, 625 cases of pertussis were reported in Virginia. This is a 57% increase from the 399 cases reported in 2011 and a 135% increase from the five-year average of 266.2 cases per year (Figure 65). Cases of pertussis typically occur in waves, with peak numbers appearing every 3-5 years. But for the past 20-30 years, the peaks have been getting higher and overall case counts have been going up. The number of pertussis cases has been increasing since 2007 in Virginia and across the country. The number of pertussis cases in 2012 was the highest reported in Virginia since 1959 when 1,114 cases were reported. In addition, the 48,277 cases reported nationally in 2012 are the highest since 1955.

Several factors may help explain this sustained recent increase. These include increased awareness, improved diagnostic tests and their wider availability, better reporting, increased circulation of the bacteria and waning immunity in all age groups. It is also becoming apparent that the acellular pertussis vaccine currently used in the United States may not protect for as long as the whole cell vaccine that was used earlier. As discussed below, the highest incidence rates, nationally and in Virginia, are in children (i.e., born after 1996) who received only acellular vaccine.

In Virginia, pertussis cases were reported from every age group. However, the less than one year age group had a substantially higher incidence rate than any of the others, with 81.8 cases per 100,000 population (Figure 66). The next highest incidence rates were observed in the 1-9 and 10-19 year age groups, with 21.5 and 16.4 cases per 100,000, respectively. Forty percent of cases were missing race data. Among cases with race reported, incidence in the white population was more than four times the rate in the black population (5.8 and 1.4 per 100,000, respectively), and more than three times the rate in the "other" race population (1.8 per 100,000). Females had a higher incidence rate than males (8.4 and 6.9 per 100,000, respectively).



Among regions, the northwest region had the highest number of cases and incidence (214 cases, 17.1 per 100,000). Rates in other regions ranged from 5.2 per 100,000 in the southwest region to 7.3 per 100,000 in the eastern region. While cases occurred throughout the year, the largest proportion (32%) had onset in the second quarter of the year. Seventeen pertussis outbreaks were reported in 2012. Over half the outbreaks (59%) were linked to school settings, while the largest outbreak was community-based and involved 21 cases from the eastern region. One death due to pertussis was reported in 2012 in an individual over 50 years of age.

Plague

Agent: *Yersinia pestis* (bacteria)
Mode of Transmission: Transmitted to humans through the bite of infected fleas or through handling tissue or body fluids of a plague-infected animal. If the disease attacks the lungs, it may be spread from person to person by respiratory droplets released when coughing.
Signs/Symptoms: Fever, chills, nausea, headache and body aches. Specific types of plague also lead to other symptoms, such as swollen lymph nodes ("buboes"), bloodstream infections, and pneumonia.
Prevention: In areas where plague occurs, travelers should avoid contact with rodents and fleas and avoid handling stray animals. Persons with plague that results in pneumonia should be isolated until 48 hours after antibiotics have been started.
Other Important Information: Fewer than 20 people in the United States are diagnosed with plague every year. Human plague infections continue to occur in the western United States. *Y. pestis* is considered to be one of the agents that could be used for bioterrorism because the bacteria can be spread from person to person and would cause increased illness and death in the population if it were used as a weapon.

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

Poliovirus Infection, Including Poliomyelitis

Agent: Poliovirus
Mode of Transmission: Person-to-person transmission through ingestion of contaminated food or direct contact with fecal material from infected people.
Signs/Symptoms: Up to 90% of all polio infections are asymptomatic. Ten percent will develop into a non-specific syndrome with fever, malaise, headache, nausea, and vomiting. Flaccid paralysis occurs in < 1% of poliovirus infections.
Prevention: Vaccine should be administered beginning at 2 months of age. Four doses of trivalent, inactivated poliovirus vaccine (IPV) are recommended with the last dose administered prior to kindergarten entry.
Other Important Information: Polio eradication programs have led to the elimination of the disease in the Western Hemisphere. Poliovirus transmission has never been interrupted in only three countries, Afghanistan, Nigeria, and Pakistan. Until poliovirus transmission is interrupted in these endemic countries, all countries remain at risk of importation of polio, especially in the "wild poliovirus importation belt" of countries stretching from west Africa to central Africa and the Horn of Africa. According to the World Health Organization (WHO), there were 223 reported cases of polio worldwide in 2012, with Nigeria reporting the most cases. No cases were reported from India, an endemic country prior to 2011. During 2012, re-established poliovirus transmission was interrupted in three of four countries, including Angola, the Democratic Republic of Congo, and South Sudan, while the fourth country, Chad, was making great progress. In 2011, Virginia's reporting requirements were changed to require reporting of any poliovirus infection, not only poliomyelitis.

No poliovirus infections were reported in Virginia in 2012. The last reported case of poliomyelitis in Virginia occurred in 1978.

Psittacosis

Agent: *Chlamydophila* (formerly *Chlamydia*) *psittaci* (bacteria)
Mode of Transmission: Transmission usually occurs when a person inhales organisms that have been aerosolized from dried feces or respiratory tract secretions of infected birds. Other means of exposure include handling of feathers or tissues from infected birds and laboratory exposure.
Signs/Symptoms: Most commonly fever, headache, weakness, loss of appetite, muscle aches, chills, sore throat, and cough. Symptoms can present as a mild flu-like illness or can be very severe, especially in older persons.
Prevention: Preventive measures include proper design and management of facilities that raise and sell birds and use of protective clothing (e.g., wearing of masks or respirators and gloves) by those working with birds. Bird cages should be cleaned regularly with disinfectants and the contents of the cage should be disposed of properly. People who work with birds or have birds as companion animals who experience symptoms compatible with psittacosis should bring this potential exposure to their healthcare providers' attention.
Other Important Information: Birds may or may not show signs of illness when infected. Chlamydial organisms have been isolated from over 460 bird species, but are most commonly identified in psittacine (parrot-type) birds, especially cockatiels and budgerigars (also called parakeets or budgies). In the United States, infection with *C. psittaci* occurs most frequently from psittacine birds, pigeons, and turkeys. People who raise, sell or keep birds should consult with a licensed veterinarian about protocols and best practices for preventing and treating avian psittacosis.

No cases of psittacosis were reported in Virginia during 2012. The last case was reported in 2003 and before that, one case was reported in 1998.

Q Fever

Agent: *Coxiella burnetii* (bacteria)
Mode of Transmission: Inhalation of air contaminated with dried placental material, birth fluids, or excreta of infected animals; direct exposure to infected animals or tissues; exposure to contaminated material, such as wool, straw, fertilizer, or laundry. Person-to-person transmission is rare.
Signs/Symptoms: While approximately 50% of infections are asymptomatic, symptomatic Q fever may be acute or chronic. Acute Q fever is characterized by high fever, severe headache, fatigue, chills and muscles aches. Serious illness can progress to pneumonia or inflammation of the heart and liver. Although rare, a rash can occur in children. Chronic Q fever is a severe disease developing in <5% of acutely-infected patients and is rarely reported in children. Endocarditis is the major form of chronic disease, comprising 60-70% of all reported cases. It may present within 6 weeks after an acute infection, or may manifest years later. Chronic disease can occur after symptomatic or asymptomatic infections. The three groups at highest risk for developing chronic Q fever are pregnant women, immunocompromised persons and patients with a pre-existing heart valve defect. The estimated fatality rate in untreated patients with endocarditis is 25-60%.
Prevention: Preventive measures include appropriate disposal of potentially infectious tissues and proper hygiene when handling animal birth material.
Other Important Information: Although infection has been confirmed in many species, cattle, sheep and goats are the main natural reservoirs for *C. burnetii*. The infectious form of these bacteria is highly resistant to heat, desiccation, and disinfectant substances, and can persist in the environment for long periods of time. Windborne particles containing infectious organisms can travel a half-mile or more, contributing to sporadic cases with no known animal contact. This bacterium is classified by the CDC as a potential bioterrorism agent because it could easily be disseminated and result in a moderate amount of illness.

No cases of Q fever were reported in 2012 in Virginia. This is less than the five-year average of 2.4 cases per year. Three cases of Q fever, two chronic and one acute, were reported in 2011. All three occurred in adult males, two from the northwest and one from the central region. One case was associated with exposure to livestock and birthing processes, while the second case may have been exposed during employment at a poultry plant. The third may have been exposed during several military tours of duty in Iraq and Afghanistan.

Rabies

Agent: Rabies virus, a rhabdovirus of the genus *Lyssavirus*
Mode of Transmission: Most commonly transmitted through the bite of an infected animal, but may be transmitted through any method by which virus-infected saliva or central nervous system tissue enters the body.
Signs/Symptoms: Vary widely, but in people, symptoms often include an initial headache, fever and apprehension which progresses to paralysis, spasms of the muscles used for swallowing, delirium and convulsions. Once symptoms appear, rabies is almost invariably fatal.
Prevention: Important prevention methods include vaccinating cats, dogs, and ferrets; using animal control to remove stray animals; and avoiding handling wildlife. A pre-exposure vaccine should be given to people at high risk of exposure (e.g., veterinarians and laboratorians working with rabies virus). Post-exposure vaccine should be administered to anyone who meets the definition of exposure to rabies.
Other Important Information: The main reservoir of rabies in the United States is wildlife. In most other countries, the main reservoir is dogs.

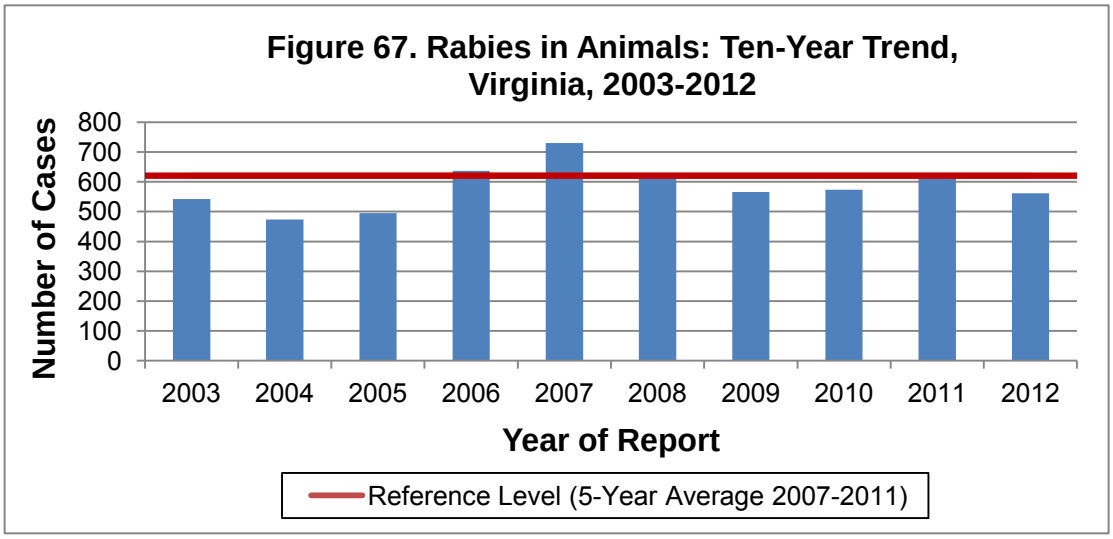
Human

No human rabies cases were reported in Virginia in 2012. The last case of human rabies in Virginia occurred in 2009 in an adult male who was infected with the Indian canine variant of the rabies virus and was thought to have been exposed during an encounter with a dog while traveling in India. The patient died as a result of this infection.

In 2012, 1,465 people were reported as having received rabies post-exposure prophylaxis (PEP) in Virginia. This represents a rate of 18.1 per 100,000 people receiving PEP and is a small increase from the previous year when 1,443 persons were reported to have received PEP. Fairfax County Health District had the highest number and rate of people receiving PEP (224 people, 39.9 per 100,000). The Central Virginia health district had the next highest rate (118 people, 21.0 per 100,000), followed by Prince William (97 people, 17.3 per 100,000). Rates in the remaining districts ranged from 0.7 to 13.7 per 100,000, with the Hampton Health District reporting the lowest rate. The number of people receiving PEP by region ranged from 165 (9.1 per 100,000) in the eastern region to 413 (18.0 per 100,000) in the northern region. Health districts that recorded exposures by species reported that more than one-third of people received PEP due to exposure to wildlife. Fewer people received PEP due to exposure to dogs (25%) or cats (22%).

Animal

In 2012, 15% of animals submitted for testing were laboratory confirmed as positive for rabies. This is within the range of 13-16% of animals testing positive that has been observed over the last 10 years. The 562 animals testing positive for rabies in 2012 was a 9% decrease from the 618 that tested positive in 2011 (Figure 67). The largest proportion of laboratory-confirmed rabid animals was reported from southwest region (187 animals, 33%), followed by the northwest region (145 animals, 26%). The remaining regions had 58 to 92 laboratory-



confirmed rabid animals. By district, the largest proportion of rabid animals was from the Fairfax Health District (47 animals, 8%), followed by New River (42 animals, 7%) and Central Shenandoah Health Districts (40 animals, 7%). Cats remain the domestic animal most commonly diagnosed with rabies, and raccoons remain the most common wild animal to test positive; these trends have been consistent for over 10 years.

Among all species tested for rabies, cats were the most commonly tested animal, with 956 cats tested, but only 3% were positive (Table 11). Skunks had the highest percentage of positive test results (61%), followed by bobcats (60%). Of the 562 animals positive for rabies in Virginia in 2012, raccoons accounted for almost half (46%) followed by skunks (30%). Of note, the four beavers that tested positive in 2012 are the most recent cases of rabid beavers since two were laboratory confirmed as positive in 2007. In 2012, Virginia recorded its first bear that was positive for rabies. With regard to livestock, bovines account for the largest proportion of animals testing positive for rabies (16%), followed by equines (13%). All small rodents submitted for testing were negative.

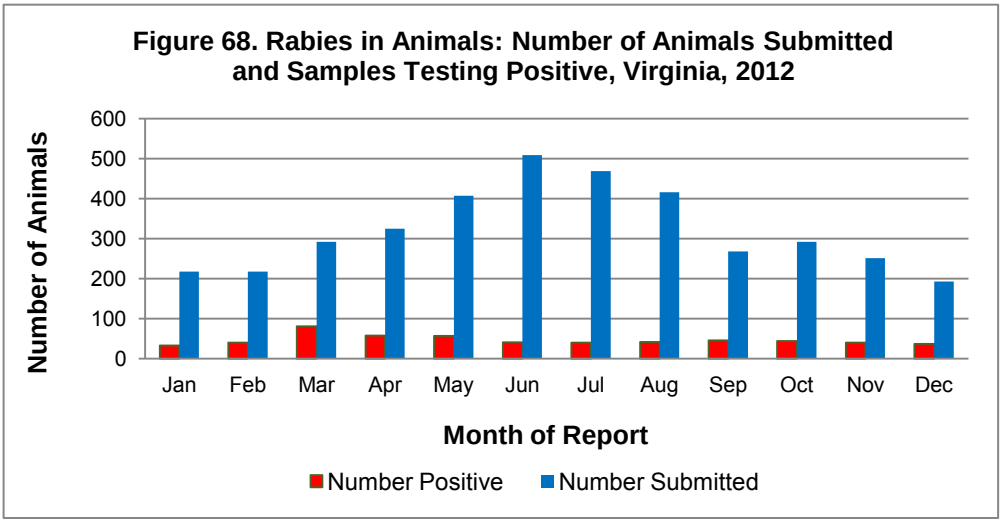
Table 11. Animals Testing Positive for Rabies by Species, Virginia, 2012

Animal Species	Number of Animals Tested	Positive	
		Number	Percent
Alpaca	6	0	0%
Bat	690	19	3%
Bear	2	1	50%
Beaver	8	4	50%
Bobcat	5	3	60%
Bovine	92	15	16%
Cat	956	28	3%
Chipmunk	10	0	0%
Coyote	9	0	0%
Deer	8	0	0%
Dog	557	3	1%
Equine	31	4	13%
Ferret	4	0	0%
Fox	146	54	37%

Table 11. Animals Testing Positive for Rabies by Species, Virginia, 2012 (cont.)

Animal Species	Number of Animals Tested	Positive	
		Number	Percent
Goat	29	2	7%
Groundhog	114	7	6%
Hamster	1	0	0%
Mole	3	0	0%
Mouse	19	0	0%
Mule	1	0	0%
Muskrat	5	0	0%
Opossum	168	0	0%
Otter	1	0	0%
Pig	2	0	0%
Rabbit	6	0	0%
Raccoon	620	258	42%
Rat	10	0	0%
Sheep	15	1	7%
Shrew	1	0	0%
Skunk	273	166	61%
Squirrel	62	0	0%
Vole	3	0	0%
Weasel	1	0	0%
TOTAL	3858	562	15%

The largest proportion of animals were submitted for rabies testing during the late spring and summer months, while the fewest animals were submitted for testing during the winter months (Figure 68). This seasonal pattern is likely a result of increased domestic animal and human interaction with wildlife during warmer months. No seasonal pattern was observed in the number of animals testing positive for rabies, but March had the highest number of any month, with 81 animals testing positive.



Rubella

Agent: Rubella virus
Mode of Transmission: Person-to-person transmission through contact with nose and throat secretions from infected people. The virus may also be transmitted from mother to child during pregnancy, causing congenital rubella syndrome in the infant.
Signs/Symptoms: Fever and rash, with frequent occurrences of arthralgia, arthritis, and lymphadenopathy.
Prevention: Vaccination, preferably administered as MMR vaccine, should begin at 12 months of age.
Other Important Information: In 2004, rubella was declared to be no longer endemic in the United States, although a small number of cases continue to be imported.

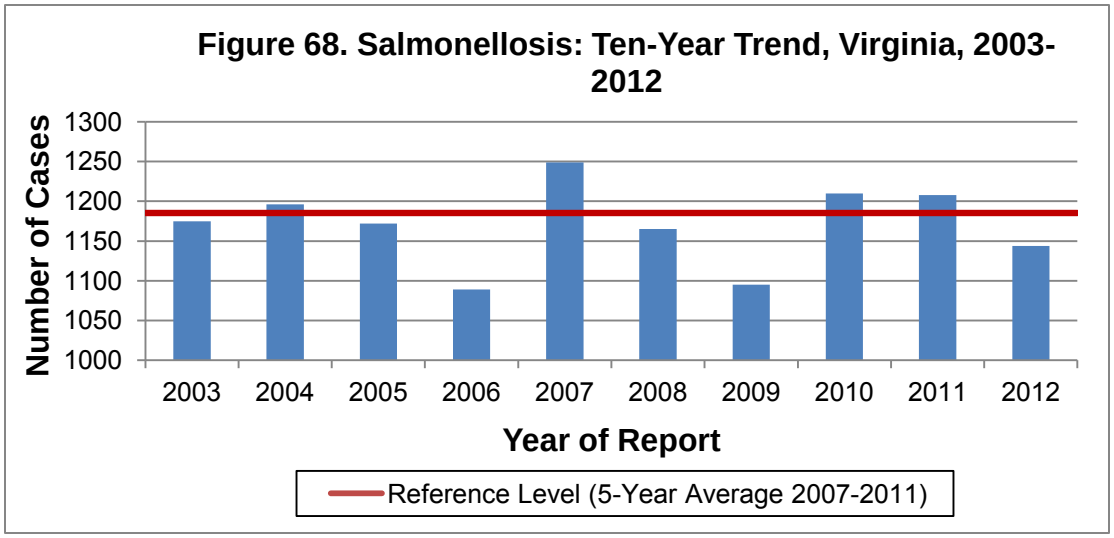
No cases of rubella were reported in Virginia during 2012. The most recent cases in Virginia occurred in 2010 in two unvaccinated individuals. The cases occurred in an adolescent with travel to an out-of-state U.S. tourist destination and in a foreign-born adult with travel to a country where rubella is endemic. Prior to these cases, the last reported case occurred in 2001. Of note, nine cases of rubella were reported in the United States during 2012, which is similar to the previous five-year average of eight cases per year.

Although Virginia does not have a higher proportion of unvaccinated residents than most other states, each year Virginia hosts large numbers of visiting travelers and welcomes thousands of residents returning from trips abroad. This underscores the importance of vaccination in both travelers and non-travelers.

Salmonellosis

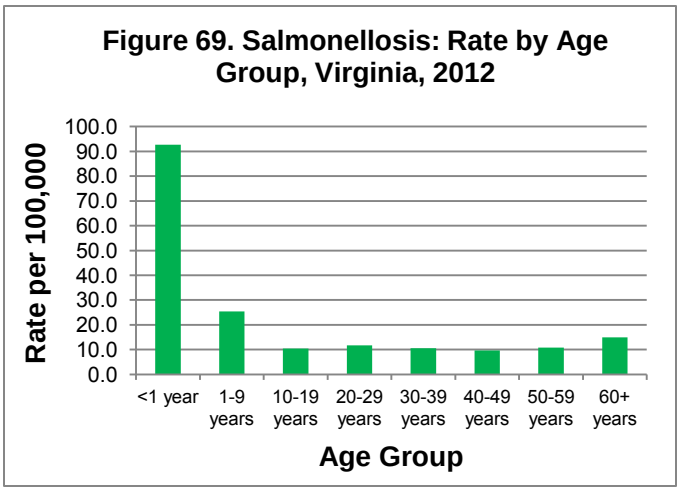
Agent: *Salmonella* (bacteria)
Mode of Transmission: Ingestion of food or drinking water contaminated with animal feces. Infected persons can spread the bacteria to other persons by not washing their hands properly after going to the bathroom and then handling food that others will eat. Infection can also occur after eating, smoking, or touching one's mouth if hands are contaminated with the bacteria and not washed well. People can also be infected with *Salmonella* by the feces of some pets, including reptiles and young birds, if hands are not washed well after contact with sick or seemingly healthy infected animals.
Signs/Symptoms: Sudden onset of headache, fever, abdominal pain, diarrhea and sometimes vomiting. Dehydration, especially in older adults and young children, can be a severe complication.
Prevention: Preventive measures should include following proper sanitation methods for food preparation and water supplies, including preventing cross-contamination of food preparation surfaces, maintaining sanitary sewage disposal, excluding infected people from handling food or providing healthcare, prohibiting the sale of small turtles and restricting the sale of other reptiles for pets, and observing proper hand hygiene, including washing hands after toileting or diapering, before and after handling food, and after handling animals or their feces. Eggs and other animal food products should be cooked thoroughly.
Other Important Information: With approximately 42,000 salmonellosis cases reported each year in the United States, *Salmonella* is one of the leading pathogens that cause foodborne illnesses and result in hospital admissions. The incidence rate is highest among infants and young children. Mortality rates are higher in infants, older adults and people with impaired immune systems.
Special Note about Salmonellosis: While more than 2,500 serotypes of *Salmonella* can cause human illness, two specific *Salmonella* serotypes (*S.* Typhi and *S.* Paratyphi*) can lead to typhoidal illness (i.e., typhoid fever and paratyphoid fever, respectively). Typhoidal illness is found only in humans and often results in more serious infections than those seen in other *Salmonella* serotypes; up to 10% of people who are untreated for typhoidal illness may die. Cases of typhoid fever and paratyphoid fever are usually associated with foreign travel and are alike in regard to clinical features and measures necessary to control the spread of infection. However, despite their similarities, paratyphoid fever tends to be milder than typhoid fever, with a lower fatality rate. Due to its severity, typhoid fever is reported as a separate condition in Virginia (see the Typhoid Fever section of this report for more information), while cases of paratyphoid fever are included in the general salmonellosis report.

*Paratyphoid fever can be caused by any of three separate strains of *S.* Paratyphi*: S.* Paratyphi A, *S.* schottmuelleri (also called *S.* Paratyphi B), or *S.* hirschfeldii (also called *S.* Paratyphi C). A separate strain of *S.* Paratyphi B (i.e., *S.* Paratyphi B var. L[+] tartrate [+]) causes illness that resembles non-typhoidal salmonellosis; these cases are treated as general salmonellosis and are not considered to be paratyphoid fever.

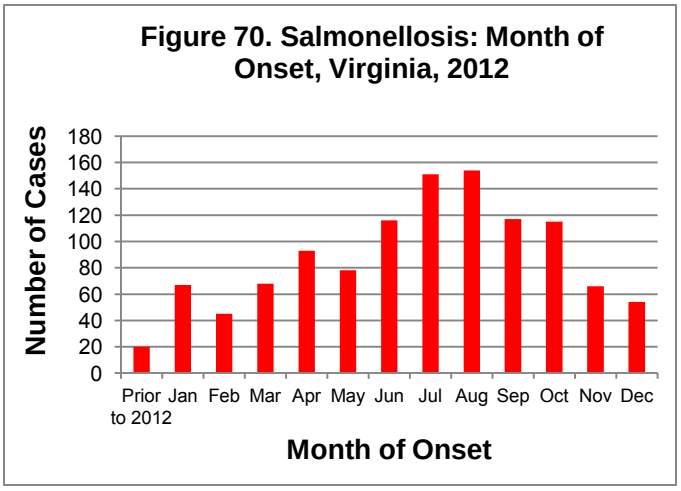


The 1,144 cases of salmonellosis reported in Virginia in 2012 is lower than the 1,208 cases reported in 2011, and represents a 4% decrease from the five-year average of 1,185.4 cases per year (Figure 68).

By far, infants were at the greatest risk for *Salmonella* infection (92.7 cases per 100,000), followed by children aged 1-9 years (25.4 per 100,000) (Figure 69). Incidence rates in the other age groups were much lower, ranging from 9.6 to 15.0 per 100,000. Race information was missing for 42% of all cases; among cases with race reported, incidence was higher in the white population (9.2 per 100,000) than the black and "other" race populations (6.5 and 3.2 per 100,000, respectively). Females were reported to be infected with *Salmonella* more frequently than males (14.8 and 13.0 per 100,000, respectively).



Regionally, the highest incidence rate was seen in the eastern health planning region (17.3 per 100,000). The lowest rate was seen in the northern region (10.4 per 100,000). *Salmonella* infections peaked during the third quarter of 2012, with 37% of cases occurring between July and September (Figure 70). Only one person reported to have *Salmonella* infection was known to have died in Virginia during 2012.



Thirteen confirmed salmonellosis outbreaks occurred during 2012. Eight foodborne outbreaks of salmonellosis were reported; the number of Virginia residents affected during each outbreak ranged from 1 to 34. Three outbreaks were associated with zoonotic exposures, with two to nine Virginia cases per outbreak. The animal exposures identified during these outbreaks included turtles and live poultry (e.g., chicks, ducklings, and partridges). Two other salmonellosis outbreaks were reported during 2012; the method of transmission could not be identified for one, while the remaining outbreak was linked to contaminated dog food. Nine of the *Salmonella* outbreaks involving Virginia residents in 2012 were multi-state outbreaks. See the Outbreaks section of this report for more information.

Illnesses identified during the 2012 salmonellosis outbreaks were attributed to several *Salmonella* serotypes; during some outbreaks, more than one *Salmonella* serotype was detected. The serotypes involved included Bareilly, Braenderup, Bredeney, Enteritidis, Heidelberg, Infantis, Javiana, Mississippi, Montevideo, Nchanga, Newport, Pomona, Poona, Sandiego, and I 4,[5],12:i:-. For all salmonellosis infections among Virginia residents during 2012, the most commonly detected serotypes were *Salmonella* ser. Enteritidis and *Salmonella* ser. Typhimurium (Table 12).

Table 12. Top Ten *Salmonella* Serotypes Reported to the CDC PulseNet System by the Division of Consolidated Laboratory Services, Virginia, 2012

Rank	Serotype Causing Infection	Number		Rank	Serotype Causing Infection	Number
1	*S.* ser Enteritidis	239		6	*S.* ser I 4,[5],12:i:-	34
2	*S.* ser Typhimurium	191		7	*S.* ser Saintpaul	28
3	*S.* ser Newport	117		8	*S.* ser Infantis	19
4	*S.* ser Javiana	87		9	*S.* ser Braenderup	18
5	*S.* ser Bareilly	58		10	*S.* ser Heidelberg	18

Three cases of paratyphoid fever (all *S.* Paratyphi A) were reported in Virginia during 2012, down from the 16 cases identified in 2011 and the 12 cases reported in 2010. All three affected individuals had a history of international travel in the weeks prior to illness onset; two case-patients had traveled to India and one had visited Pakistan shortly before becoming ill.

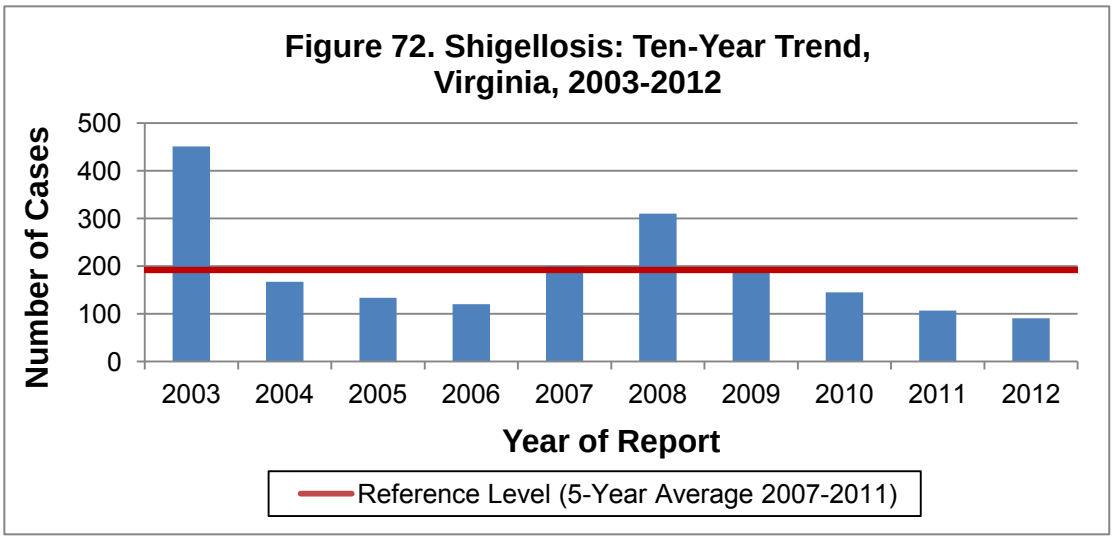
Severe Acute Respiratory Syndrome (SARS)

Agent: Severe acute respiratory syndrome-associated coronavirus (SARS-CoV)
Mode of Transmission: Most likely transmitted from person to person through respiratory droplets released during coughing and sneezing; transmission can also occur by touching a contaminated surface or object and then touching the mouth, nose, or eyes. It is possible that SARS-CoV might be spread more broadly through the air or by other routes that are not yet known.
Signs/Symptoms: Fever, chills, headache, body aches, followed by respiratory symptoms, such as cough, shortness of breath, or difficulty breathing. Diarrhea may occur.
Prevention: Factors that may reduce transmission include frequent hand washing, avoidance of touching the eyes, nose, and mouth with contaminated hands, and covering the nose and mouth with a tissue when coughing or sneezing.
Other Important Information: Major outbreaks of SARS occurred between November 2002 and July 2003 in Canada, China, Singapore and Vietnam. In the United States, eight people had laboratory evidence of SARS-CoV infection. SARS is thought to have originated in China.

No cases of SARS were reported in Virginia during 2012. Previously, one case of SARS was confirmed in Virginia in 2003 during the international outbreaks in 2002 and 2003. The case occurred in a female aged 50 years or more who had traveled to Taiwan, Malaysia and Singapore in the four weeks before she developed symptoms. Her exposure most likely occurred in a Singapore hospital where she had direct contact with patients being treated for SARS. The last reported case detected through active global surveillance occurred in China in April 2004. Since then, there has been no evidence of SARS circulating in the human population.

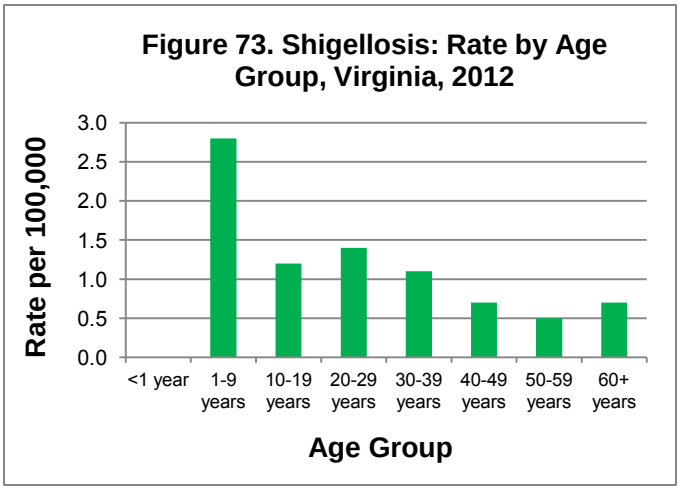
Shigellosis

Agent: *Shigella* (bacteria)
Mode of Transmission: Primarily person-to-person transmission when the bacteria are passed from the stool of an infected person to another person through direct contact. Additionally, contact with a contaminated inanimate object, ingestion of contaminated food or water, and certain types of sexual contact may spread the disease.
Signs/Symptoms: Diarrhea ranging from watery and loose to mucoid with or without blood; fever; and sometimes nausea, vomiting, abdominal cramps and painful straining while defecating. Mild and asymptomatic infections can also occur.
Prevention: Proper hand hygiene is essential to limit transmission. Additional control measures include improved sanitation, chlorination of drinking water, proper cooking and storage of food, the exclusion of infected persons as food handlers, and measures to decrease contamination of food by houseflies.
Other Important Information: *Shigella sonnei*, (also known as "Group D" *Shigella)*, accounts for over two-thirds of shigellosis in the United States, while *Shigella flexneri* (also known as "group B" *Shigella)* accounts for almost all the rest.



During 2012, 91 cases of shigellosis were reported in Virginia. This represents a 15% decrease from the 107 cases reported in 2011, and a 53% decrease from the five-year average of 192 cases per year (Figure 72).

Similar to what was seen in 2011, the 1-9 year age group again had the highest number of cases and

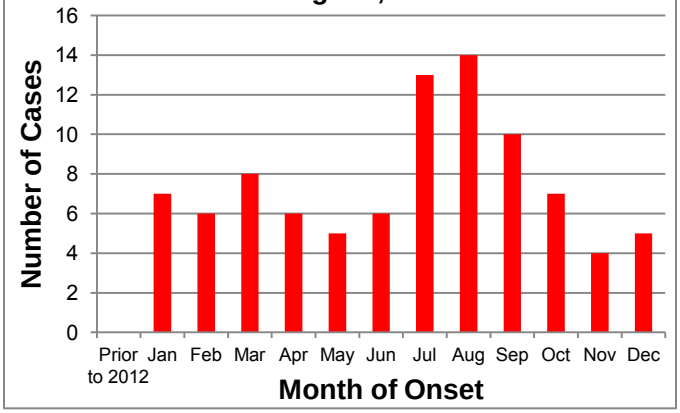


the highest incidence rate (26 cases, 2.8 per 100,000) (Figure 73). The high rate in this age group is expected because toddlers, age 2 to 4 years, are more likely to be exposed to shigellosis in child care and home settings where other young children may not routinely wash their hands after using the toilet. No cases were reported in children less than one year of age; incidence among the other age groups ranged from 0.5 to 1.4 per 100,000.

Race data were missing for 47% of reported shigellosis cases. Among those with race information, incidence was highest in the "other" race population (0.9 per 100,000), followed closely by the black and white populations (0.7 and 0.5 per 100,000, respectively). The incidence of shigellosis was similar among males and females (1.3 and 1.0 per 100,000, respectively).

Geographically, the northern region had the highest incidence rate (2.0 per 100,000) and the southwest region had the lowest (0.1 per 100,000). Rates among the other regions ranged from 0.7 to 1.0 per 100,000. Onset dates show a peak in the late summer months of July through September (Figure 74). No reported outbreaks were attributed to *Shigella* during 2012.

Figure 74. Shigellosis: Month of Onset, Virginia, 2012



Smallpox

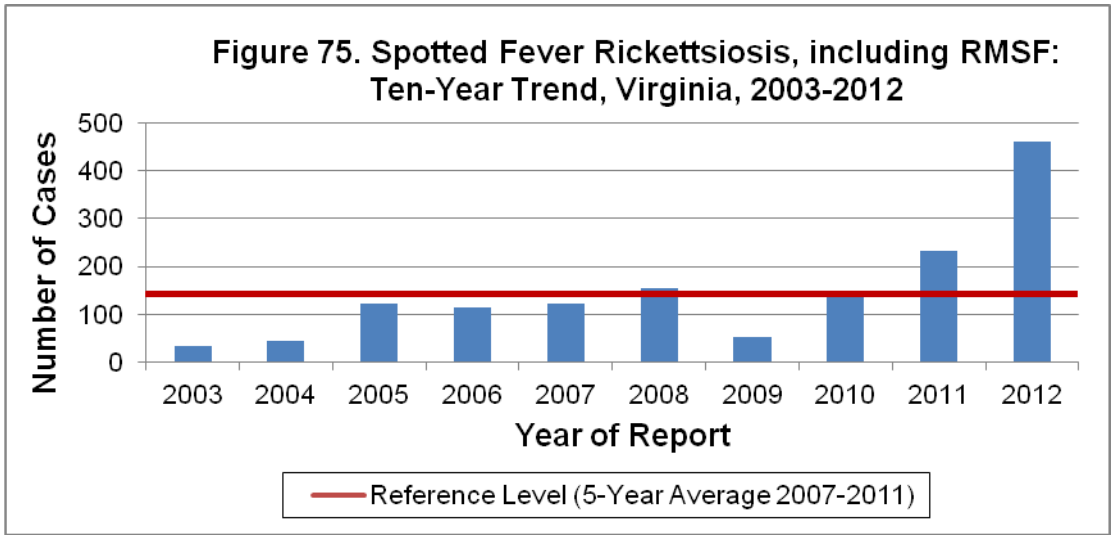
Agent: Variola virus
Mode of Transmission: Person-to-person transmission through contact with respiratory droplets, airborne particles (rare), and skin lesions of an infected person. Smallpox can also be transmitted through contact with contaminated clothing or bedding.
Signs/Symptoms: Sudden onset of fever, headache, weakness and exhaustion followed by development of a rash that first appears on the face and extremities.
Prevention: Preventive measures include vaccination with the genetically distinct vaccinia virus. Routine vaccination of the American public stopped in 1972. At this time, vaccine is only available to members of emergency response teams and some military personnel.
Other Important Information: The last case of smallpox in the United States was in 1949; the last naturally occurring case in the world was in Somalia in 1977. Smallpox is considered to be one of the agents that could be used for bioterrorism because the disease can be spread from person to person and would cause increased illness and death in the population if used as a weapon.

The last case of smallpox in Virginia occurred in 1944.

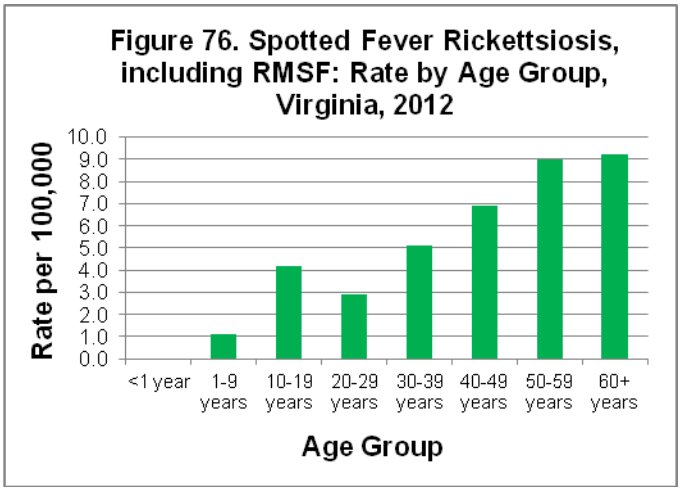
Spotted Fever Rickettsiosis, including Rocky Mountain Spotted Fever

Agent: Tick-borne species of *Rickettsia* (bacteria). Spotted fever rickettsiosis includes a number of different diseases, including Rocky Mountain spotted fever (RMSF), caused by *Rickettsia rickettsii*, and Tidewater spotted fever, caused by *Rickettsia parkeri*.
Mode of Transmission: Transmitted to humans by the bite of an infected tick. Ticks must be attached for at least 10 to 20 hours to transmit the bacterium.
Signs/Symptoms: Persons with spotted fever rickettsiosis may have a sudden onset of fever, severe headache, muscle pain, nausea and vomiting. Three to five days after onset of illness, a rash may develop that starts on the wrists and ankles, and spreads to the rest of the body. The rash is seen in about 80% of cases.
Prevention: Tick bites can be minimized by avoiding likely tick-prone habitats such as open fields with tall brush and weeds, old fields with early succession forest growth, or brushy vegetation along trails. Repellents containing DEET, Picaridin, BioUD, IR3535, or oil of lemon eucalyptus as active ingredients are effective against ticks and should be applied to exposed areas of skin before entering tick habitats. When in tick-prone habitats, light-colored clothing should be worn with pants legs tucked into socks, and shirts tucked into pants. Permethrin-based repellants should be applied to clothing, socks and shoes. After visiting tick habitats, a person should thoroughly check all body surfaces for ticks and, if found, attached ticks should be removed as soon as possible.
Other Important Information: Although the severity of infections attributable to spotted fever rickettsiosis varies greatly depending on the causative agent, all suspect patients should be treated as if they have RMSF. RMSF can be serious, particularly in untreated patients and patients treated late in the course of illness. About one-third of all untreated cases are fatal and up to 3% of patients die because treatment was provided too late in the course of illness. If tick exposure is noted or RMSF is suspected, treatment should be started based on suspicion of infection and not delayed pending the outcome of diagnostic tests. Case-fatality rates have declined in recent years to <1% of reported cases. One possible explanation is prompt disease recognition and increased availability and appropriate use of effective antibiotics. Another explanation is the increasing prevalence of other spotted fever group *Rickettsiae* (SFGR) species in Virginia's ticks. These other SFGR species may not cause illness in people, or may cause only a mild illness, but exposure to other SFGR causes cross-reactive positive results on blood tests for RMSF. Therefore, it is possible that some reported RMSF cases in recent years are actually due to non-pathogenic or mildly pathogenic SFGR, and/or to Rickettsial illnesses such as ehrlichiosis which cause symptoms similar to those of RMSF. Lone star ticks are the most common cause of tick bites in Virginia. Tick surveys have shown that the majority of lone star ticks in Virginia carry a non-pathogenic SFGR and do not carry RMSF.

In 2012, 461 cases of spotted fever rickettsiosis were reported in Virginia. This represents nearly a two-fold increase from the 231 cases reported in 2011, and is more than three times the five-year average of 141.4 cases per year (Figure 75).



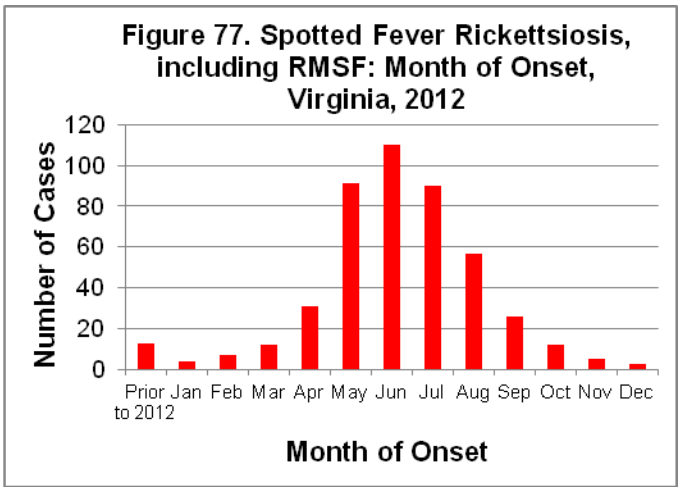
In 2012, spotted fever rickettsiosis incidence rates increased with age from no cases in the less than one year age group to a rate of 9.2 cases per 100,000 in the 60 year and older age group. The exception to this pattern was a higher incidence rate in the 10-19 year age group than in the 20-29 year age group (Figure 76). Although older national studies showed a higher incidence for RMSF in children under age 10, more recent national data indicate a shift in the age distribution, with the highest rates among adults aged older than 40 years. This is consistent with what has been observed in Virginia since 2010.



Information on race was missing for 64% of reported cases. Among cases for which race information was reported, the rate for the white population (2.4 cases per 100,000) was more than twice the rate in the black population (0.9 cases per 100,000). The lowest rate was seen in the "other" race population (0.4 per 100,000). Incidence among males was almost twice the rate among females (7.4 and 4.0 per 100,000, respectively).

The central, southwest and northwest regions had the highest incidence rates in 2012 (11.1, 8.9 and 7.8 cases per 100,000, respectively). Rates in the eastern and northern regions were substantially lower (1.6 and 2.9 per 100,000, respectively). The northwest and central regions have had high rates since 2009, but the rate in the southwest region increased during 2012.

Spotted fever rickettsiosis displays a distinctly seasonal pattern. For 88% of cases, symptom onset occurred from May through August, with a peak in June (Figure 77). This is consistent with the peak activity periods for the most common human-biting tick species in Virginia. No deaths attributed to spotted fever rickettsiosis occurred among the 461 cases reported in 2012.



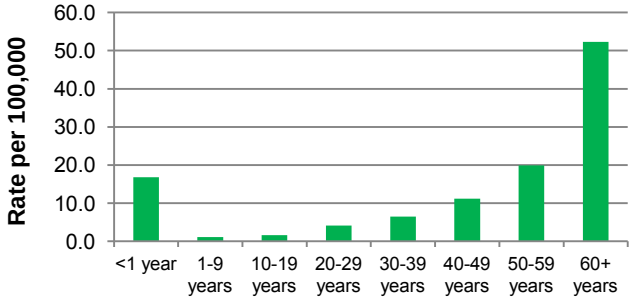
***Staphylococcus aureus* Infection, Invasive, Methicillin-Resistant (MRSA)**

Agent: *Staphylococcus aureus* (bacteria) that has developed resistance to the class of beta-lactam antibiotics, including penicillin, cloxacillin, oxacillin, nafcillin, and methicillin, as well as cephalosporins and carbapenems.
Mode of Transmission: Person-to-person transmission via direct contact with colonized skin or skin lesions of an infected person, or by indirect contact with contaminated personal items or surfaces. Invasive infections occur when the bacteria penetrate normally sterile sites.
Signs/Symptoms: Invasive infections may affect the blood, bone, lung, and lining of the brain and spinal cord and may cause fever, difficulty breathing, chills, pain and other syndrome-specific signs and symptoms. Non-invasive skin and soft tissue infections commonly cause swelling, tenderness, and redness and can manifest as abscesses, boils, or pustules.
Prevention: In the community, preventive measures include practicing proper hygiene and wound care and cleaning hands regularly and thoroughly with soap and water or alcohol-based hand sanitizer. In healthcare settings, control measures include adhering to appropriate infection prevention practices, including management of catheters or other medical equipment, and practicing prudent use of antibiotics.
Other Important Information: Only invasive MRSA infections are required to be reported in Virginia and only laboratories are required to report these infections. Asymptomatic colonization and infections from non-sterile sites (e.g., skin and soft tissue) are not reportable. Reporting of this condition became effective on October 26, 2007.

The 1,294 cases of invasive MRSA infection reported in 2012 are similar to the 1,304 cases reported in 2011, but represent a 15% decrease from the 1,524 cases reported in 2008, the first full reporting year for invasive MRSA infection in Virginia.

In general, with the exception of the less than one year age group, both the number of cases and the incidence rate increased with age in 2012. As in previous years, the 60 year and older age group experienced both the highest number of cases and highest incidence rate (773 cases, 52.3 per 100,000), followed by the 50-59 year age group (225 cases, 19.9 per 100,000) (Figure 78). The less than one year age group had the third highest incidence rate (16.8 per 100,000), although the number of cases in that age group was among the lowest of all age groups (17 cases). The 1-9 year age group had the lowest number of cases and incidence rate of all age groups in 2012 (10 cases, 1.1 per 100,000).

Figure 78. *Staphylococcus aureus* Infection, Invasive, Methicillin-Resistant (MRSA): Rate by Age Group, Virginia, 2012

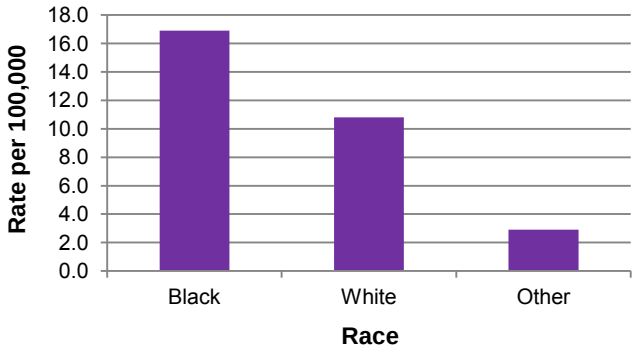


Twenty-eight percent of cases were missing race data; however, among cases with race information, incidence in the black population (16.9 per 100,000) was 1.6 times the rate in the white population (10.8 per 100,000), and more than 5.8 times the rate in the "other" race population (2.9 per 100,000) (Figure 79). Although the cause is unknown, this racial disparity in

invasive MRSA infections has also been observed nationally. In Virginia, incidence was higher in males than in females (19.1 and 12.5 per 100,000, respectively).

By region, the southwest region had the highest incidence rate (22.5 per 100,000) and the northern region experienced the lowest rate (8.9 per 100,000). In general, invasive MRSA infections occurred throughout the year with little seasonal variation.

Figure 79. *Staphylococcus aureus* Infection, Invasive, Methicillin-Resistant (MRSA): Rate by Race, Virginia, 2012



One outbreak due to MRSA was reported in 2012. It occurred in a medical facility in the northwest region and involved 15 infants. Two of the infants were identified with invasive MRSA infection, and surveillance cultures submitted in response to that finding identified thirteen additional colonized infants. The hospital instituted numerous measures to halt the spread of the organism.

Among those with invasive MRSA infections reported in 2012, slightly more than 2% (32 cases) were reported to have died from these infections. This is similar to the case-fatality rate for the previous two years. Among the deaths in 2012, 84% occurred in adults aged 60 years and older. This is a larger proportion than in 2011, when 70% of the reported deaths occurred in adults in this age group. Case-fatality was similar for males and females (around 2% each).

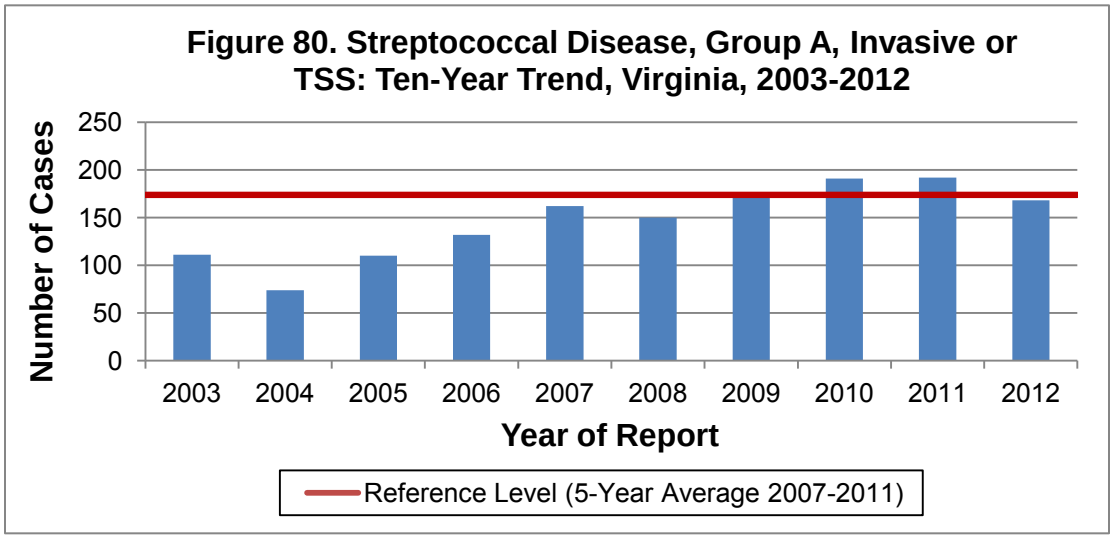
Staphylococcus aureus **Infection, Vancomycin-Intermediate (VISA) or Vancomycin-Resistant (VRSA)**

Agent: *Staphylococcus aureus* (bacteria) that has developed intermediate or complete resistance to the antibiotic vancomycin, based on susceptibility testing.
Mode of Transmission: Person-to-person spread through direct contact or through contact with contaminated materials or surfaces.
Signs/Symptoms: Dependent on site of infection (e.g., skin, bone, urinary or respiratory tract). Infection may develop into toxic shock syndrome. Asymptomatic colonization can occur.
Prevention: Preventive measures include appropriate use of antibiotics to treat infections, good hand hygiene, and proper cleaning and disinfecting of contaminated surfaces.

Two cases of VISA infection were reported in Virginia in 2012. Both infections occurred in black males in the 30-39 year age group, with one reporting a history of treatment with vancomycin. The cases were reported from the central and eastern regions. These are the fifth and sixth cases of VISA reported in Virginia, with the prior infections occurring in 2007 (1 case), 2010 (1 case), and 2011 (2 cases). VRSA has never been reported in a Virginia resident.

Streptococcal Disease, Group A (GAS), Invasive or Toxic Shock Syndrome

Agent: *Streptococcus pyogenes* (bacteria)
Mode of Transmission: Person-to-person transmission through respiratory droplets, direct contact with objects contaminated with the body fluids of infected persons, or contact with infected wounds or sores.
Signs/Symptoms: People may carry group A streptococci in the throat or on the skin and have no symptoms of illness. Most GAS infections are relatively mild, such as "strep throat" or impetigo (a skin infection). Rarely, they can lead to severe invasive infections of the blood or other internal body fluids if they enter a normally sterile site. Invasive infections often require hospitalization.
Prevention: Preventive measures include prompt identification and treatment of non-invasive cases and temporary exclusion of infected healthcare employees/others from work and other group settings for the first 24 hours of antibiotic therapy. Wounds should be kept clean, and medical care should be sought at the first signs of infection.
Other Important Information: Persons at higher risk for developing invasive GAS infections include older persons, immunocompromised persons, and those with chronic, underlying conditions. The two most severe, but least common, forms of invasive GAS infections are necrotizing fasciitis (NF) and streptococcal toxic shock syndrome (TSS). NF infections present with severe pain and rapid destruction of tissue. Streptococcal TSS infections are characterized by shock and rapid organ failure.

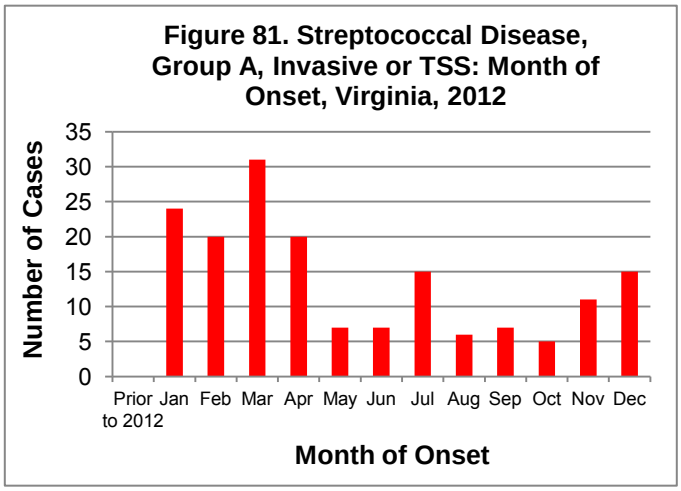


During 2012, 168 cases of invasive GAS infection were reported in Virginia. This is a 13% decrease from the 192 cases reported in 2011 and similar to the five-year average of 173.8 cases per year (Figure 80).

The highest number and incidence rate of invasive GAS infections occurred in the 60 year and older age group (80 cases, 5.4 per 100,000). This was followed by the less than one year age group, with an incidence rate of 4.9 cases per 100,000. The other age groups had rates between 0.3 and 3.4 per 100,000. Race information was missing for 31% of reported cases. Among cases for which race was reported, the incidence rate was higher in the white

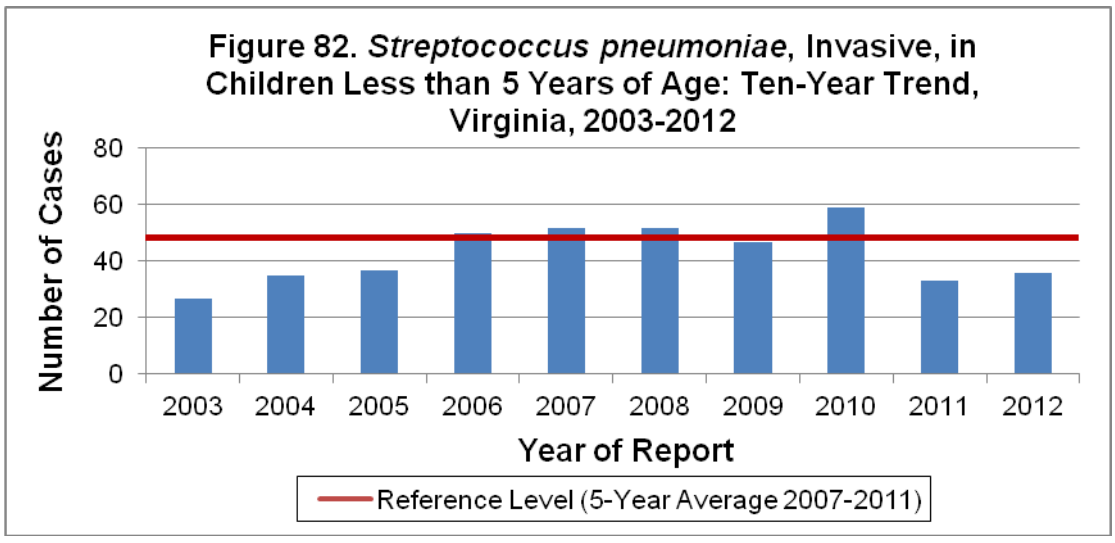
population (1.6 per 100,000) than in the black or "other" populations (1.1 and 0.4 per 100,000, respectively). Incidence was higher among males than among females (2.3 and 1.7 per 100,000, respectively). Geographically, rates were highest in the northwest and central regions (both 3.1 per 100,000), while rates in the remaining regions ranged from 1.4 to 1.7 per 100,000.

While cases occurred throughout the year, a seasonal trend was observed with 57% of cases occurring during the months of January through April, including a peak of 31 cases in March (Figure 81). This general late-winter pattern is also typically seen with "strep throat", a non-invasive GAS infection. Among the 168 cases reported in 2012, there were 16 deaths attributed to invasive GAS infection. Two of the deaths were due to streptococcal toxic shock syndrome and 11 occurred in those aged 60 years and older. Five outbreaks were attributed to invasive GAS infection in 2012; four occurred in healthcare facilities and one was in an assisted living facility.



Streptococcus pneumoniae, Invasive, in Children Less than 5 Years of Age

Agent: *Streptococcus pneumoniae* (bacteria)
Mode of Transmission: Person-to-person transmission via respiratory droplets or direct contact with respiratory secretions from persons carrying the bacteria in their upper respiratory tract.
Signs/Symptoms: Invasive pneumococcal disease (IPD) may affect the blood, lung, and lining of the brain and spinal cord and may cause fever, chills, and irritability. Headache, stiff neck, confusion, sleepiness, vomiting, and poor feeding can occur with meningitis.
Prevention: Routine immunization with pneumococcal conjugate vaccine as a 4-dose series is recommended for infants at 2, 4, 6, and 12 to 15 months of age. IPD can be hard to treat because of antibiotic resistance, thus making prevention through vaccination even more important. The 7-valent conjugate vaccine was first licensed in the U.S. in 2000 and a 13-valent vaccine was licensed in 2012. Vaccine is also recommended for adults aged 65 years or older and other persons at increased risk for infection, although a 23-valent polysaccharide vaccine is traditionally used in these populations.
Other Important Information: There are more than 90 known serotypes of *S. pneumoniae*. Although all serotypes may cause serious disease, a relatively limited number of serotypes cause the majority of invasive infections. Before routine use of pneumococcal conjugate vaccine, the burden of pneumococcal disease among children younger than 5 years of age was significant. An estimated 17,000 cases of invasive disease occurred each year in the United States, of which 13,000 were bacteremia without a known site of infection and about 700 were meningitis. An estimated 200 children died every year as a result of IPD. Today *S. pneumoniae* is the leading cause of bacterial meningitis among children less than 5 years of age in the United States.

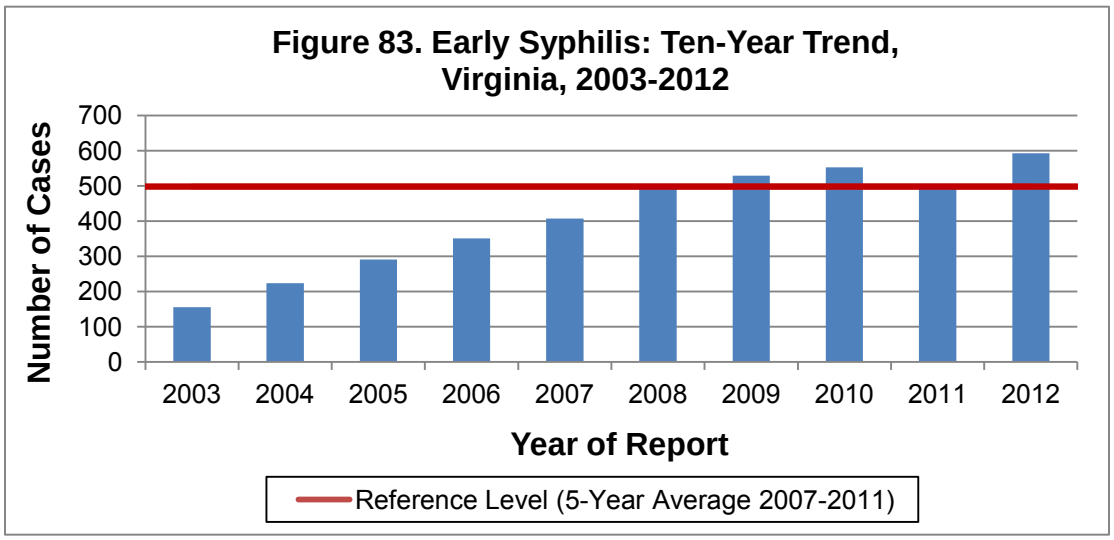


Thirty-six cases of invasive *S. pneumoniae* infection in children less than 5 years of age were reported in Virginia during 2012. This represents a 9% increase from the 33 cases reported in 2011, but a 26% decrease from the five-year average of 48.6 cases per year (Figure 82).

The incidence rate was higher in the less than one year age group than in the 1-4 year age group (17.7 and 4.4 per 100,000, respectively). Race was unknown for 17% of cases. Among cases with race information, incidence was higher in the "other" race population (7.2 per 100,000) than in the white and black populations (5.8 and 5.6 per 100,000, respectively). The rate of IPD among males was higher than in females (8.8 and 5.2 per 100,000, respectively). While cases were reported from all regions of the state, the highest incidence rate (8.5 per 100,000) was reported from the central region followed closely by the northern region (7.9 per 100,000). The rates in other regions ranged from 5.6 to 6.7 per 100,000. Cases occurred throughout the year, but rates were slightly higher in the colder months with 58% having onset in the first or fourth quarter of the year. Twenty-three (64%) of the 36 cases required hospitalization, which highlights the serious nature of the disease. Among cases reported in 2012, three deaths were attributed to invasive *S. pneumoniae* infection in children. The three deaths occurred in male infants one year old or younger.

Syphilis

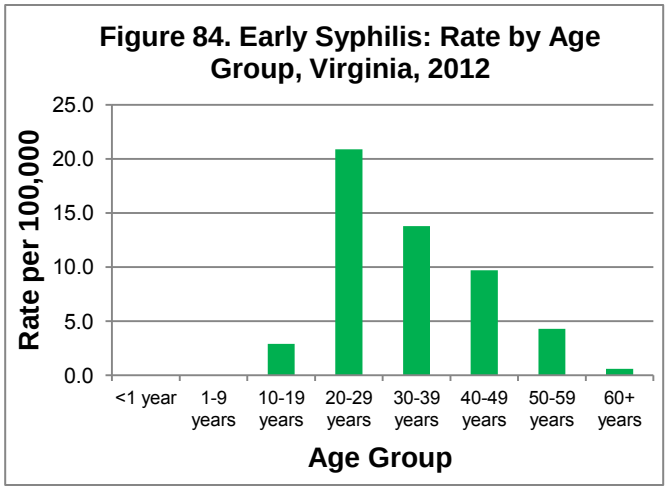
Agent: *Treponema pallidum* (bacteria)
Mode of Transmission: Through sexual intercourse, from mother to child through the placenta, and via blood transfusion from an infected donor in the early stage of disease.
Signs/Symptoms: The primary stage is characterized by a chancre. The secondary stage includes a skin rash and lesions of the mucous membranes. A latent period follows with no clinical symptoms. In late syphilis, the central nervous system may become sufficiently damaged, causing death.
Prevention: Preventive measures include safer sexual practices, screening of all women during early pregnancy to prevent infection of infants, and treatment of infected partners.
Other Important Information: Nationwide, the rate of primary and secondary syphilis is on the rise for two populations: men who have sex with men (MSM) and persons of black race.



Early Syphilis

Early syphilis includes the primary and secondary stages and early latent syphilis (cases diagnosed without signs and symptoms within one year from the time of infection). There were 593 cases of early syphilis reported in Virginia during 2012, representing an 18% increase from the previous year (Figure 83). Despite a slight decrease in 2011, the number of early syphilis cases has consistently increased over the past 10 years. Incidence tripled in Virginia from a low of 2.1 per 100,000 in 2003 to 7.3 per 100,000 in 2012. Nationally, the overall upward trend masks a growing gender gap; infections are declining among women and increasing among men.

In 2012, the highest incidence rate occurred in the 20-29 year age group (20.9 per 100,000), followed by the 30-39 year age group (13.8 per 100,000) (Figure 84). No cases were reported in children less than 10 years of age. The rate in the black population (20.0 per 100,000) was nearly six times the rate in the white population (3.5 per 100,000), and over twice the rate in the "other" race population (9.3 per 100,000). The rate in males was nearly nine times the rate in females (13.4 and 1.5 per 100,000, respectively). The male to female ratio has risen from approximately 1:1 to nearly 9:1 over the past ten years, which is indicative of rising syphilis incidence among MSM. The eastern region leads the state in rate of infection, followed closely by the central region (11.1 and 10.8, respectively). Since 2006, these two regions have consistently had higher incidence rates of early syphilis than the other regions.



Congenital Syphilis

Congenital syphilis is a condition affecting an infant whose mother had untreated syphilis or inadequately treated syphilis at delivery. Diagnosis is based on serologic testing of the mother's serum because the serologic tests performed on the infected infant's serum can be nonreactive if the mother's serologic test result is of low titer or if the mother was infected late in pregnancy. One case of congenital syphilis was reported in Virginia in 2012. This is similar to the average of 1.6 cases per year over the preceding 5 years, when between one and three cases were reported annually.

Latent Syphilis

Latent syphilis occurs when the disease goes untreated. It is diagnosed when there is no evidence that infection was acquired within the preceding 12 months. In 2012, 317 cases of latent syphilis were reported in Virginia, which is a 42% increase from the 224 cases reported in 2011. Incidence in the black population was eleven times the incidence in the white population (11.1 and 1.0 per 100,000, respectively). While the gender gap is not as considerable as with early syphilis, latent syphilis was diagnosed more frequently in males than in females (4.7 and 3.2 per 100,000, respectively). The highest incidence rate was reported in the 50-59 year age group (7.0 per 100,000). Incidence rates were highest in the eastern and northern regions, at 5.7 and 4.6 per 100,000, respectively.

Tetanus

Agent: Toxin secreted by the bacteria *Clostridium tetani*
Mode of Transmission: The bacteria enter the body through a break in the skin, usually when a wound, either major or minor, is infected by contaminated soil, dust, or animal or human feces. Person-to-person transmission does not occur.
Signs/Symptoms: A descending pattern of painful muscle contractions, particularly of the neck muscles; difficulty swallowing; and abdominal rigidity.
Prevention: Tetanus vaccine is available as part of the diphtheria/tetanus/pertussis (DTaP) vaccine for children and the combination tetanus/diphtheria/pertussis (Tdap) vaccine for adolescents and adults. One dose of Tdap should be given at 11 to 12 years of age with booster doses of tetanus/diphtheria (Td) every ten years thereafter.
Other Important Information: In recent years, a higher proportion of patients with tetanus had minor wounds, probably because severe wounds are more likely to be properly managed. The case-fatality rate of tetanus ranges from 10% to over 80%, and depends on patient age, length of incubation period, and quality of and access to care, especially access to intensive care unit resources and tetanus immune globulin. Attempts at laboratory confirmation may not be helpful because the organism is rarely recovered from the site of infection, and there is usually no detectable antibody response.

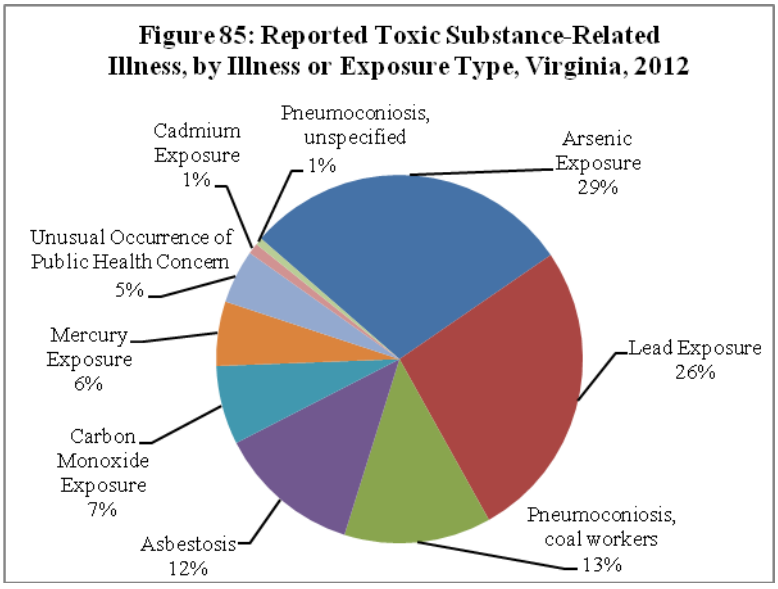
In 2012, one case of tetanus was reported in a female in the 20-29 year age group from the eastern region. Prior to this, the last cases were reported in 2004 and 2005, with one case occurring in each of those years.

Toxic Substance-Related Illness

Agent: Multiple, including heavy metals (e.g., lead, cadmium, mercury, arsenic), occupational dusts or fibers (e.g., coal, silica, asbestos), gases (e.g., carbon monoxide, methane), pesticides, or radioactive materials.
Mode of Transmission: Varies depending on agent; can include absorption through skin, ingestion, or inhalation.
Signs/Symptoms: Varies depending on agent and route, dose and duration of exposure. Chronic occupational dust or fiber exposure may increase the risk of lung cancer, mesothelioma and nonmalignant lung disorders. Heavy metals, gases and pesticides may damage nervous, hepatic (liver), digestive, or reproductive systems.
Prevention: Eating, drinking, or smoking should not occur in contaminated work areas. Hands and face should be washed with soap and water after contacting toxic materials. After working with potential toxic substances, showering and changing clothes should occur at the worksite, if possible. Preventive measures include strict adherence to safety guidelines and requirements.
Other Important Information: Improving public and healthcare professional awareness and recognition of various toxic substance exposures can help reduce subsequent illness.

During 2012, 317 cases of toxic substance-related illness were reported in Virginia. This is 7% fewer than the five-year average of 340.6 cases per year. A determination of illness is based upon a physician's diagnosis or on a laboratory finding outside an occupational standard, or when no standard exists, outside expected normal values. The two most frequently reported toxic substance-related conditions were arsenic and lead exposure, followed by coal workers' pneumoconiosis and asbestosis (Figure 85). Additional toxic substance-related illnesses reported during 2012 included unspecified pneumoconiosis and exposures to cadmium, carbon monoxide, and mercury. While the percentages may fluctuate from year to year, these represent the same types of exposure or illness that have been reported for several years. Illness from exposure to rarely reported substances were also captured. These "unusual occurrences of public health concern" included exposures to aerosol cleaners, noxious fumes, hydrogen sulfide, methanol, ethanol, ethylene glycol, drain cleaner, and difluoroethane. All of these unusual exposures were reported through death certificates or claims from the Virginia Workers' Compensation Commission (WCC).

Figure 85: Reported Toxic Substance-Related Illness, by Illness or Exposure Type, Virginia, 2012



Arsenic has continued to be one of the most frequently reported toxic substance exposures. Since 2007, when 18 cases were reported, there has been a general increase to the 92 cases reported in 2012. This increase is primarily due to more comprehensive electronic laboratory reporting of persons with arsenic levels above normal laboratory values. Previously, these reports were rarely received from physicians or laboratory directors. The same phenomenon is seen, to a lesser extent, in reporting of mercury and cadmium exposure. However, these two conditions have seen a noticeable drop in reported cases in the last two years and together account for 7% of toxic substance-related illness in 2012. Arsenic and mercury lab reports are based on elevated urine or blood levels. Most laboratories report total arsenic or mercury without further speciation of these substances.

While lead remains one of the three most commonly reported exposures on a yearly basis, reported cases of adult lead exposure continue to show a general decrease. In 2012, 84 cases of elevated blood lead levels in adults were reported compared with 181 cases in 2006. Greater awareness of the dangers of lead exposure, as well as enforcement of workplace lead standards, has contributed to the decrease in reported exposures.

Among other frequently reported toxic substance-related illnesses, pneumoconiosis remains within the top three conditions reported. Eighty-six percent of the 43 persons reported with pneumoconiosis worked in the coal mining industry, and of these, 29 persons, or 78%, were identified from death certificates. Forty-one persons were reported with asbestosis, accounting for 13% of all toxic substance-related illness in 2012; the number of cases reported each year has remained relatively stable over the past decade. The average age of those reported with asbestosis was 80 years, which is reflective of exposures occurring before regulatory standards and guidelines came into effect. All but four of the asbestos exposures were reported through death certificates, and of these, 58% listed asbestosis as a primary cause of death. The remaining four asbestosis cases were reported by the WCC as worker exposures. The 22 persons with reported carbon monoxide exposures worked in various industries; all but four of the exposures were reported through death certificates and resulted from either accidental or deliberate exposure to fire, vehicle exhaust, charcoal grills, or generators. The remaining four carbon monoxide cases resulted from accidental exposure to fumes from generators utilized during a storm-related power failure.

Among all toxic substance exposures, the highest percentage of cases (40%) occurred in the 60 year and older age group, with an incidence rate of 8.7 per 100,000, followed by the 50-59 year age group, with a rate of 4.7 per 100,000. No cases of toxic substance exposure (excluding childhood lead) occurred in children less than one year of age. This age distribution reflects the large proportion of cases identified by public health through WCC reports and death certificates, which are likely to represent long-term exposures. Race information was not reported for 43% of toxic substance-related cases. Where race information was provided, incidence in the white population was more than double the rate in the black population (2.7 and 1.0 per 100,000, respectively). Eighty percent of all cases occurred in males and the incidence was more than four times that in females (6.4 and 1.5 per 100,000, respectively). The eastern region had the highest incidence rate at 5.7 per 100,000. Incidence rates in other regions of the state ranged from 2.4 to 4.7 per 100,000.

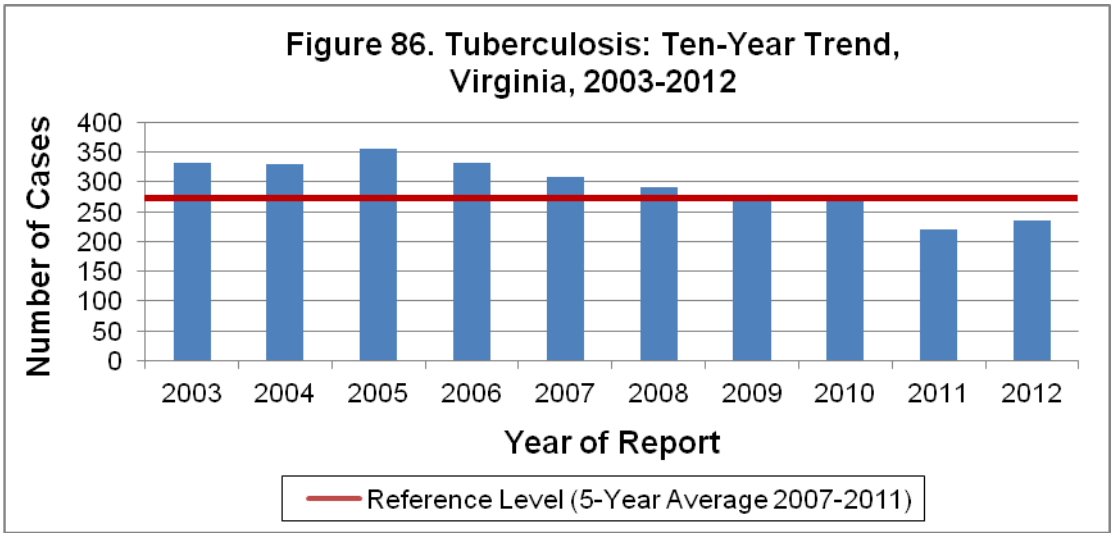
Trichinosis

Agent: Roundworms of genus *Trichinella; T. spiralis* is the most common cause of human infections.
Mode of Transmission: Eating raw or undercooked contaminated meat, including bear, pork, wild feline (such as cougar), fox, dog, wolf, horse, seal, or walrus. Trichinosis is not transmitted from person to person.
Signs/Symptoms: Usually occur in 1-2 days after consuming contaminated meat and may include nausea, diarrhea, vomiting, fatigue, fever, and abdominal discomfort. Headaches, fever, chills, cough, eye swelling, aching joints and muscle pains, itchy skin, diarrhea, or constipation may follow. Individuals may be asymptomatic, but severe or even fatal infections can occur.
Prevention: Cook all whole cuts of pork and meat from wild animals to an internal temperature of at least 145 degrees Fahrenheit, and all ground meat from pork and wild game to an internal temperature of 160 degrees Fahrenheit.
Other Important Information: Trichinosis used to be more common in the United States, but has decreased dramatically in the past forty years. Consumption of raw or undercooked pork products was the most common risk factor. Now, more cases in the United States are associated with consuming raw or undercooked wild game meats than with pork products. Infected meat will remain infective until it has been properly cooked, cured, frozen or irradiated.

Two cases of trichinosis were reported in 2012. This is the same as the number of cases reported in 2011, but higher than the five-year average of 0.6 cases per year. Both cases occurred in persons in the 30-39 year age group from the northern region. Both reported eating undercooked pork prior to illness onset.

Tuberculosis

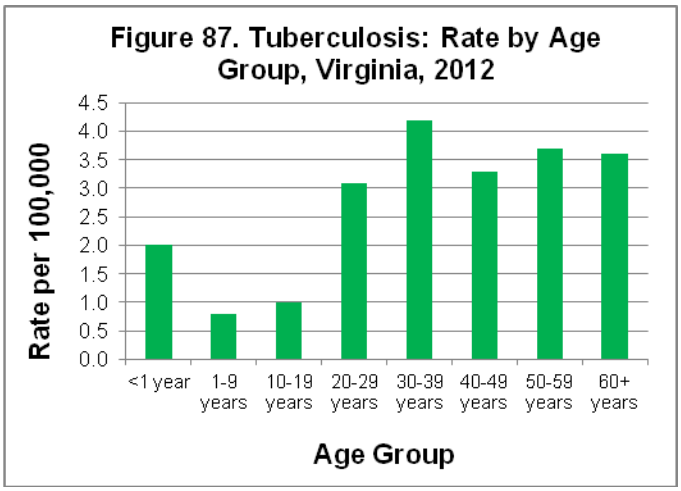
Agent: *Mycobacterium tuberculosis* (bacteria)
Mode of Transmission: Inhalation of tubercle bacilli via airborne droplets produced when patients with pulmonary or respiratory tract tuberculosis exhale the bacilli through coughing, singing, or sneezing.
Signs/Symptoms: Dependent on the organ(s) affected. General systemic signs and symptoms include fever, chills, night sweats, weight loss and fatigue. Symptoms of pulmonary tuberculosis may also include a prolonged (i.e., greater than 3 weeks) productive cough and coughing up blood.
Prevention: Control measures include the prompt identification, diagnosis and treatment of persons with infectious tuberculosis, followed by timely contact investigations to identify and treat additional persons with active tuberculosis disease and persons with latent tuberculosis infection. Infection control measures should be practiced in high-risk settings.
Other Important Information: Persons with latent tuberculosis infection do not have any signs or symptoms of disease. These persons do not spread tuberculosis bacteria. Approximately 10% of those infected with tuberculosis will develop active disease during their lifetime, with the greatest risk for disease progression during the two years following infection. Co-infection with HIV and other immune suppressing conditions represent the greatest risks for progression to active disease.



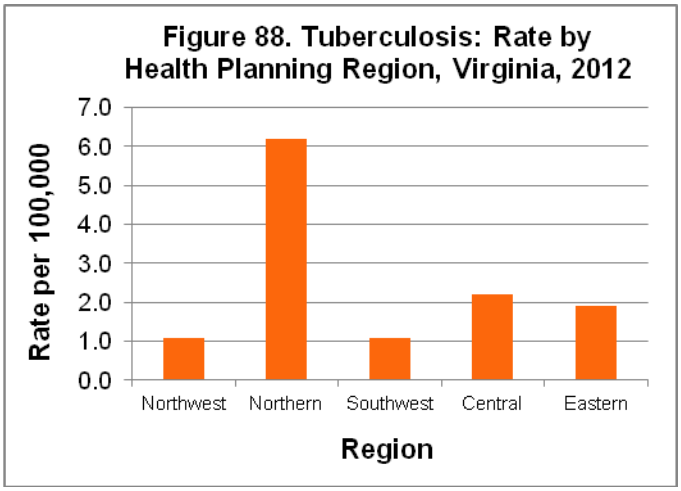
Virginia continues to see a decline in TB cases. Although the 235 tuberculosis cases reported in 2012 represent a 6% increase from the 221 cases reported in 2011, this was a 14% decrease from the five-year average of 272.6 cases per year (Figure 86). Nationally, 2012 was the twentieth consecutive year of declining rates of TB. In Virginia, TB cases among those born in the U.S. decreased by 15%, from 61 in 2011 to 52 in 2012, but increased by 14% among the foreign-born, from 160 cases in 2011 to 183 cases in 2012. The 78% of Virginia cases among the foreign-born is the largest proportion ever seen in

Virginia. Among the foreign-born, the five most frequent countries of origin were India, Mexico, the Philippines, Viet Nam and South Korea.

Incidence was higher in adults than in children and adolescents. The highest incidence rate occurred among those in the 30-39 year age group (4.2 cases per 100,000). Rates among other adult age groups ranged from 3.1 to 3.7 cases per 100,000. Rates among children ranged from 0.8 per 100,000 in the 1-9 year age group to 2.0 per 100,000 in those less than one year of age (Figure 87). By race, the highest incidence was observed in the "other" race group (17.4 per 100,000), while rates were substantially lower in the black and white populations (3.0 and 1.5 per 100,000, respectively). Males experienced a higher rate (3.2 per 100,000) than females (2.6 per 100,000).



The highest number of cases and highest incidence rate occurred in the northern region, where 70% of the foreign-born TB cases lived (142 cases, 6.2 per 100,000) (Figure 88). Five multidrug resistant cases (resistant to isoniazid and rifampin) were reported in 2012. Among cases reported in 2012, twenty-one deaths were attributed to tuberculosis. Seventy percent of these deaths occurred among persons aged 60 years and older.



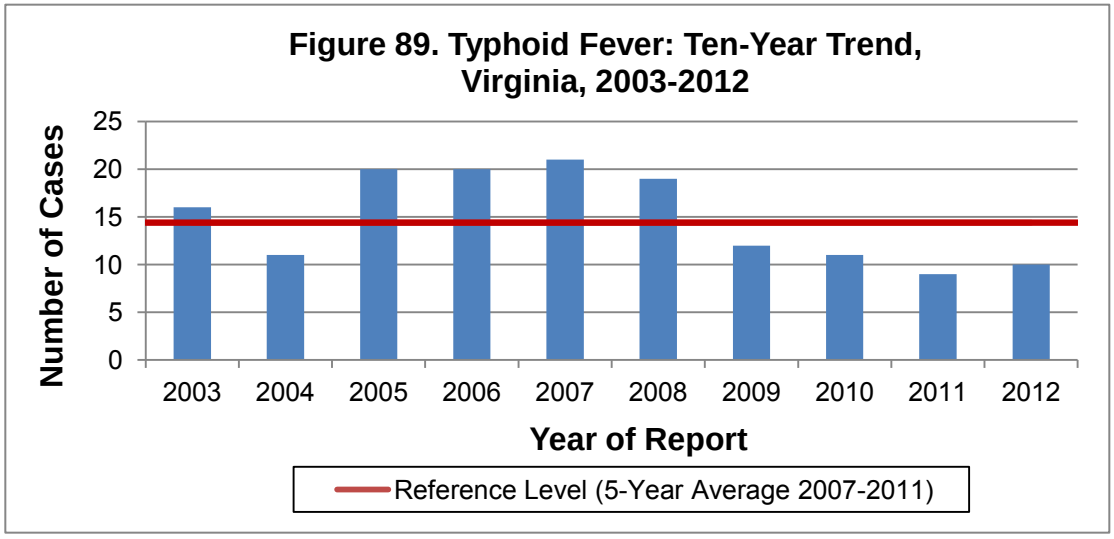
Tularemia

Agent: *Francisella tularensis* (bacteria)
Mode of Transmission: Transmission in the United States is primarily by the bite of an infected tick such as the American dog tick, the lone star tick, or occasionally by the bite of an infected deer fly. Hunters can contract the disease while cleaning infected game or when eating infected meat that is raw or undercooked. Humans may also become infected by drinking water contaminated by infected animals, by contaminating their eyes with infected material, or by breathing *F. tularensis* spores from the dried carcasses or pelts of animals that died from tularemia. Because *F. tularensis* is highly infectious when grown in culture, laboratorians who work with the bacteria may became infected with the bacteria through wound contamination, or inhalation of aerosolized material. The bacteria are not transmitted directly from person to person.
Signs/Symptoms: Symptoms vary depending on the mode of transmission, but usually include sudden onset of high fever, chills, fatigue, general body aches, headache and nausea. An ulcer may occur at the site of infectious bites or wounds, and proximate lymph nodes may become swollen and painful. Ingestion may result in painful pharyngitis, abdominal pain, diarrhea and vomiting. Pulmonary infection may result in pneumonia and requires prompt identification and treatment to prevent development of life-threatening illness.
Prevention: Preventive measures include minimizing the risk of bites by avoiding areas infested by ticks or deer flies, and avoiding untreated water in areas where tularemia is prevalent among wild animals. Impervious protective gloves should be used when skinning rabbits and other wild game. Utensils used for preparing meat from game should not be used to prepare other food items. Undercooked meat should not be consumed. Avoid mowing over dead animals to lower the risk of aerosolizing infectious particles.
Other Important Information: Wild animals are the reservoir for *F. tularensis* and rabbits, hares, and rodents are especially susceptible to infection. Tularemia is classified as a potential bioweapon because its spores are relatively easy to disseminate as a breathable aerosol or as a food and water contaminant.

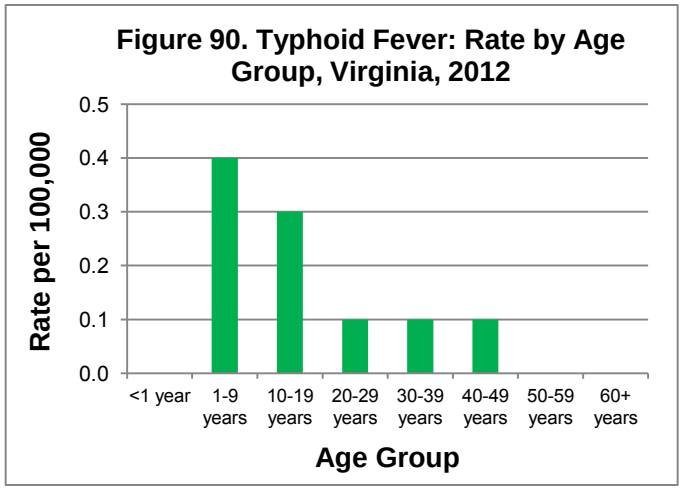
In 2012, two cases of tularemia were reported in Virginia residents. This is consistent with the five-year average of 2.2 cases per year, but fewer than the six cases that were reported in Virginia in 2011. Both cases occurred in the eastern region. One was reported in an adult male who had a history of direct contact with a dead rabbit prior to developing symptoms. The second was reported in a male child who also reported contact with a rabbit.

Typhoid Fever

Agent: *Salmonella* ser. Typhi (bacteria)
Mode of Transmission: Ingestion of food or water contaminated by feces or urine of infected persons. The bacteria live only in humans.
Signs/Symptoms: Include sustained fever, headache, malaise, altered mental status, lethargy, anorexia, fast heart rate, enlarged spleen, a non-productive cough and constipation.
Prevention: Access to safe water and proper sanitation, and following safe food handling and hand hygiene practices are essential. Travelers to countries where the disease is common should get vaccinated and avoid consuming risky foods and drinks.
Other Important Information: According to the CDC, most cases of typhoid fever in the U.S. (up to 75%) are acquired while traveling internationally. The condition is very common in the developing world, where it affects more than 20 million persons annually. Approximately 200,000 deaths are attributed to typhoid fever worldwide each year.



During 2012, 10 cases of typhoid fever were reported in Virginia, which is similar to the nine cases reported in 2011, and a 31% decrease from the five-year average of 14.4 cases per year (Figure 89). All cases had traveled outside the United States in the 30 days before illness onset, visiting India (70%), El Salvador (20%) and Pakistan (10%).



The 1-9 and 10-19 year age groups had the highest incidence rates (0.4 and 0.3 per 100,000, respectively) (Figure 90). Race information was not available for two of the ten cases. Where information on race was available, the "other" race population had the highest incidence (1.1 per 100,000). Males and females had similar incidence rates (0.2 and 0.1 per 100,000, respectively). The majority of the cases (70%) were reported from the northern region, where the incidence rate was 0.3 per 100,000.

Onset occurred throughout the year; because all cases were acquired outside the country, any seasonal pattern would most likely be related to travel patterns. During 2012, no deaths were attributed to typhoid fever in Virginia.

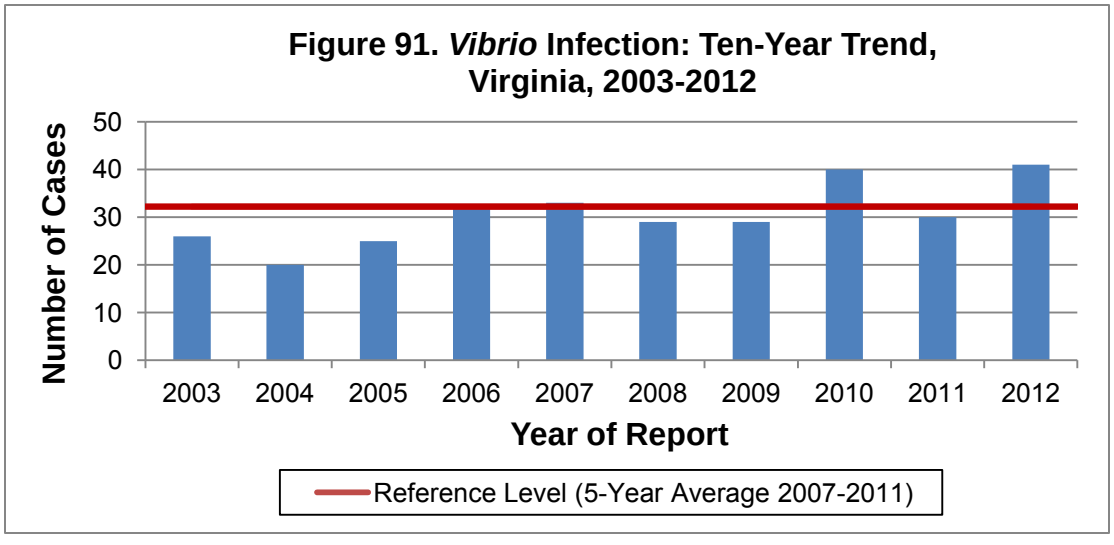
Vaccinia, Disease or Adverse Event

Agent: Vaccinia virus, which is used in the smallpox vaccine
Mode of Transmission: Through injection with the smallpox vaccine or through direct contact with contaminated materials or the vaccination site before it has healed.
Signs/Symptoms: Include rash, fever and head and body aches. Some individuals, especially those with certain skin conditions or weakened immune systems, may experience more serious effects, such as a toxic or allergic reaction at the vaccination site or spread of the virus to other parts of the body.
Prevention: When smallpox is not circulating, and to prevent serious reaction to the vaccine, administration of the smallpox vaccine should be generally limited to laboratory workers who handle smallpox and similar viruses and certain healthcare workers. The vaccine is currently available only to members of emergency response teams and some military personnel.
Other Important Information: The U.S. government has enough smallpox vaccine to vaccinate every person in the country in the event of a smallpox emergency. Vaccinia became a reportable condition in Virginia in 2003.

The first report of vaccinia infection in Virginia was received in 2008. The infection occurred in a laboratory worker who handled vaccinia-infected mice. No cases of vaccinia have been reported in Virginia since 2008, yielding a five-year average of 0.2 cases per year.

Vibrio Infection

Agent: *Vibrio* (bacteria)
Mode of Transmission: Gastroenteritis caused by *Vibrio* is usually related to the consumption of raw or undercooked seafood, particularly shellfish. Several large foodborne outbreaks of *Vibrio parahaemolyticus* have occurred in the United States in which undercooked seafood was the food vehicle. Wound infections occur when seawater carrying the *Vibrio* bacteria enters the body through a break in the skin, usually from brackish waters or from occupational injuries (e.g., among fishermen).
Signs/Symptoms: Syndromes associated with *Vibrio* infection include diarrhea, wound infection, and septicemia (bloodstream infection). Diarrheal illness is most common and includes watery stools, cramping, and abdominal pain. Low-grade fever, headache, and chills are seen in half of those ill with diarrheal illness, while 30% of those with diarrheal illness will experience vomiting. Wound infection is usually severe in those who have liver disease or are immunosuppressed. Among those infected with *V. vulnificus*, over 50% of patients with primary septicemia die.
Prevention: Seafood should be cooked adequately and should be refrigerated. Abrasions suffered by those swimming in the ocean should be rinsed with clean, fresh water. Most people are considered susceptible, especially those with liver disease, decreased gastric acidity, diabetes, peptic ulcers, or immunosuppression. People in high risk groups should refrain from consuming raw or undercooked shellfish.
Other Important Information: Marine coastal areas are the natural habitat of *Vibrio*. During the cold season, organisms are found in marine silt; during the warm season, they are found free in coastal waters and in fish and shellfish. Most *Vibrio* infections occur during summer and fall months, when levels of bacteria in brackish waters and estuaries are highest.



During 2012, 41 cases of *Vibrio* infection were reported in Virginia. This is higher than both the 30 cases reported in 2011 and the five-year average of 32.2 cases per year but similar to the 40 cases reported in 2010 (Figure 91). The species breakdown among the

41 *Vibrio* infections included 19 (46%) infections caused by *V. parahaemolyticus*; 8 (20%) caused by *V. vulnificus*; 5 (12%) caused by *V. alginolyticus*; 3 (7%) caused by *V. cholerae* (non O1, non O139), 3 (7%) caused by *Vibrio* with no species identified; 2 (5%) caused by *Grimontia hollisae*, and 1 (2%) caused by *V. mimicus*. Illnesses included 15 gastrointestinal infections, 4 ear infections, 14 wound infections, 7 bloodstream infections, and 1 urinary tract infection (Table 13).

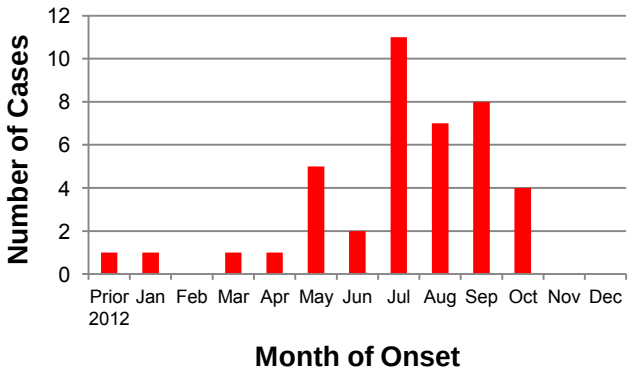
Table 13. *Vibrio* Infections by Species and Specimen Source, 2012

***Vibrio* Species**	***Vibrio* Specimen Source**				
	Wound	**Stool**	**Ear**	**Blood**	**Urine**
V. parahaemolyticus	7	9	1	2	0
V. vulnificus	4	0	0	4	0
V. alginolyticus	2	0	3	0	0
V. cholera non O1, non O139	0	2	0	0	1
Vibrio, unspeciated	1	1	0	1	0
Grimontia hollisae	0	2	0	0	0
V. mimicus	0	1	0	0	0

The largest number of cases occurred in the 60 year and older age group (10 cases), followed closely by the 10-19 year age group (9 cases). Though the numbers of cases are similar between these two groups, the breakdown of specimen collection sites is quite different. Among 10-19 year olds, five specimens were collected from wounds, two were from stool, and two were from the ear. For the 60 year and older group, five specimens were collected from the blood, three were from stool, and two were from wounds. No cases were reported among children less than one year of age and 3 to 5 cases were reported in each of the remaining age groups. Among the 61% of cases for whom race information was available, incidence rates were similar for whites and blacks (0.3 and 0.2 per 100,000, respectively).

In Virginia, *Vibrio* infections typically affect males more often than females and this was true in 2012, when 78% of cases were male. Geographically, the eastern region had the highest number of cases and the highest incidence rate (16, 0.9 per 100,000) followed by the central region (11, 0.8 per 100,000). Cases were clustered in the summer and early fall, with onset of illness for 63% of cases occurring in July, August, and September (Figure 92). Hospitalization information was available for 40 (98%) patients, with 22 cases (55%) reported as being hospitalized. Among the *Vibrio* infections reported in 2012, one death occurred in a male in the 50-59 year age group. *V. parahaemolyticus* was cultured from the patient's blood prior to death.

Figure 92. *Vibrio* Infection: Month of Onset, Virginia, 2012



Viral Hemorrhagic Fever

Agent(s): Viruses of four distinct families including *Arenaviridae* (Argentine, Bolivian, Venezuelan, Brazilian, Chapare and Lujo hemorrhagic fevers, and Lassa fever), *Filoviridae* (Ebola and Marburg hemorrhagic fevers), *Bunyaviridae* (Crimean-Congo hemorrhagic fever, Rift Valley fever, and hemorrhagic fever with renal syndrome [HFRS]), and *Flaviviridae* (dengue hemorrhagic fever, yellow fever, Omsk hemorrhagic fever, and Kyasansur Forest disease).
Mode of Transmission: Varies by agent. Arenaviruses are carried by rodents and are contracted by breathing dust contaminated with saliva, feces or urine of infected rodents, but may also be transmitted person-to-person by infected patients. Filovirus hemorrhagic fevers are contracted through direct contact with blood or body fluids from infected animals or persons. Bunyaviruses are typically transmitted by the bites of arthropods but may also be contracted through contact with the blood and body fluids of infected livestock or people. Hemorrhagic fevers caused by Flaviviruses are typically transmitted by the bites of arthropods. Historically, among the viral hemorrhagic fevers, only dengue hemorrhagic fever has been found to occur naturally in North America.
Signs/Symptoms: Vary by type, including but not limited to, malaise, headache, fever, bleeding from the nose and gums, rash, appearance of blood in the eyes, or vomiting. Case-fatality rates can range from 1% (dengue) to 90% (Ebola).
Prevention: Depending on agent, exposure to hemorrhagic diseases can be reduced by rodent control in and around the home in endemic areas, by isolation of infected persons during their febrile period, by preventing contact with blood or body fluids of sick or dead animals, and by avoiding the bites of mosquito or tick vectors.
Other Important Information: Viral hemorrhagic fevers are classified as potential bioweapons because they could cause high mortality, public panic, or social disruption. For surveillance purposes, cases of dengue fever are counted in the Arboviral Infection section of this report, while cases of yellow fever are counted in the Yellow Fever section. Therefore, any cases of dengue fever or yellow fever, including those with hemorrhagic signs, will be discussed in their respective sections of this surveillance report.

No cases of viral hemorrhagic fever were reported in Virginia during 2012. In 2011, one case of dengue hemorrhagic fever was reported and was counted for surveillance purposes as an arboviral condition, and was discussed in the Arboviral Infection section of the report.

Yellow Fever

Agent: Yellow fever virus
Mode of Transmission: Transmitted through the bites of several species of infected *Aedes* mosquitoes, most notably the yellow fever mosquito (*Aedes aegypti*), which breeds in containers of water occurring around human habitats. Yellow fever mosquitoes occur in Virginia but have become rare after being displaced from their container breeding habitats by the arrival of the closely related Asian tiger mosquito (*Aedes albopictus*) in 1992. The Asian tiger mosquito is more cold tolerant than the yellow fever mosquito and is able to overwinter and maintain populations from year to year in most parts of Virginia. As a result, tiger mosquitoes have become very common throughout most of Virginia and could be potential vectors of the yellow fever virus. Tiger mosquitoes are similar in behavior and appearance to yellow fever mosquitoes. Although the Asian tiger mosquito's competence as a yellow fever vector has been proven in laboratory studies, there are currently no records of this mosquito having transmitted yellow fever in nature.
Signs/Symptoms: Varying levels of severity, but could include a sudden onset of fever, chills, headache, backache, generalized muscle pain, prostration, nausea, vomiting and jaundice. Jaundice is usually mild in early disease but intensifies later. Among cases with jaundice, the fatality rate is 20% to 50%.
Prevention: Vaccination against the yellow fever virus before traveling to yellow fever endemic regions of the world and avoidance of mosquito bites while traveling in these regions.

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

Yersiniosis

Agent: *Yersinia* species (bacteria)
Mode of Transmission: Ingestion of contaminated foods, particularly raw or incompletely cooked pork products and unpasteurized milk; contaminated surface or well water; or by direct or indirect contact with infected people or animals.
Signs/Symptoms: Vary depending on age, but may include fever, abdominal pain, and bloody diarrhea.
Prevention: Preventive measures include safe food preparation and pasteurization of dairy products. People handling pork intestines should wash their hands and environmental surfaces thoroughly after contact with raw meat and should not handle their young infant, the infant's toys, bottles or pacifiers until hands are washed thoroughly.
Other Important Information: Infection most often occurs from eating contaminated food, especially raw or undercooked pork products including pork intestines (chitterlings). Children are infected more often than adults. While most infections occur during the winter months, this is believed to be related to the preparation of chitterlings for the holidays, and not to outdoor temperatures.

Eight cases of yersiniosis were reported in Virginia for 2012, which is similar to the ten in 2011 and the five-year average of 11.6 cases per year.

Cases were reported from each age group except for those aged 50-59 years. The ages of persons reported with yersiniosis ranged from 0-89 years, and averaged 25.9 years. Information on race was missing for 50% of cases. Among those cases with race information reported, three cases were in the white population and one was in the black population. Five cases occurred in males and three were in females.

No cases were reported from the northwest region; one to three cases were reported from each of the other regions. No seasonal pattern was observed in the onset dates, and no clear risk factors were associated with the illnesses.

NUMBER OF REPORTED CASES

AND

RATE PER 100,000 POPULATION

FOR SELECTED DISEASES BY

LOCALITY, DISTRICT, AND REGION

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Amebiasis REPORTED CASES	Amebiasis RATE PER 100,000	Campylobacteriosis REPORTED CASES	Campylobacteriosis RATE PER 100,000	Chickenpox REPORTED CASES	Chickenpox RATE PER 100,000
VIRGINIA TOTAL	8,096,604	29	0.4	764	9.4	505	6.2
LOCALITY							
Accomack County	33,336	0	0.0	9	27.0	2	6.0
Albemarle Co., Charlottesville	144,064	0	0.0	5	3.5	5	3.5
Alleghany Co., Clifton Forge, Covington	22,114	0	0.0	1	4.5	0	0.0
Amelia County	12,805	0	0.0	2	15.6	0	0.0
Amherst County	32,167	0	0.0	2	6.2	0	0.0
Appomattox County	15,041	0	0.0	1	6.6	0	0.0
Arlington County	216,004	5	2.3	48	22.2	11	5.1
Augusta Co., Staunton	97,318	0	0.0	4	4.1	6	6.2
Bath County	4,657	0	0.0	1	21.5	1	21.5
Bedford County and City	75,427	0	0.0	10	13.3	1	1.3
Bland County	6,818	0	0.0	1	14.7	0	0.0
Botetourt County	32,928	0	0.0	0	0.0	3	9.1
Brunswick County	17,204	0	0.0	5	29.1	1	5.8
Buchanan County	23,581	0	0.0	0	0.0	0	0.0
Buckingham County	17,278	0	0.0	1	5.8	2	11.6
Campbell County	55,032	0	0.0	6	10.9	1	1.8
Caroline County	28,674	0	0.0	2	7.0	1	3.5
Carroll County	29,981	0	0.0	1	3.3	0	0.0
Charles City County	7,241	0	0.0	0	0.0	0	0.0
Charlotte County	12,505	0	0.0	1	8.0	5	40.0
Chesterfield County	320,277	1	0.3	21	6.6	19	5.9
Clarke County	14,258	0	0.0	5	35.1	0	0.0
Craig County	5,099	0	0.0	1	19.6	0	0.0
Culpeper County	47,476	0	0.0	4	8.4	0	0.0
Cumberland County	9,969	0	0.0	2	20.1	0	0.0
Dickenson County	15,741	0	0.0	1	6.4	0	0.0
Dinwiddie County	27,918	0	0.0	5	17.9	0	0.0
Essex County	11,205	0	0.0	1	8.9	0	0.0
Fairfax Co./City/Falls Church	1,135,992	12	1.1	98	8.6	87	7.7
Fauquier County	66,071	0	0.0	7	10.6	1	1.5
Floyd County	15,378	0	0.0	2	13.0	0	0.0
Fluvanna County	26,061	0	0.0	0	0.0	2	7.7
Franklin County	56,419	0	0.0	9	16.0	2	3.5
Frederick Co., Winchester	106,253	0	0.0	16	15.1	0	0.0
Giles County	17,124	0	0.0	4	23.4	1	5.8
Gloucester County	36,901	0	0.0	0	0.0	0	0.0
Goochland County	21,883	0	0.0	0	0.0	0	0.0
Grayson County	15,328	0	0.0	0	0.0	1	6.5
Greene County	18,660	0	0.0	0	0.0	1	5.4
Greensville Co., Emporia	17,983	0	0.0	2	11.1	0	0.0
Halifax County	36,056	0	0.0	7	19.4	0	0.0
Hanover County	100,342	0	0.0	17	16.9	6	6.0
Henrico County	310,445	0	0.0	22	7.1	19	6.1
Henry Co., Martinsville	67,300	0	0.0	7	10.4	10	14.9
Highland County	2,267	0	0.0	0	0.0	1	44.1
Isle of Wight County	35,356	0	0.0	2	5.7	0	0.0
James City County	68,200	0	0.0	4	5.9	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Amebiasis REPORTED CASES	Amebiasis RATE PER 100,000	Campylobacteriosis REPORTED CASES	Campylobacteriosis RATE PER 100,000	Chickenpox REPORTED CASES	Chickenpox RATE PER 100,000
VIRGINIA TOTAL	8,096,604	29	0.4	764	9.4	505	6.2
LOCALITY							
King and Queen County	6,997	0	0.0	1	14.3	2	28.6
King George County	24,161	0	0.0	5	20.7	0	0.0
King William County	15,981	0	0.0	1	6.3	1	6.3
Lancaster County	11,282	1	8.9	2	17.7	0	0.0
Lee County	25,146	0	0.0	1	4.0	6	23.9
Loudoun County	325,405	1	0.3	42	12.9	37	11.4
Louisa County	33,395	0	0.0	2	6.0	1	3.0
Lunenburg County	12,874	0	0.0	2	15.5	2	15.5
Madison County	13,169	0	0.0	0	0.0	1	7.6
Mathews County	8,962	0	0.0	0	0.0	0	0.0
Mecklenburg County	32,622	0	0.0	3	9.2	1	3.1
Middlesex County	10,854	0	0.0	1	9.2	0	0.0
Montgomery County	94,342	0	0.0	8	8.5	14	14.8
Nelson County	15,097	0	0.0	3	19.9	1	6.6
New Kent County	18,822	0	0.0	2	10.6	0	0.0
Northampton County	12,377	0	0.0	2	16.2	1	8.1
Northumberland County	12,461	0	0.0	1	8.0	0	0.0
Nottoway County	15,840	0	0.0	1	6.3	2	12.6
Orange County	33,938	0	0.0	7	20.6	2	5.9
Page County	23,958	0	0.0	5	20.9	6	25.0
Patrick County	18,390	0	0.0	2	10.9	6	32.6
Pittsylvania County	62,844	0	0.0	3	4.8	7	11.1
Powhatan County	28,110	0	0.0	4	14.2	1	3.6
Prince Edward County	23,343	0	0.0	5	21.4	3	12.9
Prince George County	36,555	0	0.0	1	2.7	0	0.0
Pr. William Co./Manassas/M. Park	473,638	2	0.4	33	7.0	34	7.2
Pulaski County	34,607	0	0.0	4	11.6	0	0.0
Rappahannock County	7,444	0	0.0	2	26.9	0	0.0
Richmond County	9,220	0	0.0	0	0.0	0	0.0
Roanoke County	92,740	0	0.0	4	4.3	7	7.5
Rockbridge Co., Lexington	29,370	0	0.0	7	23.8	0	0.0
Rockingham Co., Harrisonburg	126,562	1	0.8	7	5.5	13	10.3
Russell County	28,749	0	0.0	6	20.9	2	7.0
Scott County	23,126	0	0.0	7	30.3	3	13.0
Shenandoah County	42,289	0	0.0	12	28.4	12	28.4
Smyth County	32,029	0	0.0	10	31.2	2	6.2
Southampton County	18,408	0	0.0	1	5.4	0	0.0
Spotsylvania County	124,327	1	0.8	22	17.7	5	4.0
Stafford County	132,133	0	0.0	12	9.1	5	3.8
Surry County	6,931	0	0.0	0	0.0	0	0.0
Sussex County	12,087	0	0.0	0	0.0	0	0.0
Tazewell County	44,715	0	0.0	8	17.9	19	42.5
Warren County	37,749	0	0.0	7	18.5	8	21.2
Washington County	54,827	0	0.0	19	34.7	1	1.8
Westmoreland County	17,595	0	0.0	1	5.7	0	0.0
Wise Co., Norton	45,619	0	0.0	6	13.2	6	13.2
Wythe County	29,204	0	0.0	5	17.1	2	6.8
York Co., Poquoson	78,134	1	1.3	7	9.0	2	2.6

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Amebiasis REPORTED CASES	Amebiasis RATE PER 100,000	Campylobacteriosis REPORTED CASES	Campylobacteriosis RATE PER 100,000	Chickenpox REPORTED CASES	Chickenpox RATE PER 100,000
VIRGINIA TOTAL	8,096,604	29	0.4	764	9.4	505	6.2
LOCALITY							
Alexandria	144,301	0	0.0	16	11.1	4	2.8
Bristol	17,750	0	0.0	2	11.3	1	5.6
Buena Vista	6,636	1	15.1	1	15.1	0	0.0
Chesapeake	225,050	1	0.4	11	4.9	14	6.2
Colonial Heights	17,440	0	0.0	1	5.7	1	5.7
Danville	42,852	0	0.0	2	4.7	12	28.0
Franklin City	8,588	0	0.0	0	0.0	0	0.0
Fredericksburg	25,691	0	0.0	4	15.6	1	3.9
Galax	6,983	0	0.0	1	14.3	3	43.0
Hampton	136,401	1	0.7	6	4.4	10	7.3
Hopewell	22,580	0	0.0	1	4.4	2	8.9
Lynchburg	76,504	0	0.0	4	5.2	2	2.6
Newport News	179,611	0	0.0	5	2.8	9	5.0
Norfolk	242,628	0	0.0	10	4.1	6	2.5
Petersburg	32,326	0	0.0	2	6.2	2	6.2
Portsmouth	95,684	0	0.0	4	4.2	5	5.2
Radford	16,414	0	0.0	1	6.1	1	6.1
Richmond City	205,533	0	0.0	14	6.8	2	1.0
Roanoke City	96,714	0	0.0	3	3.1	11	11.4
Salem	24,961	0	0.0	0	0.0	0	0.0
Suffolk	84,930	0	0.0	4	4.7	0	0.0
Virginia Beach	442,707	0	0.0	40	9.0	12	2.7
Waynesboro	21,311	1	4.7	3	14.1	1	4.7
Williamsburg	14,444	0	0.0	8	55.4	2	13.8

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Amebiasis REPORTED CASES	Amebiasis RATE PER 100,000	Campylobacteriosis REPORTED CASES	Campylobacteriosis RATE PER 100,000	Chickenpox REPORTED CASES	Chickenpox RATE PER 100,000
VIRGINIA TOTAL	8,096,604	29	0.4	764	9.4	505	6.2
DISTRICT/REGION							

Central Shenandoah	288,121	3	1.0	23	8.0	22	7.6
Lord Fairfax	224,507	0	0.0	45	20.0	26	11.6
Rappahannock	334,986	1	0.3	45	13.4	12	3.6
Rappahannock/Rapidan	168,098	0	0.0	20	11.9	4	2.4
Thomas Jefferson	237,277	0	0.0	10	4.2	10	4.2
Northwest Region	1,252,989	4	0.3	143	11.4	74	5.9

Alexandria	144,301	0	0.0	16	11.1	4	2.8
Arlington	216,004	5	2.3	48	22.2	11	5.1
Fairfax	1,135,992	12	1.1	98	8.6	87	7.7
Loudoun	325,405	1	0.3	42	12.9	37	11.4
Prince William	473,638	2	0.4	33	7.0	34	7.2
Northern Region	2,295,340	20	0.9	237	10.3	173	7.5

Alleghany	177,842	0	0.0	6	3.4	10	5.6
Central Virginia	254,171	0	0.0	23	9.0	4	1.6
Cumberland Plateau	112,786	0	0.0	15	13.3	21	18.6
Lenowisco	93,891	0	0.0	14	14.9	15	16.0
Mount Rogers	192,920	0	0.0	39	20.2	10	5.2
New River	177,865	0	0.0	19	10.7	16	9.0
Pittsylvania/Danville	105,696	0	0.0	5	4.7	19	18.0
Roanoke City	96,714	0	0.0	3	3.1	11	11.4
West Piedmont	142,109	0	0.0	18	12.7	18	12.7
Southwest Region	1,353,994	0	0.0	142	10.5	124	9.2

Chesterfield	365,827	1	0.3	26	7.1	21	5.7
Chickahominy	148,288	0	0.0	19	12.8	6	4.0
Crater	156,380	0	0.0	11	7.0	4	2.6
Henrico	310,445	0	0.0	22	7.1	19	6.1
Piedmont	104,614	0	0.0	14	13.4	14	13.4
Richmond City	205,533	0	0.0	14	6.8	2	1.0
Southside	85,882	0	0.0	15	17.5	2	2.3
Central Region	1,376,969	1	0.1	121	8.8	68	4.9

Chesapeake	225,050	1	0.4	11	4.9	14	6.2
Eastern Shore	45,713	0	0.0	11	24.1	3	6.6
Hampton	136,401	1	0.7	6	4.4	10	7.3
Norfolk	242,628	0	0.0	10	4.1	6	2.5
Peninsula	340,389	1	0.3	24	7.1	13	3.8
Portsmouth	95,684	0	0.0	4	4.2	5	5.2
Three Rivers	141,458	1	0.7	8	5.7	3	2.1
Virginia Beach	442,707	0	0.0	40	9.0	12	2.7
Western Tidewater	147,282	0	0.0	7	4.8	0	0.0
Eastern Region	1,817,312	4	0.2	121	6.7	66	3.6

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***Chlamydia trachomatis* Infection**		**Cryptosporidiosis**		**Ehrlichiosis/ Anaplasmosis**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	35,016	432.5	144	1.8	148	1.8
LOCALITY							
Accomack County	33,336	267	800.9	0	0.0	2	6.0
Albemarle Co., Charlottesville	144,064	542	376.2	0	0.0	7	4.9
Alleghany Co., Clifton Forge, Covington	22,114	72	325.6	1	4.5	0	0.0
Amelia County	12,805	45	351.4	0	0.0	1	7.8
Amherst County	32,167	109	338.9	0	0.0	4	12.4
Appomattox County	15,041	45	299.2	2	13.3	0	0.0
Arlington County	216,004	575	266.2	4	1.9	2	0.9
Augusta Co., Staunton	97,318	238	244.6	1	1.0	0	0.0
Bath County	4,657	4	85.9	0	0.0	0	0.0
Bedford County and City	75,427	106	140.5	2	2.7	6	8.0
Bland County	6,818	7	102.7	0	0.0	0	0.0
Botetourt County	32,928	40	121.5	1	3.0	0	0.0
Brunswick County	17,204	87	505.7	0	0.0	1	5.8
Buchanan County	23,581	15	63.6	0	0.0	0	0.0
Buckingham County	17,278	83	480.4	0	0.0	3	17.4
Campbell County	55,032	183	332.5	2	3.6	1	1.8
Caroline County	28,674	102	355.7	0	0.0	2	7.0
Carroll County	29,981	57	190.1	0	0.0	0	0.0
Charles City County	7,241	40	552.4	0	0.0	0	0.0
Charlotte County	12,505	69	551.8	0	0.0	0	0.0
Chesterfield County	320,277	1260	393.4	2	0.6	10	3.1
Clarke County	14,258	25	175.3	1	7.0	0	0.0
Craig County	5,099	8	156.9	0	0.0	0	0.0
Culpeper County	47,476	136	286.5	1	2.1	2	4.2
Cumberland County	9,969	41	411.3	0	0.0	0	0.0
Dickenson County	15,741	47	298.6	0	0.0	0	0.0
Dinwiddie County	27,918	126	451.3	1	3.6	1	3.6
Essex County	11,205	79	705.0	0	0.0	0	0.0
Fairfax Co./City/Falls Church	1,135,992	2216	195.1	26	2.3	6	0.5
Fauquier County	66,071	133	201.3	2	3.0	5	7.6
Floyd County	15,378	30	195.1	0	0.0	0	0.0
Fluvanna County	26,061	56	214.9	0	0.0	0	0.0
Franklin County	56,419	160	283.6	2	3.5	0	0.0
Frederick Co., Winchester	106,253	489	460.2	1	0.9	3	2.8
Giles County	17,124	49	286.1	1	5.8	0	0.0
Gloucester County	36,901	83	224.9	0	0.0	0	0.0
Goochland County	21,883	44	201.1	1	4.6	0	0.0
Grayson County	15,328	19	124.0	0	0.0	0	0.0
Greene County	18,660	39	209.0	0	0.0	0	0.0
Greensville Co., Emporia	17,983	101	561.6	0	0.0	0	0.0
Halifax County	36,056	155	429.9	0	0.0	0	0.0
Hanover County	100,342	216	215.3	0	0.0	1	1.0
Henrico County	310,445	1405	452.6	2	0.6	6	1.9
Henry Co., Martinsville	67,300	345	512.6	1	1.5	2	3.0
Highland County	2,267	1	44.1	0	0.0	0	0.0
Isle of Wight County	35,356	140	396.0	2	5.7	0	0.0
James City County	68,200	162	237.5	0	0.0	1	1.5

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***Chlamydia trachomatis* Infection**		**Cryptosporidiosis**		**Ehrlichiosis/ Anaplasmosis**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	35,016	432.5	144	1.8	148	1.8
LOCALITY							
King and Queen County	6,997	32	457.3	0	0.0	1	14.3
King George County	24,161	74	306.3	0	0.0	1	4.1
King William County	15,981	43	269.1	0	0.0	0	0.0
Lancaster County	11,282	46	407.7	0	0.0	0	0.0
Lee County	25,146	28	111.3	0	0.0	0	0.0
Loudoun County	325,405	531	163.2	1	0.3	3	0.9
Louisa County	33,395	87	260.5	1	3.0	3	9.0
Lunenburg County	12,874	36	279.6	0	0.0	2	15.5
Madison County	13,169	21	159.5	1	7.6	0	0.0
Mathews County	8,962	17	189.7	0	0.0	0	0.0
Mecklenburg County	32,622	148	453.7	0	0.0	2	6.1
Middlesex County	10,854	40	368.5	0	0.0	1	9.2
Montgomery County	94,342	271	287.3	1	1.1	0	0.0
Nelson County	15,097	36	238.5	0	0.0	0	0.0
New Kent County	18,822	36	191.3	0	0.0	0	0.0
Northampton County	12,377	94	759.5	0	0.0	0	0.0
Northumberland County	12,461	60	481.5	0	0.0	0	0.0
Nottoway County	15,840	64	404.0	2	12.6	1	6.3
Orange County	33,938	78	229.8	0	0.0	0	0.0
Page County	23,958	60	250.4	0	0.0	0	0.0
Patrick County	18,390	37	201.2	1	5.4	0	0.0
Pittsylvania County	62,844	221	351.7	0	0.0	4	6.4
Powhatan County	28,110	52	185.0	0	0.0	0	0.0
Prince Edward County	23,343	117	501.2	2	8.6	2	8.6
Prince George County	36,555	283	774.2	0	0.0	2	5.5
Pr. William Co./Manassas/M. Park	473,638	1562	329.8	12	2.5	2	0.4
Pulaski County	34,607	81	234.1	0	0.0	0	0.0
Rappahannock County	7,444	9	120.9	0	0.0	0	0.0
Richmond County	9,220	30	325.4	0	0.0	1	10.8
Roanoke County	92,740	183	197.3	1	1.1	2	2.2
Rockbridge Co., Lexington	29,370	86	292.8	1	3.4	0	0.0
Rockingham Co., Harrisonburg	126,562	342	270.2	0	0.0	2	1.6
Russell County	28,749	43	149.6	2	7.0	0	0.0
Scott County	23,126	28	121.1	0	0.0	0	0.0
Shenandoah County	42,289	86	203.4	0	0.0	4	9.5
Smyth County	32,029	58	181.1	2	6.2	0	0.0
Southampton County	18,408	87	472.6	0	0.0	0	0.0
Spotsylvania County	124,327	390	313.7	1	0.8	9	7.2
Stafford County	132,133	404	305.8	1	0.8	5	3.8
Surry County	6,931	51	735.8	0	0.0	0	0.0
Sussex County	12,087	58	479.9	0	0.0	0	0.0
Tazewell County	44,715	69	154.3	0	0.0	0	0.0
Warren County	37,749	137	362.9	0	0.0	4	10.6
Washington County	54,827	78	142.3	3	5.5	0	0.0
Westmoreland County	17,595	95	539.9	0	0.0	0	0.0
Wise Co., Norton	45,619	153	335.4	1	2.2	0	0.0
Wythe County	29,204	63	215.7	0	0.0	1	3.4
York Co., Poquoson	78,134	160	204.8	6	7.7	1	1.3

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***Chlamydia trachomatis* Infection**		**Cryptosporidiosis**		**Ehrlichiosis/ Anaplasmosis**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	35,016	432.5	144	1.8	148	1.8
LOCALITY							
Alexandria	144,301	491	340.3	15	10.4	0	0.0
Bristol	17,750	55	309.9	0	0.0	0	0.0
Buena Vista	6,636	30	452.1	0	0.0	0	0.0
Chesapeake	225,050	1325	588.8	4	1.8	1	0.4
Colonial Heights	17,440	81	464.4	0	0.0	2	11.5
Danville	42,852	393	917.1	0	0.0	4	9.3
Franklin City	8,588	103	1199.3	0	0.0	0	0.0
Fredericksburg	25,691	214	833.0	0	0.0	1	3.9
Galax	6,983	24	343.7	0	0.0	0	0.0
Hampton	136,401	1355	993.4	1	0.7	1	0.7
Hopewell	22,580	194	859.2	0	0.0	0	0.0
Lynchburg	76,504	430	562.1	1	1.3	10	13.1
Newport News	179,611	1776	988.8	15	8.4	1	0.6
Norfolk	242,628	2842	1171.3	1	0.4	1	0.4
Petersburg	32,326	498	1540.6	0	0.0	1	3.1
Portsmouth	95,684	1101	1150.7	0	0.0	0	0.0
Radford	16,414	99	603.1	0	0.0	0	0.0
Richmond City	205,533	2758	1341.9	2	1.0	2	1.0
Roanoke City	96,714	696	719.6	2	2.1	0	0.0
Salem	24,961	75	300.5	1	4.0	0	0.0
Suffolk	84,930	658	774.8	2	2.4	0	0.0
Virginia Beach	442,707	2544	574.6	0	0.0	2	0.5
Waynesboro	21,311	95	445.8	0	0.0	0	0.0
Williamsburg	14,444	163	1128.5	5	34.6	3	20.8

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***Chlamydia trachomatis* Infection**		**Cryptosporidiosis**		**Ehrlichiosis/ Anaplasmosis**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	35,016	432.5	144	1.8	148	1.8
DISTRICT/REGION							

Central Shenandoah	288,121	796	276.3	2	0.7	2	0.7
Lord Fairfax	224,507	797	355.0	2	0.9	11	4.9
Rappahannock	334,986	1184	353.4	2	0.6	18	5.4
Rappahannock/Rapidan	168,098	377	224.3	4	2.4	7	4.2
Thomas Jefferson	237,277	760	320.3	1	0.4	10	4.2
Northwest Region	1,252,989	3,914	312.4	11	0.9	48	3.8

Alexandria	144,301	491	340.3	15	10.4	0	0.0
Arlington	216,004	575	266.2	4	1.9	2	0.9
Fairfax	1,135,992	2216	195.1	26	2.3	6	0.5
Loudoun	325,405	531	163.2	1	0.3	3	0.9
Prince William	473,638	1562	329.8	12	2.5	2	0.4
Northern Region	2,295,340	5,375	234.2	58	2.5	13	0.6

Alleghany	177,842	378	212.5	4	2.2	2	1.1
Central Virginia	254,171	873	343.5	7	2.8	21	8.3
Cumberland Plateau	112,786	174	154.3	2	1.8	0	0.0
Lenowisco	93,891	209	222.6	1	1.1	0	0.0
Mount Rogers	192,920	361	187.1	5	2.6	1	0.5
New River	177,865	530	298.0	2	1.1	0	0.0
Pittsylvania/Danville	105,696	614	580.9	0	0.0	8	7.6
Roanoke City	96,714	696	719.6	2	2.1	0	0.0
West Piedmont	142,109	542	381.4	4	2.8	2	1.4
Southwest Region	1,353,994	4,377	323.3	27	2.0	34	2.5

Chesterfield	365,827	1393	380.8	2	0.5	12	3.3
Chickahominy	148,288	336	226.6	1	0.7	1	0.7
Crater	156,380	1311	838.3	1	0.6	4	2.6
Henrico	310,445	1405	452.6	2	0.6	6	1.9
Piedmont	104,614	455	434.9	4	3.8	9	8.6
Richmond City	205,533	2758	1341.9	2	1.0	2	1.0
Southside	85,882	390	454.1	0	0.0	3	3.5
Central Region	1,376,969	8,048	584.5	12	0.9	37	2.7

Chesapeake	225,050	1325	588.8	4	1.8	1	0.4
Eastern Shore	45,713	361	789.7	0	0.0	2	4.4
Hampton	136,401	1355	993.4	1	0.7	1	0.7
Norfolk	242,628	2842	1171.3	1	0.4	1	0.4
Peninsula	340,389	2261	664.2	26	7.6	6	1.8
Portsmouth	95,684	1101	1150.7	0	0.0	0	0.0
Three Rivers	141,458	525	371.1	0	0.0	3	2.1
Virginia Beach	442,707	2544	574.6	0	0.0	2	0.5
Western Tidewater	147,282	988	670.8	4	2.7	0	0.0
Eastern Region	1,817,312	13,302	732.0	36	2.0	16	0.9

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***Escherichia coli* Infection, Shiga Toxin-Producing**		**Giardiasis**		**Gonorrhea**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	81	1.0	272	3.4	6,894	85.1
LOCALITY							
Accomack County	33,336	0	0.0	1	3.0	39	117.0
Albemarle Co., Charlottesville	144,064	2	1.4	6	4.2	115	79.8
Alleghany Co., Clifton Forge, Covington	22,114	0	0.0	2	9.0	2	9.0
Amelia County	12,805	0	0.0	1	7.8	4	31.2
Amherst County	32,167	1	3.1	1	3.1	25	77.7
Appomattox County	15,041	0	0.0	0	0.0	9	59.8
Arlington County	216,004	4	1.9	16	7.4	83	38.4
Augusta Co., Staunton	97,318	2	2.1	4	4.1	38	39.0
Bath County	4,657	0	0.0	1	21.5	0	0.0
Bedford County and City	75,427	2	2.7	1	1.3	13	17.2
Bland County	6,818	0	0.0	0	0.0	0	0.0
Botetourt County	32,928	0	0.0	2	6.1	4	12.1
Brunswick County	17,204	0	0.0	0	0.0	17	98.8
Buchanan County	23,581	0	0.0	0	0.0	0	0.0
Buckingham County	17,278	0	0.0	1	5.8	9	52.1
Campbell County	55,032	0	0.0	2	3.6	30	54.5
Caroline County	28,674	0	0.0	0	0.0	9	31.4
Carroll County	29,981	0	0.0	0	0.0	2	6.7
Charles City County	7,241	0	0.0	0	0.0	2	27.6
Charlotte County	12,505	0	0.0	1	8.0	22	175.9
Chesterfield County	320,277	2	0.6	7	2.2	238	74.3
Clarke County	14,258	0	0.0	1	7.0	1	7.0
Craig County	5,099	0	0.0	1	19.6	1	19.6
Culpeper County	47,476	0	0.0	2	4.2	8	16.9
Cumberland County	9,969	0	0.0	0	0.0	4	40.1
Dickenson County	15,741	0	0.0	0	0.0	2	12.7
Dinwiddie County	27,918	1	3.6	0	0.0	37	132.5
Essex County	11,205	0	0.0	0	0.0	21	187.4
Fairfax Co./City/Falls Church	1,135,992	12	1.1	59	5.2	254	22.4
Fauquier County	66,071	0	0.0	2	3.0	17	25.7
Floyd County	15,378	0	0.0	0	0.0	1	6.5
Fluvanna County	26,061	1	3.8	0	0.0	11	42.2
Franklin County	56,419	0	0.0	0	0.0	31	54.9
Frederick Co., Winchester	106,253	6	5.6	2	1.9	64	60.2
Giles County	17,124	0	0.0	0	0.0	2	11.7
Gloucester County	36,901	0	0.0	0	0.0	15	40.6
Goochland County	21,883	0	0.0	2	9.1	13	59.4
Grayson County	15,328	1	6.5	2	13.0	0	0.0
Greene County	18,660	1	5.4	1	5.4	6	32.2
Greensville Co., Emporia	17,983	0	0.0	0	0.0	19	105.7
Halifax County	36,056	0	0.0	1	2.8	91	252.4
Hanover County	100,342	1	1.0	4	4.0	39	38.9
Henrico County	310,445	4	1.3	5	1.6	287	92.4
Henry Co., Martinsville	67,300	0	0.0	0	0.0	46	68.4
Highland County	2,267	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,356	0	0.0	3	8.5	19	53.7
James City County	68,200	0	0.0	1	1.5	23	33.7

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***Escherichia coli* Infection, Shiga Toxin-Producing**		**Giardiasis**		**Gonorrhea**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	81	1.0	272	3.4	6,894	85.1
LOCALITY							
King and Queen County	6,997	0	0.0	0	0.0	5	71.5
King George County	24,161	0	0.0	3	12.4	12	49.7
King William County	15,981	0	0.0	0	0.0	9	56.3
Lancaster County	11,282	0	0.0	0	0.0	10	88.6
Lee County	25,146	1	4.0	0	0.0	0	0.0
Loudoun County	325,405	5	1.5	10	3.1	62	19.1
Louisa County	33,395	1	3.0	1	3.0	19	56.9
Lunenburg County	12,874	0	0.0	0	0.0	17	132.0
Madison County	13,169	0	0.0	0	0.0	3	22.8
Mathews County	8,962	0	0.0	0	0.0	1	11.2
Mecklenburg County	32,622	0	0.0	0	0.0	50	153.3
Middlesex County	10,854	1	9.2	0	0.0	1	9.2
Montgomery County	94,342	0	0.0	0	0.0	42	44.5
Nelson County	15,097	0	0.0	0	0.0	3	19.9
New Kent County	18,822	0	0.0	2	10.6	4	21.3
Northampton County	12,377	0	0.0	0	0.0	16	129.3
Northumberland County	12,461	0	0.0	0	0.0	13	104.3
Nottoway County	15,840	0	0.0	0	0.0	20	126.3
Orange County	33,938	0	0.0	0	0.0	18	53.0
Page County	23,958	0	0.0	1	4.2	1	4.2
Patrick County	18,390	0	0.0	0	0.0	3	16.3
Pittsylvania County	62,844	0	0.0	1	1.6	45	71.6
Powhatan County	28,110	0	0.0	0	0.0	7	24.9
Prince Edward County	23,343	0	0.0	0	0.0	19	81.4
Prince George County	36,555	0	0.0	1	2.7	30	82.1
Pr. William Co./Manassas/M. Park	473,638	2	0.4	15	3.2	181	38.2
Pulaski County	34,607	0	0.0	2	5.8	5	14.4
Rappahannock County	7,444	0	0.0	0	0.0	1	13.4
Richmond County	9,220	0	0.0	1	10.8	13	141.0
Roanoke County	92,740	0	0.0	4	4.3	37	39.9
Rockbridge Co., Lexington	29,370	3	10.2	1	3.4	8	27.2
Rockingham Co., Harrisonburg	126,562	3	2.4	8	6.3	30	23.7
Russell County	28,749	1	3.5	0	0.0	4	13.9
Scott County	23,126	1	4.3	1	4.3	1	4.3
Shenandoah County	42,289	1	2.4	1	2.4	4	9.5
Smyth County	32,029	2	6.2	1	3.1	6	18.7
Southampton County	18,408	0	0.0	1	5.4	20	108.6
Spotsylvania County	124,327	0	0.0	6	4.8	34	27.3
Stafford County	132,133	0	0.0	4	3.0	43	32.5
Surry County	6,931	0	0.0	0	0.0	12	173.1
Sussex County	12,087	0	0.0	1	8.3	6	49.6
Tazewell County	44,715	1	2.2	1	2.2	16	35.8
Warren County	37,749	1	2.6	2	5.3	15	39.7
Washington County	54,827	1	1.8	0	0.0	11	20.1
Westmoreland County	17,595	0	0.0	1	5.7	25	142.1
Wise Co., Norton	45,619	0	0.0	0	0.0	9	19.7
Wythe County	29,204	1	3.4	1	3.4	5	17.1
York Co., Poquoson	78,134	0	0.0	2	2.6	24	30.7

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	***Escherichia coli* Infection, Shiga Toxin-Producing** REPORTED CASES	RATE PER 100,000	**Giardiasis** REPORTED CASES	RATE PER 100,000	**Gonorrhea** REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	81	1.0	272	3.4	6,894	85.1
LOCALITY							
Alexandria	144,301	1	0.7	15	10.4	97	67.2
Bristol	17,750	1	5.6	0	0.0	18	101.4
Buena Vista	6,636	0	0.0	0	0.0	0	0.0
Chesapeake	225,050	2	0.9	5	2.2	246	109.3
Colonial Heights	17,440	0	0.0	0	0.0	19	108.9
Danville	42,852	0	0.0	0	0.0	135	315.0
Franklin City	8,588	0	0.0	0	0.0	13	151.4
Fredericksburg	25,691	0	0.0	2	7.8	30	116.8
Galax	6,983	1	14.3	0	0.0	0	0.0
Hampton	136,401	2	1.5	5	3.7	312	228.7
Hopewell	22,580	0	0.0	1	4.4	61	270.2
Lynchburg	76,504	1	1.3	1	1.3	188	245.7
Newport News	179,611	0	0.0	4	2.2	467	260.0
Norfolk	242,628	0	0.0	6	2.5	666	274.5
Petersburg	32,326	1	3.1	0	0.0	152	470.2
Portsmouth	95,684	0	0.0	1	1.0	221	231.0
Radford	16,414	0	0.0	0	0.0	5	30.5
Richmond City	205,533	2	1.0	6	2.9	754	366.9
Roanoke City	96,714	2	2.1	6	6.2	274	283.3
Salem	24,961	1	4.0	0	0.0	12	48.1
Suffolk	84,930	2	2.4	0	0.0	145	170.7
Virginia Beach	442,707	0	0.0	14	3.2	441	99.6
Waynesboro	21,311	0	0.0	0	0.0	15	70.4
Williamsburg	14,444	0	0.0	2	13.8	30	207.7

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***Escherichia coli* Infection, Shiga Toxin-Producing**		**Giardiasis**		**Gonorrhea**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	81	1.0	272	3.4	6,894	85.1
DISTRICT/REGION							

Central Shenandoah	288,121	8	2.8	14	4.9	91	31.6
Lord Fairfax	224,507	8	3.6	7	3.1	85	37.9
Rappahannock	334,986	0	0.0	15	4.5	128	38.2
Rappahannock/Rapidan	168,098	0	0.0	4	2.4	47	28.0
Thomas Jefferson	237,277	5	2.1	8	3.4	154	64.9
Northwest Region	1,252,989	21	1.7	48	3.8	505	40.3

Alexandria	144,301	1	0.7	15	10.4	97	67.2
Arlington	216,004	4	1.9	16	7.4	83	38.4
Fairfax	1,135,992	12	1.1	59	5.2	254	22.4
Loudoun	325,405	5	1.5	10	3.1	62	19.1
Prince William	473,638	2	0.4	15	3.2	181	38.2
Northern Region	2,295,340	24	1.0	115	5.0	677	29.5

Alleghany	177,842	1	0.6	9	5.1	56	31.5
Central Virginia	254,171	4	1.6	5	2.0	265	104.3
Cumberland Plateau	112,786	2	1.8	1	0.9	22	19.5
Lenowisco	93,891	2	2.1	1	1.1	10	10.7
Mount Rogers	192,920	7	3.6	4	2.1	42	21.8
New River	177,865	0	0.0	2	1.1	55	30.9
Pittsylvania/Danville	105,696	0	0.0	1	0.9	180	170.3
Roanoke City	96,714	2	2.1	6	6.2	274	283.3
West Piedmont	142,109	0	0.0	0	0.0	80	56.3
Southwest Region	1,353,994	18	1.3	29	2.1	984	72.7

Chesterfield	365,827	2	0.5	7	1.9	264	72.2
Chickahominy	148,288	1	0.7	8	5.4	58	39.1
Crater	156,380	2	1.3	3	1.9	317	202.7
Henrico	310,445	4	1.3	5	1.6	287	92.4
Piedmont	104,614	0	0.0	3	2.9	95	90.8
Richmond City	205,533	2	1.0	6	2.9	754	366.9
Southside	85,882	0	0.0	1	1.2	158	184.0
Central Region	1,376,969	11	0.8	33	2.4	1,933	140.4

Chesapeake	225,050	2	0.9	5	2.2	246	109.3
Eastern Shore	45,713	0	0.0	1	2.2	55	120.3
Hampton	136,401	2	1.5	5	3.7	312	228.7
Norfolk	242,628	0	0.0	6	2.5	666	274.5
Peninsula	340,389	0	0.0	9	2.6	544	159.8
Portsmouth	95,684	0	0.0	1	1.0	221	231.0
Three Rivers	141,458	1	0.7	2	1.4	113	79.9
Virginia Beach	442,707	0	0.0	14	3.2	441	99.6
Western Tidewater	147,282	2	1.4	4	2.7	197	133.8
Eastern Region	1,817,312	7	0.4	47	2.6	2,795	153.8

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***H. influenzae* Infection, Invasive**		**Hepatitis A**		**Hepatitis B, Acute**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	101	1.2	49	0.6	84	1.0
LOCALITY							
Accomack County	33,336	0	0.0	0	0.0	1	3.0
Albemarle Co., Charlottesville	144,064	1	0.7	0	0.0	1	0.7
Alleghany Co., Clifton Forge, Covington	22,114	0	0.0	0	0.0	0	0.0
Amelia County	12,805	0	0.0	0	0.0	0	0.0
Amherst County	32,167	0	0.0	0	0.0	0	0.0
Appomattox County	15,041	1	6.6	0	0.0	0	0.0
Arlington County	216,004	1	0.5	1	0.5	0	0.0
Augusta Co., Staunton	97,318	3	3.1	0	0.0	1	1.0
Bath County	4,657	0	0.0	0	0.0	0	0.0
Bedford County and City	75,427	5	6.6	0	0.0	0	0.0
Bland County	6,818	0	0.0	0	0.0	0	0.0
Botetourt County	32,928	1	3.0	0	0.0	0	0.0
Brunswick County	17,204	0	0.0	0	0.0	0	0.0
Buchanan County	23,581	1	4.2	0	0.0	4	17.0
Buckingham County	17,278	1	5.8	0	0.0	0	0.0
Campbell County	55,032	2	3.6	0	0.0	0	0.0
Caroline County	28,674	0	0.0	1	3.5	0	0.0
Carroll County	29,981	0	0.0	0	0.0	0	0.0
Charles City County	7,241	0	0.0	0	0.0	0	0.0
Charlotte County	12,505	0	0.0	0	0.0	0	0.0
Chesterfield County	320,277	1	0.3	1	0.3	0	0.0
Clarke County	14,258	0	0.0	0	0.0	0	0.0
Craig County	5,099	0	0.0	0	0.0	0	0.0
Culpeper County	47,476	1	2.1	0	0.0	0	0.0
Cumberland County	9,969	0	0.0	0	0.0	0	0.0
Dickenson County	15,741	0	0.0	0	0.0	1	6.4
Dinwiddie County	27,918	1	3.6	0	0.0	0	0.0
Essex County	11,205	0	0.0	0	0.0	0	0.0
Fairfax Co./City/Falls Church	1,135,992	8	0.7	14	1.2	1	0.1
Fauquier County	66,071	2	3.0	0	0.0	0	0.0
Floyd County	15,378	0	0.0	0	0.0	0	0.0
Fluvanna County	26,061	0	0.0	0	0.0	0	0.0
Franklin County	56,419	1	1.8	1	1.8	0	0.0
Frederick Co., Winchester	106,253	1	0.9	3	2.8	1	0.9
Giles County	17,124	0	0.0	0	0.0	1	5.8
Gloucester County	36,901	0	0.0	0	0.0	0	0.0
Goochland County	21,883	1	4.6	1	4.6	0	0.0
Grayson County	15,328	2	13.0	0	0.0	0	0.0
Greene County	18,660	0	0.0	1	5.4	0	0.0
Greensville Co., Emporia	17,983	0	0.0	0	0.0	0	0.0
Halifax County	36,056	1	2.8	1	2.8	0	0.0
Hanover County	100,342	1	1.0	0	0.0	2	2.0
Henrico County	310,445	5	1.6	0	0.0	7	2.3
Henry Co., Martinsville	67,300	0	0.0	0	0.0	0	0.0
Highland County	2,267	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,356	2	5.7	0	0.0	0	0.0
James City County	68,200	1	1.5	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***H. influenzae* Infection, Invasive**		**Hepatitis A**		**Hepatitis B, Acute**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	101	1.2	49	0.6	84	1.0
LOCALITY							
King and Queen County	6,997	0	0.0	0	0.0	0	0.0
King George County	24,161	0	0.0	0	0.0	0	0.0
King William County	15,981	1	6.3	0	0.0	1	6.3
Lancaster County	11,282	0	0.0	0	0.0	0	0.0
Lee County	25,146	0	0.0	1	4.0	7	27.8
Loudoun County	325,405	2	0.6	3	0.9	2	0.6
Louisa County	33,395	0	0.0	0	0.0	0	0.0
Lunenburg County	12,874	0	0.0	0	0.0	0	0.0
Madison County	13,169	0	0.0	0	0.0	0	0.0
Mathews County	8,962	0	0.0	0	0.0	0	0.0
Mecklenburg County	32,622	1	3.1	1	3.1	0	0.0
Middlesex County	10,854	0	0.0	0	0.0	0	0.0
Montgomery County	94,342	1	1.1	1	1.1	1	1.1
Nelson County	15,097	0	0.0	0	0.0	0	0.0
New Kent County	18,822	0	0.0	0	0.0	0	0.0
Northampton County	12,377	0	0.0	0	0.0	1	8.1
Northumberland County	12,461	0	0.0	0	0.0	0	0.0
Nottoway County	15,840	1	6.3	1	6.3	0	0.0
Orange County	33,938	0	0.0	0	0.0	0	0.0
Page County	23,958	0	0.0	0	0.0	1	4.2
Patrick County	18,390	0	0.0	0	0.0	0	0.0
Pittsylvania County	62,844	0	0.0	0	0.0	0	0.0
Powhatan County	28,110	1	3.6	0	0.0	2	7.1
Prince Edward County	23,343	1	4.3	0	0.0	0	0.0
Prince George County	36,555	0	0.0	0	0.0	0	0.0
Pr. William Co./Manassas/M. Park	473,638	3	0.6	3	0.6	3	0.6
Pulaski County	34,607	1	2.9	0	0.0	5	14.4
Rappahannock County	7,444	0	0.0	0	0.0	0	0.0
Richmond County	9,220	0	0.0	0	0.0	0	0.0
Roanoke County	92,740	1	1.1	0	0.0	0	0.0
Rockbridge Co., Lexington	29,370	0	0.0	0	0.0	0	0.0
Rockingham Co., Harrisonburg	126,562	2	1.6	0	0.0	1	0.8
Russell County	28,749	0	0.0	0	0.0	2	7.0
Scott County	23,126	0	0.0	1	4.3	1	4.3
Shenandoah County	42,289	2	4.7	1	2.4	1	2.4
Smyth County	32,029	1	3.1	3	9.4	0	0.0
Southampton County	18,408	0	0.0	0	0.0	0	0.0
Spotsylvania County	124,327	1	0.8	1	0.8	1	0.8
Stafford County	132,133	2	1.5	1	0.8	0	0.0
Surry County	6,931	0	0.0	0	0.0	0	0.0
Sussex County	12,087	0	0.0	0	0.0	0	0.0
Tazewell County	44,715	1	2.2	0	0.0	1	2.2
Warren County	37,749	1	2.6	0	0.0	0	0.0
Washington County	54,827	2	3.6	0	0.0	1	1.8
Westmoreland County	17,595	0	0.0	0	0.0	0	0.0
Wise Co., Norton	45,619	2	4.4	2	4.4	15	32.9
Wythe County	29,204	0	0.0	0	0.0	0	0.0
York Co., Poquoson	78,134	2	2.6	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***H. influenzae* Infection, Invasive**		**Hepatitis A**		**Hepatitis B, Acute**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	101	1.2	49	0.6	84	1.0
LOCALITY							
Alexandria	144,301	3	2.1	2	1.4	1	0.7
Bristol	17,750	0	0.0	0	0.0	0	0.0
Buena Vista	6,636	0	0.0	0	0.0	0	0.0
Chesapeake	225,050	4	1.8	0	0.0	3	1.3
Colonial Heights	17,440	0	0.0	0	0.0	0	0.0
Danville	42,852	1	2.3	0	0.0	0	0.0
Franklin City	8,588	0	0.0	0	0.0	0	0.0
Fredericksburg	25,691	2	7.8	0	0.0	0	0.0
Galax	6,983	0	0.0	0	0.0	0	0.0
Hampton	136,401	1	0.7	0	0.0	2	1.5
Hopewell	22,580	0	0.0	0	0.0	1	4.4
Lynchburg	76,504	1	1.3	0	0.0	0	0.0
Newport News	179,611	0	0.0	0	0.0	0	0.0
Norfolk	242,628	4	1.6	0	0.0	1	0.4
Petersburg	32,326	0	0.0	0	0.0	0	0.0
Portsmouth	95,684	1	1.0	0	0.0	1	1.0
Radford	16,414	0	0.0	0	0.0	2	12.2
Richmond City	205,533	4	1.9	2	1.0	6	2.9
Roanoke City	96,714	2	2.1	1	1.0	0	0.0
Salem	24,961	0	0.0	0	0.0	0	0.0
Suffolk	84,930	2	2.4	0	0.0	0	0.0
Virginia Beach	442,707	2	0.5	1	0.2	0	0.0
Waynesboro	21,311	1	4.7	0	0.0	0	0.0
Williamsburg	14,444	0	0.0	0	0.0	1	6.9

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		***H. influenzae* Infection, Invasive**		**Hepatitis A**		**Hepatitis B, Acute**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	101	1.2	49	0.6	84	1.0
DISTRICT/REGION							

Central Shenandoah	288,121	6	2.1	0	0.0	2	0.7
Lord Fairfax	224,507	4	1.8	4	1.8	3	1.3
Rappahannock	334,986	5	1.5	3	0.9	1	0.3
Rappahannock/Rapidan	168,098	3	1.8	0	0.0	0	0.0
Thomas Jefferson	237,277	1	0.4	1	0.4	1	0.4
Northwest Region	1,252,989	19	1.5	8	0.6	7	0.6

Alexandria	144,301	3	2.1	2	1.4	1	0.7
Arlington	216,004	1	0.5	1	0.5	0	0.0
Fairfax	1,135,992	8	0.7	14	1.2	1	0.1
Loudoun	325,405	2	0.6	3	0.9	2	0.6
Prince William	473,638	3	0.6	3	0.6	3	0.6
Northern Region	2,295,340	17	0.7	23	1.0	7	0.3

Alleghany	177,842	2	1.1	0	0.0	0	0.0
Central Virginia	254,171	9	3.5	0	0.0	0	0.0
Cumberland Plateau	112,786	2	1.8	0	0.0	8	7.1
Lenowisco	93,891	2	2.1	4	4.3	23	24.5
Mount Rogers	192,920	5	2.6	3	1.6	1	0.5
New River	177,865	2	1.1	1	0.6	9	5.1
Pittsylvania/Danville	105,696	1	0.9	0	0.0	0	0.0
Roanoke City	96,714	2	2.1	1	1.0	0	0.0
West Piedmont	142,109	1	0.7	1	0.7	0	0.0
Southwest Region	1,353,994	26	1.9	10	0.7	41	3.0

Chesterfield	365,827	2	0.5	1	0.3	2	0.5
Chickahominy	148,288	2	1.3	1	0.7	2	1.3
Crater	156,380	1	0.6	0	0.0	1	0.6
Henrico	310,445	5	1.6	0	0.0	7	2.3
Piedmont	104,614	3	2.9	1	1.0	0	0.0
Richmond City	205,533	4	1.9	2	1.0	6	2.9
Southside	85,882	2	2.3	2	2.3	0	0.0
Central Region	1,376,969	19	1.4	7	0.5	18	1.3

Chesapeake	225,050	4	1.8	0	0.0	3	1.3
Eastern Shore	45,713	0	0.0	0	0.0	2	4.4
Hampton	136,401	1	0.7	0	0.0	2	1.5
Norfolk	242,628	4	1.6	0	0.0	1	0.4
Peninsula	340,389	3	0.9	0	0.0	1	0.3
Portsmouth	95,684	1	1.0	0	0.0	1	1.0
Three Rivers	141,458	1	0.7	0	0.0	1	0.7
Virginia Beach	442,707	2	0.5	1	0.2	0	0.0
Western Tidewater	147,282	4	2.7	0	0.0	0	0.0
Eastern Region	1,817,312	20	1.1	1	0.1	11	0.6

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Hepatitis C, Acute**		**HIV Disease***		**Lead-Elevated Blood Levels in Children** Age 0-15 years**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	76	0.9	1,105	13.6	201	12.2
LOCALITY							
Accomack County	33,336	0	0.0	2	6.0	2	31.7
Albemarle Co., Charlottesville	144,064	0	0.0	13	9.0	4	16.2
Alleghany Co., Clifton Forge, Covington	22,114	0	0.0	2	9.0	4	100.9
Amelia County	12,805	0	0.0	1	7.8	1	41.0
Amherst County	32,167	0	0.0	1	3.1	1	17.3
Appomattox County	15,041	0	0.0	2	13.3	0	0.0
Arlington County	216,004	0	0.0	72	33.3	2	6.4
Augusta Co., Staunton	97,318	5	5.1	2	2.1	2	11.5
Bath County	4,657	0	0.0	0	0.0	0	0.0
Bedford County and City	75,427	0	0.0	1	1.3	3	21.2
Bland County	6,818	0	0.0	0	0.0	0	0.0
Botetourt County	32,928	0	0.0	1	3.0	0	0.0
Brunswick County	17,204	0	0.0	3	17.4	0	0.0
Buchanan County	23,581	1	4.2	0	0.0	0	0.0
Buckingham County	17,278	0	0.0	1	5.8	1	34.8
Campbell County	55,032	1	1.8	4	7.3	0	0.0
Caroline County	28,674	0	0.0	6	20.9	1	16.5
Carroll County	29,981	0	0.0	2	6.7	0	0.0
Charles City County	7,241	0	0.0	3	41.4	0	0.0
Charlotte County	12,505	0	0.0	1	8.0	0	0.0
Chesterfield County	320,277	3	0.9	34	10.6	0	0.0
Clarke County	14,258	1	7.0	0	0.0	0	0.0
Craig County	5,099	0	0.0	0	0.0	0	0.0
Culpeper County	47,476	1	2.1	4	8.4	3	28.0
Cumberland County	9,969	0	0.0	0	0.0	1	51.1
Dickenson County	15,741	0	0.0	1	6.4	3	104.4
Dinwiddie County	27,918	0	0.0	2	7.2	1	18.9
Essex County	11,205	0	0.0	2	17.8	0	0.0
Fairfax Co./City/Falls Church	1,135,992	0	0.0	163	14.3	18	7.4
Fauquier County	66,071	0	0.0	0	0.0	0	0.0
Floyd County	15,378	0	0.0	0	0.0	0	0.0
Fluvanna County	26,061	0	0.0	4	15.3	0	0.0
Franklin County	56,419	0	0.0	1	1.8	0	0.0
Frederick Co., Winchester	106,253	5	4.7	4	3.8	3	13.2
Giles County	17,124	5	29.2	0	0.0	1	31.5
Gloucester County	36,901	0	0.0	3	8.1	1	14.7
Goochland County	21,883	0	0.0	3	13.7	0	0.0
Grayson County	15,328	0	0.0	0	0.0	0	0.0
Greene County	18,660	0	0.0	2	10.7	0	0.0
Greensville Co., Emporia	17,983	0	0.0	2	11.1	2	65.9
Halifax County	36,056	1	2.8	6	16.6	2	29.2
Hanover County	100,342	2	2.0	6	6.0	0	0.0
Henrico County	310,445	1	0.3	48	15.5	9	13.7
Henry Co., Martinsville	67,300	0	0.0	5	7.4	0	0.0
Highland County	2,267	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,356	0	0.0	2	5.7	1	14.8
James City County	68,200	0	0.0	11	16.1	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Hepatitis C, Acute: REPORTED CASES	Hepatitis C, Acute: RATE PER 100,000	HIV Disease*: REPORTED CASES	HIV Disease*: RATE PER 100,000	Lead-Elevated Blood Levels in Children Age 0-15 years**: REPORTED CASES	Lead-Elevated Blood Levels in Children Age 0-15 years**: RATE PER 100,000
VIRGINIA TOTAL	8,096,604	76	0.9	1,105	13.6	201	12.2
LOCALITY							
King and Queen County	6,997	0	0.0	0	0.0	0	0.0
King George County	24,161	0	0.0	5	20.7	0	0.0
King William County	15,981	0	0.0	1	6.3	0	0.0
Lancaster County	11,282	0	0.0	0	0.0	1	63.5
Lee County	25,146	2	8.0	1	4.0	3	67.3
Loudoun County	325,405	0	0.0	22	6.8	1	1.1
Louisa County	33,395	0	0.0	3	9.0	0	0.0
Lunenburg County	12,874	0	0.0	0	0.0	0	0.0
Madison County	13,169	0	0.0	0	0.0	1	39.9
Mathews County	8,962	0	0.0	0	0.0	0	0.0
Mecklenburg County	32,622	0	0.0	4	12.3	1	18.1
Middlesex County	10,854	0	0.0	0	0.0	0	0.0
Montgomery County	94,342	3	3.2	8	8.5	0	0.0
Nelson County	15,097	0	0.0	0	0.0	0	0.0
New Kent County	18,822	0	0.0	2	10.6	0	0.0
Northampton County	12,377	0	0.0	0	0.0	1	46.4
Northumberland County	12,461	0	0.0	0	0.0	2	112.9
Nottoway County	15,840	0	0.0	2	12.6	1	34.5
Orange County	33,938	0	0.0	1	2.9	3	44.7
Page County	23,958	2	8.3	0	0.0	1	22.7
Patrick County	18,390	0	0.0	1	5.4	0	0.0
Pittsylvania County	62,844	0	0.0	9	14.3	0	0.0
Powhatan County	28,110	0	0.0	3	10.7	0	0.0
Prince Edward County	23,343	0	0.0	3	12.9	0	0.0
Prince George County	36,555	0	0.0	2	5.5	0	0.0
Pr. William Co./Manassas/M. Park	473,638	2	0.4	57	12.0	9	7.4
Pulaski County	34,607	12	34.7	2	5.8	0	0.0
Rappahannock County	7,444	0	0.0	1	13.4	0	0.0
Richmond County	9,220	0	0.0	1	10.8	0	0.0
Roanoke County	92,740	1	1.1	9	9.7	0	0.0
Rockbridge Co., Lexington	29,370	0	0.0	5	17.0	0	0.0
Rockingham Co., Harrisonburg	126,562	4	3.2	6	4.7	2	8.9
Russell County	28,749	0	0.0	0	0.0	0	0.0
Scott County	23,126	0	0.0	0	0.0	2	52.0
Shenandoah County	42,289	0	0.0	1	2.4	2	24.9
Smyth County	32,029	0	0.0	0	0.0	0	0.0
Southampton County	18,408	0	0.0	0	0.0	0	0.0
Spotsylvania County	124,327	5	4.0	12	9.7	5	17.1
Stafford County	132,133	2	1.5	10	7.6	1	3.1
Surry County	6,931	0	0.0	1	14.4	0	0.0
Sussex County	12,087	0	0.0	1	8.3	0	0.0
Tazewell County	44,715	2	4.5	0	0.0	1	12.8
Warren County	37,749	1	2.6	0	0.0	2	25.5
Washington County	54,827	0	0.0	4	7.3	0	0.0
Westmoreland County	17,595	0	0.0	2	11.4	1	32.8
Wise Co., Norton	45,619	4	8.8	2	4.4	0	0.0
Wythe County	29,204	0	0.0	2	6.8	0	0.0
York Co., Poquoson	78,134	0	0.0	1	1.3	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Hepatitis C, Acute: REPORTED CASES	Hepatitis C, Acute: RATE PER 100,000	HIV Disease*: REPORTED CASES	HIV Disease*: RATE PER 100,000	Lead-Elevated Blood Levels in Children Age 0-15 years**: REPORTED CASES	Lead-Elevated Blood Levels in Children Age 0-15 years**: RATE PER 100,000
VIRGINIA TOTAL	8,096,604	76	0.9	1,105	13.6	201	12.2
LOCALITY							
Alexandria	144,301	0	0.0	48	33.3	1	4.3
Bristol	17,750	0	0.0	6	33.8	1	31.2
Buena Vista	6,636	0	0.0	0	0.0	0	0.0
Chesapeake	225,050	1	0.4	29	12.9	1	2.0
Colonial Heights	17,440	0	0.0	2	11.5	0	0.0
Danville	42,852	1	2.3	9	21.0	4	48.4
Franklin City	8,588	0	0.0	1	11.6	1	54.9
Fredericksburg	25,691	0	0.0	0	0.0	2	41.5
Galax	6,983	0	0.0	0	0.0	0	0.0
Hampton	136,401	1	0.7	29	21.3	1	3.7
Hopewell	22,580	0	0.0	5	22.1	2	39.7
Lynchburg	76,504	0	0.0	10	13.1	6	45.4
Newport News	179,611	0	0.0	53	29.5	4	10.3
Norfolk	242,628	3	1.2	82	33.8	14	30.6
Petersburg	32,326	1	3.1	21	65.0	7	112.8
Portsmouth	95,684	0	0.0	35	36.6	5	24.6
Radford	16,414	1	6.1	0	0.0	0	0.0
Richmond City	205,533	0	0.0	87	42.3	33	92.9
Roanoke City	96,714	1	1.0	13	13.4	6	31.7
Salem	24,961	0	0.0	2	8.0	0	0.0
Suffolk	84,930	0	0.0	15	17.7	0	0.0
Virginia Beach	442,707	0	0.0	52	11.7	6	6.5
Waynesboro	21,311	1	4.7	1	4.7	1	22.2
Williamsburg	14,444	0	0.0	1	6.9	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Hepatitis C, Acute**		**HIV Disease***		**Lead-Elevated Blood Levels in Children** Age 0-15 years**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	76	0.9	1,105	13.6	201	12.2
DISTRICT/REGION							

Central Shenandoah	288,121	10	3.5	14	4.9	5	9.8
Lord Fairfax	224,507	9	4.0	5	2.2	8	17.5
Rappahannock	334,986	7	2.1	33	9.9	9	11.5
Rappahannock/Rapidan	168,098	1	0.6	6	3.6	7	19.7
Thomas Jefferson	237,277	0	0.0	22	9.3	4	9.3
Northwest Region	1,252,989	27	2.2	80	6.4	33	13.0

Alexandria	144,301	0	0.0	48	33.3	1	4.3
Arlington	216,004	0	0.0	72	33.3	2	6.4
Fairfax	1,135,992	0	0.0	163	14.3	18	7.4
Loudoun	325,405	0	0.0	22	6.8	1	1.1
Prince William	473,638	2	0.4	57	12.0	9	7.4
Northern Region	2,295,340	2	0.1	362	15.8	31	6.1

Alleghany	177,842	1	0.6	14	7.9	4	12.3
Central Virginia	254,171	1	0.4	18	7.1	10	21.6
Cumberland Plateau	112,786	3	2.7	1	0.9	4	20.5
Lenowisco	93,891	6	6.4	3	3.2	5	30.1
Mount Rogers	192,920	0	0.0	14	7.3	1	3.0
New River	177,865	21	11.8	10	5.6	1	3.8
Pittsylvania/Danville	105,696	1	0.9	18	17.0	4	20.2
Roanoke City	96,714	1	1.0	13	13.4	6	31.7
West Piedmont	142,109	0	0.0	7	4.9	0	0.0
Southwest Region	1,353,994	34	2.5	98	7.2	35	14.6

Chesterfield	365,827	3	0.8	39	10.7	0	0.0
Chickahominy	148,288	2	1.3	14	9.4	0	0.0
Crater	156,380	1	0.6	34	21.7	12	40.2
Henrico	310,445	1	0.3	48	15.5	9	13.7
Piedmont	104,614	0	0.0	8	7.6	4	21.9
Richmond City	205,533	0	0.0	87	42.3	33	92.9
Southside	85,882	1	1.2	13	15.1	3	19.8
Central Region	1,376,969	8	0.6	243	17.6	61	22.3

Chesapeake	225,050	1	0.4	29	12.9	1	2.0
Eastern Shore	45,713	0	0.0	2	4.4	3	35.5
Hampton	136,401	1	0.7	29	21.3	1	3.7
Norfolk	242,628	3	1.2	82	33.8	14	30.6
Peninsula	340,389	0	0.0	66	19.4	4	5.8
Portsmouth	95,684	0	0.0	35	36.6	5	24.6
Three Rivers	141,458	0	0.0	9	6.4	5	20.7
Virginia Beach	442,707	0	0.0	52	11.7	6	6.5
Western Tidewater	147,282	0	0.0	18	12.2	2	6.4
Eastern Region	1,817,312	5	0.3	322	17.7	41	11.1

***** Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS defining condition at first HIV report.

** Rates are based on population figures for ages 0-15 years only

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Legionellosis REPORTED CASES	Legionellosis RATE PER 100,000	Listeriosis REPORTED CASES	Listeriosis RATE PER 100,000	Lyme Disease REPORTED CASES	Lyme Disease RATE PER 100,000
VIRGINIA TOTAL	8,096,604	76	0.9	18	0.2	1,110	13.7
LOCALITY							
Accomack County	33,336	0	0.0	0	0.0	7	21.0
Albemarle Co., Charlottesville	144,064	1	0.7	1	0.7	40	27.8
Alleghany Co, Clifton Forge, Covington	22,114	1	4.5	0	0.0	0	0.0
Amelia County	12,805	0	0.0	0	0.0	1	7.8
Amherst County	32,167	0	0.0	0	0.0	13	40.4
Appomattox County	15,041	0	0.0	0	0.0	0	0.0
Arlington County	216,004	1	0.5	0	0.0	10	4.6
Augusta Co., Staunton	97,318	1	1.0	0	0.0	32	32.9
Bath County	4,657	1	21.5	0	0.0	0	0.0
Bedford County and City	75,427	0	0.0	0	0.0	19	25.2
Bland County	6,818	0	0.0	0	0.0	0	0.0
Botetourt County	32,928	0	0.0	0	0.0	0	0.0
Brunswick County	17,204	1	5.8	0	0.0	1	5.8
Buchanan County	23,581	0	0.0	0	0.0	1	4.2
Buckingham County	17,278	0	0.0	0	0.0	1	5.8
Campbell County	55,032	0	0.0	0	0.0	5	9.1
Caroline County	28,674	0	0.0	0	0.0	2	7.0
Carroll County	29,981	1	3.3	0	0.0	9	30.0
Charles City County	7,241	0	0.0	0	0.0	1	13.8
Charlotte County	12,505	1	8.0	0	0.0	1	8.0
Chesterfield County	320,277	2	0.6	2	0.6	13	4.1
Clarke County	14,258	1	7.0	0	0.0	8	56.1
Craig County	5,099	0	0.0	0	0.0	0	0.0
Culpeper County	47,476	1	2.1	0	0.0	16	33.7
Cumberland County	9,969	0	0.0	0	0.0	0	0.0
Dickenson County	15,741	0	0.0	0	0.0	0	0.0
Dinwiddie County	27,918	0	0.0	0	0.0	0	0.0
Essex County	11,205	0	0.0	0	0.0	1	8.9
Fairfax Co./City/Falls Church	1,135,992	5	0.4	5	0.4	149	13.1
Fauquier County	66,071	0	0.0	0	0.0	29	43.9
Floyd County	15,378	0	0.0	0	0.0	33	214.6
Fluvanna County	26,061	0	0.0	0	0.0	3	11.5
Franklin County	56,419	0	0.0	0	0.0	2	3.5
Frederick Co., Winchester	106,253	5	4.7	0	0.0	70	65.9
Giles County	17,124	0	0.0	0	0.0	10	58.4
Gloucester County	36,901	0	0.0	0	0.0	1	2.7
Goochland County	21,883	0	0.0	0	0.0	1	4.6
Grayson County	15,328	0	0.0	0	0.0	0	0.0
Greene County	18,660	0	0.0	0	0.0	7	37.5
Greensville Co., Emporia	17,983	0	0.0	0	0.0	0	0.0
Halifax County	36,056	1	2.8	0	0.0	0	0.0
Hanover County	100,342	2	2.0	0	0.0	1	1.0
Henrico County	310,445	4	1.3	2	0.6	15	4.8
Henry Co., Martinsville	67,300	0	0.0	0	0.0	2	3.0
Highland County	2,267	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,356	0	0.0	1	2.8	0	0.0
James City County	68,200	0	0.0	0	0.0	2	2.9

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Legionellosis REPORTED CASES	Legionellosis RATE PER 100,000	Listeriosis REPORTED CASES	Listeriosis RATE PER 100,000	Lyme Disease REPORTED CASES	Lyme Disease RATE PER 100,000
VIRGINIA TOTAL	8,096,604	76	0.9	18	0.2	1,110	13.7
LOCALITY							
King and Queen County	6,997	0	0.0	0	0.0	1	14.3
King George County	24,161	1	4.1	0	0.0	6	24.8
King William County	15,981	0	0.0	0	0.0	1	6.3
Lancaster County	11,282	0	0.0	0	0.0	0	0.0
Lee County	25,146	0	0.0	0	0.0	0	0.0
Loudoun County	325,405	6	1.8	2	0.6	219	67.3
Louisa County	33,395	0	0.0	0	0.0	4	12.0
Lunenburg County	12,874	0	0.0	0	0.0	0	0.0
Madison County	13,169	0	0.0	0	0.0	8	60.7
Mathews County	8,962	0	0.0	0	0.0	0	0.0
Mecklenburg County	32,622	1	3.1	0	0.0	0	0.0
Middlesex County	10,854	0	0.0	0	0.0	0	0.0
Montgomery County	94,342	1	1.1	0	0.0	44	46.6
Nelson County	15,097	0	0.0	0	0.0	3	19.9
New Kent County	18,822	0	0.0	0	0.0	2	10.6
Northampton County	12,377	0	0.0	1	8.1	2	16.2
Northumberland County	12,461	0	0.0	0	0.0	1	8.0
Nottoway County	15,840	0	0.0	0	0.0	3	18.9
Orange County	33,938	2	5.9	0	0.0	7	20.6
Page County	23,958	0	0.0	0	0.0	7	29.2
Patrick County	18,390	0	0.0	0	0.0	0	0.0
Pittsylvania County	62,844	0	0.0	0	0.0	7	11.1
Powhatan County	28,110	1	3.6	0	0.0	2	7.1
Prince Edward County	23,343	0	0.0	0	0.0	1	4.3
Prince George County	36,555	0	0.0	0	0.0	3	8.2
Pr. William Co./Manassas/M. Park	473,638	1	0.2	2	0.4	30	6.3
Pulaski County	34,607	1	2.9	0	0.0	21	60.7
Rappahannock County	7,444	0	0.0	0	0.0	10	134.3
Richmond County	9,220	0	0.0	0	0.0	0	0.0
Roanoke County	92,740	1	1.1	0	0.0	5	5.4
Rockbridge Co., Lexington	29,370	0	0.0	0	0.0	5	17.0
Rockingham Co., Harrisonburg	126,562	2	1.6	0	0.0	31	24.5
Russell County	28,749	0	0.0	0	0.0	0	0.0
Scott County	23,126	0	0.0	0	0.0	0	0.0
Shenandoah County	42,289	0	0.0	0	0.0	22	52.0
Smyth County	32,029	0	0.0	0	0.0	0	0.0
Southampton County	18,408	0	0.0	0	0.0	0	0.0
Spotsylvania County	124,327	1	0.8	0	0.0	12	9.7
Stafford County	132,133	0	0.0	0	0.0	12	9.1
Surry County	6,931	0	0.0	0	0.0	1	14.4
Sussex County	12,087	0	0.0	0	0.0	0	0.0
Tazewell County	44,715	0	0.0	1	2.2	0	0.0
Warren County	37,749	0	0.0	0	0.0	34	90.1
Washington County	54,827	0	0.0	0	0.0	1	1.8
Westmoreland County	17,595	0	0.0	0	0.0	0	0.0
Wise Co., Norton	45,619	2	4.4	0	0.0	0	0.0
Wythe County	29,204	0	0.0	0	0.0	4	13.7
York Co., Poquoson	78,134	1	1.3	0	0.0	2	2.6

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Legionellosis REPORTED CASES	Legionellosis RATE PER 100,000	Listeriosis REPORTED CASES	Listeriosis RATE PER 100,000	Lyme Disease REPORTED CASES	Lyme Disease RATE PER 100,000
VIRGINIA TOTAL	8,096,604	76	0.9	18	0.2	1,110	13.7
LOCALITY							
Alexandria	144,301	1	0.7	0	0.0	3	2.1
Bristol	17,750	1	5.6	0	0.0	0	0.0
Buena Vista	6,636	0	0.0	0	0.0	0	0.0
Chesapeake	225,050	4	1.8	0	0.0	6	2.7
Colonial Heights	17,440	1	5.7	0	0.0	1	5.7
Danville	42,852	3	7.0	0	0.0	3	7.0
Franklin City	8,588	0	0.0	0	0.0	0	0.0
Fredericksburg	25,691	0	0.0	0	0.0	6	23.4
Galax	6,983	0	0.0	0	0.0	1	14.3
Hampton	136,401	2	1.5	0	0.0	2	1.5
Hopewell	22,580	0	0.0	0	0.0	0	0.0
Lynchburg	76,504	0	0.0	0	0.0	31	40.5
Newport News	179,611	1	0.6	0	0.0	6	3.3
Norfolk	242,628	3	1.2	0	0.0	1	0.4
Petersburg	32,326	0	0.0	0	0.0	0	0.0
Portsmouth	95,684	2	2.1	0	0.0	0	0.0
Radford	16,414	0	0.0	0	0.0	9	54.8
Richmond City	205,533	2	1.0	0	0.0	0	0.0
Roanoke City	96,714	2	2.1	0	0.0	4	4.1
Salem	24,961	0	0.0	0	0.0	0	0.0
Suffolk	84,930	0	0.0	0	0.0	0	0.0
Virginia Beach	442,707	3	0.7	1	0.2	9	2.0
Waynesboro	21,311	1	4.7	0	0.0	4	18.8
Williamsburg	14,444	0	0.0	0	0.0	7	48.5

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Legionellosis REPORTED CASES	Legionellosis RATE PER 100,000	Listeriosis REPORTED CASES	Listeriosis RATE PER 100,000	Lyme Disease REPORTED CASES	Lyme Disease RATE PER 100,000
VIRGINIA TOTAL	8,096,604	76	0.9	18	0.2	1,110	13.7
DISTRICT/REGION							

Central Shenandoah	288,121	5	1.7	0	0.0	72	25.0
Lord Fairfax	224,507	6	2.7	0	0.0	141	62.8
Rappahannock	334,986	2	0.6	0	0.0	38	11.3
Rappahannock/Rapidan	168,098	3	1.8	0	0.0	70	41.6
Thomas Jefferson	237,277	1	0.4	1	0.4	57	24.0
Northwest Region	1,252,989	17	1.4	1	0.1	378	30.2

Alexandria	144,301	1	0.7	0	0.0	3	2.1
Arlington	216,004	1	0.5	0	0.0	10	4.6
Fairfax	1,135,992	5	0.4	5	0.4	149	13.1
Loudoun	325,405	6	1.8	2	0.6	219	67.3
Prince William	473,638	1	0.2	2	0.4	30	6.3
Northern Region	2,295,340	14	0.6	9	0.4	411	17.9

Alleghany	177,842	2	1.1	0	0.0	5	2.8
Central Virginia	254,171	0	0.0	0	0.0	68	26.8
Cumberland Plateau	112,786	0	0.0	1	0.9	1	0.9
Lenowisco	93,891	2	2.1	0	0.0	0	0.0
Mount Rogers	192,920	2	1.0	0	0.0	15	7.8
New River	177,865	2	1.1	0	0.0	117	65.8
Pittsylvania/Danville	105,696	3	2.8	0	0.0	10	9.5
Roanoke City	96,714	2	2.1	0	0.0	4	4.1
West Piedmont	142,109	0	0.0	0	0.0	4	2.8
Southwest Region	1,353,994	13	1.0	1	0.1	224	16.5

Chesterfield	365,827	4	1.1	2	0.5	16	4.4
Chickahominy	148,288	2	1.3	0	0.0	5	3.4
Crater	156,380	0	0.0	0	0.0	4	2.6
Henrico	310,445	4	1.3	2	0.6	15	4.8
Piedmont	104,614	1	1.0	0	0.0	7	6.7
Richmond City	205,533	2	1.0	0	0.0	0	0.0
Southside	85,882	3	3.5	0	0.0	1	1.2
Central Region	1,376,969	16	1.2	4	0.3	48	3.5

Chesapeake	225,050	4	1.8	0	0.0	6	2.7
Eastern Shore	45,713	0	0.0	1	2.2	9	19.7
Hampton	136,401	2	1.5	0	0.0	2	1.5
Norfolk	242,628	3	1.2	0	0.0	1	0.4
Peninsula	340,389	2	0.6	0	0.0	17	5.0
Portsmouth	95,684	2	2.1	0	0.0	0	0.0
Three Rivers	141,458	0	0.0	0	0.0	5	3.5
Virginia Beach	442,707	3	0.7	1	0.2	9	2.0
Western Tidewater	147,282	0	0.0	1	0.7	0	0.0
Eastern Region	1,817,312	16	0.9	3	0.2	49	2.7

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Malaria REPORTED CASES	Malaria RATE PER 100,000	Meningococcal Disease REPORTED CASES	Meningococcal Disease RATE PER 100,000	Mumps REPORTED CASES	Mumps RATE PER 100,000
VIRGINIA TOTAL	8,096,604	65	0.8	5	0.1	7	0.1
LOCALITY							
Accomack County	33,336	0	0.0	0	0.0	0	0.0
Albemarle Co., Charlottesville	144,064	3	2.1	0	0.0	1	0.7
Alleghany Co, Clifton Forge, Covington	22,114	0	0.0	0	0.0	0	0.0
Amelia County	12,805	0	0.0	0	0.0	0	0.0
Amherst County	32,167	0	0.0	0	0.0	0	0.0
Appomattox County	15,041	0	0.0	0	0.0	0	0.0
Arlington County	216,004	1	0.5	0	0.0	1	0.5
Augusta Co., Staunton	97,318	0	0.0	0	0.0	0	0.0
Bath County	4,657	0	0.0	0	0.0	0	0.0
Bedford County and City	75,427	0	0.0	0	0.0	0	0.0
Bland County	6,818	0	0.0	0	0.0	0	0.0
Botetourt County	32,928	0	0.0	0	0.0	0	0.0
Brunswick County	17,204	0	0.0	0	0.0	0	0.0
Buchanan County	23,581	0	0.0	0	0.0	0	0.0
Buckingham County	17,278	0	0.0	0	0.0	0	0.0
Campbell County	55,032	0	0.0	0	0.0	0	0.0
Caroline County	28,674	0	0.0	0	0.0	0	0.0
Carroll County	29,981	0	0.0	0	0.0	0	0.0
Charles City County	7,241	0	0.0	0	0.0	0	0.0
Charlotte County	12,505	0	0.0	0	0.0	0	0.0
Chesterfield County	320,277	2	0.6	0	0.0	0	0.0
Clarke County	14,258	0	0.0	0	0.0	0	0.0
Craig County	5,099	0	0.0	0	0.0	0	0.0
Culpeper County	47,476	0	0.0	0	0.0	0	0.0
Cumberland County	9,969	0	0.0	0	0.0	0	0.0
Dickenson County	15,741	0	0.0	0	0.0	0	0.0
Dinwiddie County	27,918	0	0.0	0	0.0	0	0.0
Essex County	11,205	0	0.0	0	0.0	0	0.0
Fairfax Co./City/Falls Church	1,135,992	28	2.5	0	0.0	2	0.2
Fauquier County	66,071	0	0.0	0	0.0	0	0.0
Floyd County	15,378	0	0.0	0	0.0	0	0.0
Fluvanna County	26,061	0	0.0	0	0.0	0	0.0
Franklin County	56,419	0	0.0	0	0.0	0	0.0
Frederick Co., Winchester	106,253	1	0.9	0	0.0	0	0.0
Giles County	17,124	0	0.0	0	0.0	0	0.0
Gloucester County	36,901	0	0.0	0	0.0	0	0.0
Goochland County	21,883	0	0.0	0	0.0	0	0.0
Grayson County	15,328	0	0.0	0	0.0	0	0.0
Greene County	18,660	1	5.4	0	0.0	0	0.0
Greensville Co., Emporia	17,983	0	0.0	0	0.0	0	0.0
Halifax County	36,056	0	0.0	0	0.0	0	0.0
Hanover County	100,342	0	0.0	0	0.0	0	0.0
Henrico County	310,445	1	0.3	0	0.0	0	0.0
Henry Co., Martinsville	67,300	0	0.0	0	0.0	0	0.0
Highland County	2,267	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,356	0	0.0	0	0.0	0	0.0
James City County	68,200	0	0.0	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Malaria REPORTED CASES	Malaria RATE PER 100,000	Meningococcal Disease REPORTED CASES	Meningococcal Disease RATE PER 100,000	Mumps REPORTED CASES	Mumps RATE PER 100,000
VIRGINIA TOTAL	8,096,604	65	0.8	5	0.1	7	0.1
LOCALITY							
King and Queen County	6,997	0	0.0	0	0.0	0	0.0
King George County	24,161	0	0.0	1	4.1	0	0.0
King William County	15,981	0	0.0	0	0.0	0	0.0
Lancaster County	11,282	0	0.0	0	0.0	0	0.0
Lee County	25,146	0	0.0	1	4.0	0	0.0
Loudoun County	325,405	1	0.3	0	0.0	0	0.0
Louisa County	33,395	0	0.0	0	0.0	0	0.0
Lunenburg County	12,874	0	0.0	0	0.0	0	0.0
Madison County	13,169	0	0.0	0	0.0	0	0.0
Mathews County	8,962	0	0.0	0	0.0	0	0.0
Mecklenburg County	32,622	0	0.0	0	0.0	0	0.0
Middlesex County	10,854	0	0.0	0	0.0	0	0.0
Montgomery County	94,342	0	0.0	0	0.0	0	0.0
Nelson County	15,097	0	0.0	0	0.0	0	0.0
New Kent County	18,822	0	0.0	0	0.0	0	0.0
Northampton County	12,377	0	0.0	0	0.0	0	0.0
Northumberland County	12,461	0	0.0	0	0.0	0	0.0
Nottoway County	15,840	0	0.0	0	0.0	0	0.0
Orange County	33,938	0	0.0	0	0.0	0	0.0
Page County	23,958	0	0.0	0	0.0	0	0.0
Patrick County	18,390	0	0.0	0	0.0	0	0.0
Pittsylvania County	62,844	0	0.0	0	0.0	0	0.0
Powhatan County	28,110	0	0.0	0	0.0	0	0.0
Prince Edward County	23,343	0	0.0	0	0.0	0	0.0
Prince George County	36,555	0	0.0	0	0.0	0	0.0
Pr. William Co./Manassas/M. Park	473,638	8	1.7	0	0.0	0	0.0
Pulaski County	34,607	0	0.0	0	0.0	0	0.0
Rappahannock County	7,444	0	0.0	0	0.0	0	0.0
Richmond County	9,220	0	0.0	0	0.0	0	0.0
Roanoke County	92,740	0	0.0	0	0.0	0	0.0
Rockbridge Co., Lexington	29,370	0	0.0	1	3.4	0	0.0
Rockingham Co., Harrisonburg	126,562	0	0.0	0	0.0	1	0.8
Russell County	28,749	0	0.0	0	0.0	0	0.0
Scott County	23,126	0	0.0	0	0.0	0	0.0
Shenandoah County	42,289	0	0.0	0	0.0	0	0.0
Smyth County	32,029	0	0.0	0	0.0	0	0.0
Southampton County	18,408	0	0.0	0	0.0	0	0.0
Spotsylvania County	124,327	2	1.6	0	0.0	0	0.0
Stafford County	132,133	3	2.3	0	0.0	0	0.0
Surry County	6,931	0	0.0	0	0.0	0	0.0
Sussex County	12,087	0	0.0	0	0.0	0	0.0
Tazewell County	44,715	0	0.0	0	0.0	0	0.0
Warren County	37,749	0	0.0	0	0.0	0	0.0
Washington County	54,827	0	0.0	0	0.0	0	0.0
Westmoreland County	17,595	0	0.0	0	0.0	0	0.0
Wise Co., Norton	45,619	0	0.0	1	2.2	0	0.0
Wythe County	29,204	0	0.0	0	0.0	0	0.0
York Co., Poquoson	78,134	0	0.0	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Malaria REPORTED CASES	Malaria RATE PER 100,000	Meningococcal Disease REPORTED CASES	Meningococcal Disease RATE PER 100,000	Mumps REPORTED CASES	Mumps RATE PER 100,000
VIRGINIA TOTAL	8,096,604	65	0.8	5	0.1	7	0.1
LOCALITY							
Alexandria	144,301	7	4.9	0	0.0	0	0.0
Bristol	17,750	0	0.0	0	0.0	0	0.0
Buena Vista	6,636	0	0.0	0	0.0	0	0.0
Chesapeake	225,050	0	0.0	0	0.0	0	0.0
Colonial Heights	17,440	0	0.0	0	0.0	0	0.0
Danville	42,852	0	0.0	0	0.0	0	0.0
Franklin City	8,588	0	0.0	0	0.0	0	0.0
Fredericksburg	25,691	2	7.8	0	0.0	0	0.0
Galax	6,983	0	0.0	0	0.0	0	0.0
Hampton	136,401	0	0.0	0	0.0	0	0.0
Hopewell	22,580	0	0.0	0	0.0	0	0.0
Lynchburg	76,504	0	0.0	0	0.0	0	0.0
Newport News	179,611	0	0.0	1	0.6	1	0.6
Norfolk	242,628	1	0.4	0	0.0	1	0.4
Petersburg	32,326	1	3.1	0	0.0	0	0.0
Portsmouth	95,684	0	0.0	0	0.0	0	0.0
Radford	16,414	0	0.0	0	0.0	0	0.0
Richmond City	205,533	1	0.5	0	0.0	0	0.0
Roanoke City	96,714	0	0.0	0	0.0	0	0.0
Salem	24,961	0	0.0	0	0.0	0	0.0
Suffolk	84,930	0	0.0	0	0.0	0	0.0
Virginia Beach	442,707	2	0.5	0	0.0	0	0.0
Waynesboro	21,311	0	0.0	0	0.0	0	0.0
Williamsburg	14,444	0	0.0	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Malaria REPORTED CASES	Malaria RATE PER 100,000	Meningococcal Disease REPORTED CASES	Meningococcal Disease RATE PER 100,000	Mumps REPORTED CASES	Mumps RATE PER 100,000
VIRGINIA TOTAL	8,096,604	65	0.8	5	0.1	7	0.1
DISTRICT/REGION							

Central Shenandoah	288,121	0	0.0	1	0.3	1	0.3
Lord Fairfax	224,507	1	0.4	0	0.0	0	0.0
Rappahannock	334,986	7	2.1	1	0.3	0	0.0
Rappahannock/Rapidan	168,098	0	0.0	0	0.0	0	0.0
Thomas Jefferson	237,277	4	1.7	0	0.0	1	0.4
Northwest Region	1,252,989	12	1.0	2	0.2	2	0.2

Alexandria	144,301	7	4.9	0	0.0	0	0.0
Arlington	216,004	1	0.5	0	0.0	1	0.5
Fairfax	1,135,992	28	2.5	0	0.0	2	0.2
Loudoun	325,405	1	0.3	0	0.0	0	0.0
Prince William	473,638	8	1.7	0	0.0	0	0.0
Northern Region	2,295,340	45	2.0	0	0.0	3	0.1

Alleghany	177,842	0	0.0	0	0.0	0	0.0
Central Virginia	254,171	0	0.0	0	0.0	0	0.0
Cumberland Plateau	112,786	0	0.0	0	0.0	0	0.0
Lenowisco	93,891	0	0.0	2	2.1	0	0.0
Mount Rogers	192,920	0	0.0	0	0.0	0	0.0
New River	177,865	0	0.0	0	0.0	0	0.0
Pittsylvania/Danville	105,696	0	0.0	0	0.0	0	0.0
Roanoke City	96,714	0	0.0	0	0.0	0	0.0
West Piedmont	142,109	0	0.0	0	0.0	0	0.0
Southwest Region	1,353,994	0	0.0	2	0.1	0	0.0

Chesterfield	365,827	2	0.5	0	0.0	0	0.0
Chickahominy	148,288	0	0.0	0	0.0	0	0.0
Crater	156,380	1	0.6	0	0.0	0	0.0
Henrico	310,445	1	0.3	0	0.0	0	0.0
Piedmont	104,614	0	0.0	0	0.0	0	0.0
Richmond City	205,533	1	0.5	0	0.0	0	0.0
Southside	85,882	0	0.0	0	0.0	0	0.0
Central Region	1,376,969	5	0.4	0	0.0	0	0.0

Chesapeake	225,050	0	0.0	0	0.0	0	0.0
Eastern Shore	45,713	0	0.0	0	0.0	0	0.0
Hampton	136,401	0	0.0	0	0.0	0	0.0
Norfolk	242,628	1	0.4	0	0.0	1	0.4
Peninsula	340,389	0	0.0	1	0.3	1	0.3
Portsmouth	95,684	0	0.0	0	0.0	0	0.0
Three Rivers	141,458	0	0.0	0	0.0	0	0.0
Virginia Beach	442,707	2	0.5	0	0.0	0	0.0
Western Tidewater	147,282	0	0.0	0	0.0	0	0.0
Eastern Region	1,817,312	3	0.2	1	0.1	2	0.1

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Pertussis REPORTED CASES	Pertussis RATE PER 100,000	Rabies in Animals REPORTED CASES	Rabies in Animals PERCENT OF TOTAL*	Salmonellosis, including paratyphoid fever REPORTED CASES	Salmonellosis, including paratyphoid fever RATE PER 100,000
VIRGINIA TOTAL	8,096,604	625	7.7	562	100.0	1,144	14.1
LOCALITY							
Accomack County	33,336	3	9.0	7	1.2	27	81.0
Albemarle Co., Charlottesville	144,064	5	3.5	12	2.1	21	14.6
Alleghany Co, Clifton Forge, Covington	22,114	0	0.0	9	1.6	3	13.6
Amelia County	12,805	0	0.0	1	0.2	0	0.0
Amherst County	32,167	1	3.1	6	1.1	8	24.9
Appomattox County	15,041	0	0.0	3	0.5	2	13.3
Arlington County	216,004	10	4.6	7	1.2	40	18.5
Augusta Co., Staunton	97,318	33	33.9	12	2.1	11	11.3
Bath County	4,657	0	0.0	8	1.4	0	0.0
Bedford County and City	75,427	3	4.0	14	2.5	16	21.2
Bland County	6,818	0	0.0	2	0.4	1	14.7
Botetourt County	32,928	2	6.1	7	1.2	8	24.3
Brunswick County	17,204	0	0.0	2	0.4	3	17.4
Buchanan County	23,581	0	0.0	0	0.0	2	8.5
Buckingham County	17,278	3	17.4	3	0.5	6	34.7
Campbell County	55,032	0	0.0	7	1.2	8	14.5
Caroline County	28,674	1	3.5	1	0.2	13	45.3
Carroll County	29,981	1	3.3	11	2.0	5	16.7
Charles City County	7,241	0	0.0	1	0.2	3	41.4
Charlotte County	12,505	4	32.0	3	0.5	4	32.0
Chesterfield County	320,277	11	3.4	7	1.2	37	11.6
Clarke County	14,258	1	7.0	5	0.9	1	7.0
Craig County	5,099	0	0.0	8	1.4	0	0.0
Culpeper County	47,476	13	27.4	5	0.9	5	10.5
Cumberland County	9,969	0	0.0	4	0.7	3	30.1
Dickenson County	15,741	0	0.0	0	0.0	1	6.4
Dinwiddie County	27,918	1	3.6	0	0.0	8	28.7
Essex County	11,205	0	0.0	1	0.2	3	26.8
Fairfax Co./City/Falls Church	1,135,992	55	4.8	47	8.4	106	9.3
Fauquier County	66,071	11	16.6	19	3.4	10	15.1
Floyd County	15,378	4	26.0	15	2.7	3	19.5
Fluvanna County	26,061	1	3.8	1	0.2	1	3.8
Franklin County	56,419	1	1.8	4	0.7	5	8.9
Frederick Co., Winchester	106,253	10	9.4	5	0.9	9	8.5
Giles County	17,124	1	5.8	5	0.9	1	5.8
Gloucester County	36,901	10	27.1	5	0.9	6	16.3
Goochland County	21,883	1	4.6	6	1.1	5	22.8
Grayson County	15,328	1	6.5	11	2.0	1	6.5
Greene County	18,660	3	16.1	4	0.7	5	26.8
Greensville Co., Emporia	17,983	0	0.0	1	0.2	0	0.0
Halifax County	36,056	1	2.8	7	1.2	11	30.5
Hanover County	100,342	0	0.0	16	2.8	29	28.9
Henrico County	310,445	43	13.9	9	1.6	41	13.2
Henry Co., Martinsville	67,300	0	0.0	3	0.5	13	19.3
Highland County	2,267	0	0.0	4	0.7	0	0.0
Isle of Wight County	35,356	4	11.3	5	0.9	7	19.8
James City County	68,200	10	14.7	4	0.7	6	8.8

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Pertussis REPORTED CASES	Pertussis RATE PER 100,000	Rabies in Animals REPORTED CASES	Rabies in Animals PERCENT OF TOTAL*	Salmonellosis, including paratyphoid fever REPORTED CASES	Salmonellosis, including paratyphoid fever RATE PER 100,000
VIRGINIA TOTAL	8,096,604	625	7.7	562	100.0	1,144	14.1
LOCALITY							
King and Queen County	6,997	0	0.0	1	0.2	2	28.6
King George County	24,161	1	4.1	3	0.5	11	45.5
King William County	15,981	0	0.0	2	0.4	4	25.0
Lancaster County	11,282	0	0.0	0	0.0	0	0.0
Lee County	25,146	0	0.0	0	0.0	0	0.0
Loudoun County	325,405	19	5.8	19	3.4	37	11.4
Louisa County	33,395	2	6.0	2	0.4	3	9.0
Lunenburg County	12,874	0	0.0	0	0.0	0	0.0
Madison County	13,169	6	45.6	2	0.4	0	0.0
Mathews County	8,962	1	11.2	2	0.4	0	0.0
Mecklenburg County	32,622	1	3.1	3	0.5	4	12.3
Middlesex County	10,854	1	9.2	0	0.0	3	27.6
Montgomery County	94,342	2	2.1	19	3.4	11	11.7
Nelson County	15,097	1	6.6	0	0.0	3	19.9
New Kent County	18,822	4	21.3	2	0.4	6	31.9
Northampton County	12,377	0	0.0	1	0.2	9	72.7
Northumberland County	12,461	0	0.0	2	0.4	3	24.1
Nottoway County	15,840	0	0.0	1	0.2	3	18.9
Orange County	33,938	5	14.7	4	0.7	3	8.8
Page County	23,958	11	45.9	2	0.4	7	29.2
Patrick County	18,390	0	0.0	7	1.2	4	21.8
Pittsylvania County	62,844	3	4.8	11	2.0	6	9.5
Powhatan County	28,110	1	3.6	2	0.4	2	7.1
Prince Edward County	23,343	2	8.6	7	1.2	7	30.0
Prince George County	36,555	3	8.2	1	0.2	9	24.6
Pr. William Co./Manassas/M. Park	473,638	34	7.2	16	2.8	42	8.9
Pulaski County	34,607	5	14.4	3	0.5	8	23.1
Rappahannock County	7,444	1	13.4	6	1.1	0	0.0
Richmond County	9,220	0	0.0	0	0.0	0	0.0
Roanoke County	92,740	16	17.3	12	2.1	17	18.3
Rockbridge Co., Lexington	29,370	8	27.2	6	1.1	2	6.8
Rockingham Co., Harrisonburg	126,562	56	44.2	9	1.6	27	21.3
Russell County	28,749	0	0.0	1	0.2	2	7.0
Scott County	23,126	0	0.0	0	0.0	3	13.0
Shenandoah County	42,289	4	9.5	12	2.1	11	26.0
Smyth County	32,029	1	3.1	3	0.5	7	21.9
Southampton County	18,408	1	5.4	1	0.2	3	16.3
Spotsylvania County	124,327	20	16.1	11	2.0	17	13.7
Stafford County	132,133	3	2.3	9	1.6	24	18.2
Surry County	6,931	0	0.0	1	0.2	0	0.0
Sussex County	12,087	0	0.0	0	0.0	3	24.8
Tazewell County	44,715	1	2.2	2	0.4	6	13.4
Warren County	37,749	0	0.0	2	0.4	9	23.8
Washington County	54,827	17	31.0	7	1.2	7	12.8
Westmoreland County	17,595	2	11.4	1	0.2	3	17.1
Wise Co., Norton	45,619	0	0.0	0	0.0	8	17.5
Wythe County	29,204	1	3.4	5	0.9	5	17.1
York Co., Poquoson	78,134	8	10.2	1	0.2	13	16.6

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Pertussis: REPORTED CASES	Pertussis: RATE PER 100,000	Rabies in Animals: REPORTED CASES	Rabies in Animals: PERCENT OF TOTAL*	Salmonellosis, including paratyphoid fever: REPORTED CASES	Salmonellosis, including paratyphoid fever: RATE PER 100,000
VIRGINIA TOTAL	8,096,604	625	7.7	562	100.0	1,144	14.1
LOCALITY							
Alexandria	144,301	5	3.5	3	0.5	13	9.0
Bristol	17,750	2	11.3	0	0.0	1	5.6
Buena Vista	6,636	2	30.1	1	0.2	2	30.1
Chesapeake	225,050	19	8.4	2	0.4	37	16.4
Colonial Heights	17,440	0	0.0	0	0.0	5	28.7
Danville	42,852	1	2.3	1	0.2	2	4.7
Franklin City	8,588	2	23.3	0	0.0	5	58.2
Fredericksburg	25,691	3	11.7	0	0.0	2	7.8
Galax	6,983	1	14.3	0	0.0	0	0.0
Hampton	136,401	2	1.5	6	1.1	8	5.9
Hopewell	22,580	1	4.4	1	0.2	5	22.1
Lynchburg	76,504	0	0.0	5	0.9	5	6.5
Newport News	179,611	11	6.1	6	1.1	33	18.4
Norfolk	242,628	13	5.4	1	0.2	24	9.9
Petersburg	32,326	0	0.0	1	0.2	1	3.1
Portsmouth	95,684	5	5.2	0	0.0	6	6.3
Radford	16,414	2	12.2	0	0.0	2	12.2
Richmond City	205,533	9	4.4	1	0.2	12	5.8
Roanoke City	96,714	3	3.1	3	0.5	9	9.3
Salem	24,961	2	8.0	3	0.5	3	12.0
Suffolk	84,930	3	3.5	3	0.5	27	31.8
Virginia Beach	442,707	34	7.7	6	1.1	61	13.8
Waynesboro	21,311	13	61.0	0	0.0	5	23.5
Williamsburg	14,444	3	20.8	1	0.2	24	166.2

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Pertussis**		**Rabies in Animals**		**Salmonellosis, including paratyphoid fever**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	PERCENT OF TOTAL*	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	625	7.7	562	100.0	1,144	14.1
DISTRICT/REGION							

Central Shenandoah	288,121	112	38.9	40	7.1	47	16.3
Lord Fairfax	224,507	26	11.6	26	4.6	37	16.5
Rappahannock	334,986	28	8.4	24	4.3	67	20.0
Rappahannock/Rapidan	168,098	36	21.4	36	6.4	18	10.7
Thomas Jefferson	237,277	12	5.1	19	3.4	33	13.9
Northwest Region	1,252,989	214	17.1	145	25.8	202	16.1

Alexandria	144,301	5	3.5	3	0.5	13	9.0
Arlington	216,004	10	4.6	7	1.2	40	18.5
Fairfax	1,135,992	55	4.8	47	8.4	106	9.3
Loudoun	325,405	19	5.8	19	3.4	37	11.4
Prince William	473,638	34	7.2	16	2.8	42	8.9
Northern Region	2,295,340	123	5.4	92	16.4	238	10.4

Alleghany	177,842	20	11.2	39	6.9	31	17.4
Central Virginia	254,171	4	1.6	35	6.2	39	15.3
Cumberland Plateau	112,786	1	0.9	3	0.5	11	9.8
Lenowisco	93,891	0	0.0	0	0.0	11	11.7
Mount Rogers	192,920	24	12.4	39	6.9	27	14.0
New River	177,865	14	7.9	42	7.5	25	14.1
Pittsylvania/Danville	105,696	4	3.8	12	2.1	8	7.6
Roanoke City	96,714	3	3.1	3	0.5	9	9.3
West Piedmont	142,109	1	0.7	14	2.5	22	15.5
Southwest Region	1,353,994	71	5.2	187	33.3	183	13.5

Chesterfield	365,827	12	3.3	9	1.6	44	12.0
Chickahominy	148,288	5	3.4	25	4.4	43	29.0
Crater	156,380	5	3.2	5	0.9	26	16.6
Henrico	310,445	43	13.9	9	1.6	41	13.2
Piedmont	104,614	9	8.6	19	3.4	23	22.0
Richmond City	205,533	9	4.4	1	0.2	12	5.8
Southside	85,882	2	2.3	12	2.1	18	21.0
Central Region	1,376,969	85	6.2	80	14.2	207	15.0

Chesapeake	225,050	19	8.4	2	0.4	37	16.4
Eastern Shore	45,713	3	6.6	8	1.4	36	78.8
Hampton	136,401	2	1.5	6	1.1	8	5.9
Norfolk	242,628	13	5.4	1	0.2	24	9.9
Peninsula	340,389	32	9.4	12	2.1	76	22.3
Portsmouth	95,684	5	5.2	0	0.0	6	6.3
Three Rivers	141,458	14	9.9	14	2.5	24	17.0
Virginia Beach	442,707	34	7.7	6	1.1	61	13.8
Western Tidewater	147,282	10	6.8	9	1.6	42	28.5
Eastern Region	1,817,312	132	7.3	58	10.3	314	17.3
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* Population rate is not applicable for rabies in animals.

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Shigellosis**		**Spotted Fever Rickettsiosis, including RMSF**		***Staphylococcus aureus* Infection, Invasive (MRSA)**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	91	1.1	461	5.7	1,294	16.0
LOCALITY							
Accomack County	33,336	1	3.0	4	12.0	1	3.0
Albemarle Co., Charlottesville	144,064	3	2.1	14	9.7	6	4.2
Alleghany Co, Clifton Forge, Covington	22,114	0	0.0	0	0.0	4	18.1
Amelia County	12,805	0	0.0	4	31.2	4	31.2
Amherst County	32,167	0	0.0	4	12.4	5	15.5
Appomattox County	15,041	0	0.0	20	133.0	2	13.3
Arlington County	216,004	6	2.8	5	2.3	22	10.2
Augusta Co., Staunton	97,318	1	1.0	1	1.0	9	9.2
Bath County	4,657	0	0.0	0	0.0	1	21.5
Bedford County and City	75,427	0	0.0	9	11.9	12	15.9
Bland County	6,818	0	0.0	0	0.0	2	29.3
Botetourt County	32,928	0	0.0	2	6.1	3	9.1
Brunswick County	17,204	0	0.0	3	17.4	3	17.4
Buchanan County	23,581	0	0.0	0	0.0	2	8.5
Buckingham County	17,278	0	0.0	5	28.9	1	5.8
Campbell County	55,032	0	0.0	8	14.5	3	5.5
Caroline County	28,674	0	0.0	6	20.9	10	34.9
Carroll County	29,981	0	0.0	1	3.3	2	6.7
Charles City County	7,241	0	0.0	1	13.8	2	27.6
Charlotte County	12,505	0	0.0	7	56.0	2	16.0
Chesterfield County	320,277	2	0.6	39	12.2	47	14.7
Clarke County	14,258	0	0.0	2	14.0	4	28.1
Craig County	5,099	0	0.0	0	0.0	1	19.6
Culpeper County	47,476	0	0.0	0	0.0	9	19.0
Cumberland County	9,969	0	0.0	0	0.0	1	10.0
Dickenson County	15,741	0	0.0	0	0.0	3	19.1
Dinwiddie County	27,918	0	0.0	8	28.7	1	3.6
Essex County	11,205	0	0.0	6	53.5	0	0.0
Fairfax Co./City/Falls Church	1,135,992	16	1.4	26	2.3	96	8.5
Fauquier County	66,071	0	0.0	8	12.1	11	16.6
Floyd County	15,378	0	0.0	1	6.5	2	13.0
Fluvanna County	26,061	0	0.0	3	11.5	3	11.5
Franklin County	56,419	0	0.0	1	1.8	12	21.3
Frederick Co., Winchester	106,253	0	0.0	1	0.9	13	12.2
Giles County	17,124	0	0.0	0	0.0	9	52.6
Gloucester County	36,901	0	0.0	1	2.7	0	0.0
Goochland County	21,883	0	0.0	3	13.7	4	18.3
Grayson County	15,328	0	0.0	0	0.0	1	6.5
Greene County	18,660	0	0.0	2	10.7	2	10.7
Greensville Co., Emporia	17,983	0	0.0	2	11.1	6	33.4
Halifax County	36,056	0	0.0	3	8.3	13	36.1
Hanover County	100,342	0	0.0	13	13.0	10	10.0
Henrico County	310,445	8	2.6	21	6.8	59	19.0
Henry Co., Martinsville	67,300	0	0.0	23	34.2	19	28.2
Highland County	2,267	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,356	0	0.0	1	2.8	8	22.6
James City County	68,200	0	0.0	2	2.9	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Shigellosis**		**Spotted Fever Rickettsiosis, including RMSF**		***Staphylococcus aureus* Infection, Invasive (MRSA)**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	91	1.1	461	5.7	1,294	16.0
LOCALITY							
King and Queen County	6,997	0	0.0	2	28.6	0	0.0
King George County	24,161	1	4.1	9	37.3	8	33.1
King William County	15,981	0	0.0	3	18.8	2	12.5
Lancaster County	11,282	0	0.0	0	0.0	1	8.9
Lee County	25,146	0	0.0	0	0.0	8	31.8
Loudoun County	325,405	7	2.2	0	0.0	17	5.2
Louisa County	33,395	0	0.0	8	24.0	7	21.0
Lunenburg County	12,874	0	0.0	4	31.1	0	0.0
Madison County	13,169	0	0.0	1	7.6	1	7.6
Mathews County	8,962	0	0.0	1	11.2	1	11.2
Mecklenburg County	32,622	0	0.0	8	24.5	3	9.2
Middlesex County	10,854	0	0.0	1	9.2	1	9.2
Montgomery County	94,342	0	0.0	1	1.1	12	12.7
Nelson County	15,097	0	0.0	4	26.5	0	0.0
New Kent County	18,822	1	5.3	5	26.6	4	21.3
Northampton County	12,377	0	0.0	4	32.3	4	32.3
Northumberland County	12,461	0	0.0	1	8.0	1	8.0
Nottoway County	15,840	0	0.0	8	50.5	3	18.9
Orange County	33,938	0	0.0	4	11.8	3	8.8
Page County	23,958	0	0.0	0	0.0	0	0.0
Patrick County	18,390	0	0.0	2	10.9	4	21.8
Pittsylvania County	62,844	0	0.0	18	28.6	15	23.9
Powhatan County	28,110	0	0.0	5	17.8	9	32.0
Prince Edward County	23,343	1	4.3	4	17.1	8	34.3
Prince George County	36,555	0	0.0	2	5.5	4	10.9
Pr. William Co./Manassas/M. Park	473,638	8	1.7	4	0.8	46	9.7
Pulaski County	34,607	1	2.9	1	2.9	15	43.3
Rappahannock County	7,444	0	0.0	0	0.0	0	0.0
Richmond County	9,220	0	0.0	1	10.8	1	10.8
Roanoke County	92,740	0	0.0	6	6.5	18	19.4
Rockbridge Co., Lexington	29,370	0	0.0	0	0.0	4	13.6
Rockingham Co., Harrisonburg	126,562	2	1.6	1	0.8	22	17.4
Russell County	28,749	0	0.0	0	0.0	10	34.8
Scott County	23,126	0	0.0	0	0.0	8	34.6
Shenandoah County	42,289	1	2.4	5	11.8	8	18.9
Smyth County	32,029	0	0.0	0	0.0	5	15.6
Southampton County	18,408	0	0.0	0	0.0	4	21.7
Spotsylvania County	124,327	0	0.0	14	11.3	38	30.6
Stafford County	132,133	1	0.8	12	9.1	20	15.1
Surry County	6,931	0	0.0	0	0.0	1	14.4
Sussex County	12,087	0	0.0	4	33.1	3	24.8
Tazewell County	44,715	0	0.0	0	0.0	11	24.6
Warren County	37,749	0	0.0	1	2.6	11	29.1
Washington County	54,827	0	0.0	0	0.0	16	29.2
Westmoreland County	17,595	0	0.0	0	0.0	1	5.7
Wise Co., Norton	45,619	0	0.0	0	0.0	12	26.3
Wythe County	29,204	0	0.0	0	0.0	4	13.7
York Co., Poquoson	78,134	0	0.0	5	6.4	6	7.7

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Shigellosis**		**Spotted Fever Rickettsiosis, including RMSF**		***Staphylococcus aureus* Infection, Invasive (MRSA)**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	91	1.1	461	5.7	1,294	16.0
LOCALITY							
Alexandria	144,301	10	6.9	2	1.4	23	15.9
Bristol	17,750	0	0.0	0	0.0	4	22.5
Buena Vista	6,636	0	0.0	0	0.0	0	0.0
Chesapeake	225,050	3	1.3	5	2.2	60	26.7
Colonial Heights	17,440	0	0.0	0	0.0	3	17.2
Danville	42,852	0	0.0	16	37.3	24	56.0
Franklin City	8,588	1	11.6	0	0.0	4	46.6
Fredericksburg	25,691	0	0.0	1	3.9	11	42.8
Galax	6,983	0	0.0	1	14.3	1	14.3
Hampton	136,401	5	3.7	1	0.7	35	25.7
Hopewell	22,580	1	4.4	2	8.9	3	13.3
Lynchburg	76,504	1	1.3	4	5.2	6	7.8
Newport News	179,611	1	0.6	2	1.1	26	14.5
Norfolk	242,628	4	1.6	1	0.4	47	19.4
Petersburg	32,326	0	0.0	1	3.1	5	15.5
Portsmouth	95,684	0	0.0	1	1.0	28	29.3
Radford	16,414	0	0.0	0	0.0	5	30.5
Richmond City	205,533	1	0.5	1	0.5	53	25.8
Roanoke City	96,714	0	0.0	1	1.0	39	40.3
Salem	24,961	0	0.0	1	4.0	5	20.0
Suffolk	84,930	0	0.0	1	1.2	24	28.3
Virginia Beach	442,707	4	0.9	2	0.5	66	14.9
Waynesboro	21,311	0	0.0	1	4.7	0	0.0
Williamsburg	14,444	0	0.0	8	55.4	12	83.1

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Shigellosis**		**Spotted Fever Rickettsiosis, including RMSF**		***Staphylococcus aureus* Infection, Invasive (MRSA)**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	91	1.1	461	5.7	1,294	16.0
DISTRICT/REGION							

Central Shenandoah	288,121	3	1.0	3	1.0	36	12.5
Lord Fairfax	224,507	1	0.4	9	4.0	36	16.0
Rappahannock	334,986	2	0.6	42	12.5	87	26.0
Rappahannock/Rapidan	168,098	0	0.0	13	7.7	24	14.3
Thomas Jefferson	237,277	3	1.3	31	13.1	18	7.6
Northwest Region	1,252,989	9	0.7	98	7.8	201	16.0

Alexandria	144,301	10	6.9	2	1.4	23	15.9
Arlington	216,004	6	2.8	5	2.3	22	10.2
Fairfax	1,135,992	16	1.4	26	2.3	96	8.5
Loudoun	325,405	7	2.2	0	0.0	17	5.2
Prince William	473,638	8	1.7	4	0.8	46	9.7
Northern Region	2,295,340	47	2.0	37	1.6	204	8.9

Alleghany	177,842	0	0.0	9	5.1	31	17.4
Central Virginia	254,171	1	0.4	45	17.7	28	11.0
Cumberland Plateau	112,786	0	0.0	0	0.0	26	23.1
Lenowisco	93,891	0	0.0	0	0.0	28	29.8
Mount Rogers	192,920	0	0.0	2	1.0	35	18.1
New River	177,865	1	0.6	3	1.7	43	24.2
Pittsylvania/Danville	105,696	0	0.0	34	32.2	39	36.9
Roanoke City	96,714	0	0.0	1	1.0	39	40.3
West Piedmont	142,109	0	0.0	26	18.3	35	24.6
Southwest Region	1,353,994	2	0.1	120	8.9	304	22.5

Chesterfield	365,827	2	0.5	44	12.0	59	16.1
Chickahominy	148,288	1	0.7	22	14.8	20	13.5
Crater	156,380	1	0.6	19	12.1	23	14.7
Henrico	310,445	8	2.6	21	6.8	59	19.0
Piedmont	104,614	1	1.0	32	30.6	19	18.2
Richmond City	205,533	1	0.5	1	0.5	53	25.8
Southside	85,882	0	0.0	14	16.3	19	22.1
Central Region	1,376,969	14	1.0	153	11.1	252	18.3

Chesapeake	225,050	3	1.3	5	2.2	60	26.7
Eastern Shore	45,713	1	2.2	8	17.5	5	10.9
Hampton	136,401	5	3.7	1	0.7	35	25.7
Norfolk	242,628	4	1.6	1	0.4	47	19.4
Peninsula	340,389	1	0.3	17	5.0	44	12.9
Portsmouth	95,684	0	0.0	1	1.0	28	29.3
Three Rivers	141,458	0	0.0	16	11.3	8	5.7
Virginia Beach	442,707	4	0.9	2	0.5	66	14.9
Western Tidewater	147,282	1	0.7	2	1.4	40	27.2
Eastern Region	1,817,312	19	1.0	53	2.9	333	18.3

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Streptococcal Disease, Group A, Invasive or TSS**		**Syphilis, Early**		**Tuberculosis**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	168	2.1	593	7.3	235	2.9
LOCALITY							
Accomack County	33,336	0	0.0	0	0.0	0	0.0
Albemarle Co., Charlottesville	144,064	7	4.9	6	4.2	3	2.1
Alleghany Co, Clifton Forge, Covington	22,114	0	0.0	0	0.0	0	0.0
Amelia County	12,805	0	0.0	0	0.0	0	0.0
Amherst County	32,167	0	0.0	0	0.0	0	0.0
Appomattox County	15,041	0	0.0	1	6.6	0	0.0
Arlington County	216,004	5	2.3	35	16.2	13	6.0
Augusta Co., Staunton	97,318	2	2.1	1	1.0	0	0.0
Bath County	4,657	0	0.0	0	0.0	0	0.0
Bedford County and City	75,427	0	0.0	1	1.3	0	0.0
Bland County	6,818	0	0.0	0	0.0	0	0.0
Botetourt County	32,928	0	0.0	0	0.0	0	0.0
Brunswick County	17,204	0	0.0	3	17.4	0	0.0
Buchanan County	23,581	0	0.0	0	0.0	1	4.2
Buckingham County	17,278	2	11.6	0	0.0	0	0.0
Campbell County	55,032	4	7.3	1	1.8	1	1.8
Caroline County	28,674	0	0.0	2	7.0	0	0.0
Carroll County	29,981	1	3.3	0	0.0	0	0.0
Charles City County	7,241	0	0.0	0	0.0	1	13.8
Charlotte County	12,505	0	0.0	0	0.0	0	0.0
Chesterfield County	320,277	12	3.7	20	6.2	5	1.6
Clarke County	14,258	1	7.0	0	0.0	0	0.0
Craig County	5,099	0	0.0	0	0.0	0	0.0
Culpeper County	47,476	0	0.0	0	0.0	2	4.2
Cumberland County	9,969	0	0.0	0	0.0	0	0.0
Dickenson County	15,741	0	0.0	0	0.0	0	0.0
Dinwiddie County	27,918	0	0.0	1	3.6	0	0.0
Essex County	11,205	0	0.0	2	17.8	0	0.0
Fairfax Co./City/Falls Church	1,135,992	14	1.2	64	5.6	92	8.1
Fauquier County	66,071	1	1.5	0	0.0	0	0.0
Floyd County	15,378	0	0.0	1	6.5	0	0.0
Fluvanna County	26,061	2	7.7	0	0.0	0	0.0
Franklin County	56,419	2	3.5	0	0.0	0	0.0
Frederick Co., Winchester	106,253	1	0.9	0	0.0	0	0.0
Giles County	17,124	0	0.0	0	0.0	0	0.0
Gloucester County	36,901	0	0.0	0	0.0	0	0.0
Goochland County	21,883	0	0.0	0	0.0	0	0.0
Grayson County	15,328	0	0.0	0	0.0	0	0.0
Greene County	18,660	1	5.4	0	0.0	0	0.0
Greensville Co., Emporia	17,983	0	0.0	1	5.6	0	0.0
Halifax County	36,056	1	2.8	1	2.8	1	2.8
Hanover County	100,342	2	2.0	0	0.0	1	1.0
Henrico County	310,445	12	3.9	30	9.7	8	2.6
Henry Co., Martinsville	67,300	0	0.0	1	1.5	0	0.0
Highland County	2,267	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,356	0	0.0	1	2.8	0	0.0
James City County	68,200	1	1.5	2	2.9	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Streptococcal Disease, Group A, Invasive or TSS**		**Syphilis, Early**		**Tuberculosis**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	168	2.1	593	7.3	235	2.9
LOCALITY							
King and Queen County	6,997	0	0.0	0	0.0	0	0.0
King George County	24,161	0	0.0	0	0.0	1	4.1
King William County	15,981	0	0.0	4	25.0	0	0.0
Lancaster County	11,282	0	0.0	0	0.0	0	0.0
Lee County	25,146	0	0.0	1	4.0	1	4.0
Loudoun County	325,405	4	1.2	11	3.4	15	4.6
Louisa County	33,395	3	9.0	2	6.0	0	0.0
Lunenburg County	12,874	0	0.0	0	0.0	0	0.0
Madison County	13,169	0	0.0	0	0.0	0	0.0
Mathews County	8,962	0	0.0	0	0.0	0	0.0
Mecklenburg County	32,622	2	6.1	1	3.1	0	0.0
Middlesex County	10,854	0	0.0	0	0.0	0	0.0
Montgomery County	94,342	0	0.0	1	1.1	2	2.1
Nelson County	15,097	1	6.6	0	0.0	0	0.0
New Kent County	18,822	0	0.0	1	5.3	0	0.0
Northampton County	12,377	0	0.0	0	0.0	2	16.2
Northumberland County	12,461	0	0.0	0	0.0	1	8.0
Nottoway County	15,840	1	6.3	0	0.0	0	0.0
Orange County	33,938	2	5.9	1	2.9	0	0.0
Page County	23,958	1	4.2	0	0.0	0	0.0
Patrick County	18,390	2	10.9	0	0.0	0	0.0
Pittsylvania County	62,844	2	3.2	1	1.6	0	0.0
Powhatan County	28,110	1	3.6	1	3.6	0	0.0
Prince Edward County	23,343	3	12.9	1	4.3	5	21.4
Prince George County	36,555	0	0.0	1	2.7	0	0.0
Pr. William Co./Manassas/M. Park	473,638	8	1.7	23	4.9	16	3.4
Pulaski County	34,607	0	0.0	0	0.0	3	8.7
Rappahannock County	7,444	0	0.0	0	0.0	0	0.0
Richmond County	9,220	0	0.0	0	0.0	0	0.0
Roanoke County	92,740	1	1.1	4	4.3	0	0.0
Rockbridge Co., Lexington	29,370	1	3.4	1	3.4	0	0.0
Rockingham Co., Harrisonburg	126,562	2	1.6	2	1.6	4	3.2
Russell County	28,749	1	3.5	0	0.0	0	0.0
Scott County	23,126	0	0.0	0	0.0	1	4.3
Shenandoah County	42,289	5	11.8	0	0.0	2	4.7
Smyth County	32,029	0	0.0	0	0.0	1	3.1
Southampton County	18,408	0	0.0	0	0.0	0	0.0
Spotsylvania County	124,327	2	1.6	4	3.2	0	0.0
Stafford County	132,133	4	3.0	7	5.3	1	0.8
Surry County	6,931	0	0.0	0	0.0	0	0.0
Sussex County	12,087	0	0.0	1	8.3	0	0.0
Tazewell County	44,715	0	0.0	0	0.0	0	0.0
Warren County	37,749	1	2.6	0	0.0	0	0.0
Washington County	54,827	1	1.8	1	1.8	0	0.0
Westmoreland County	17,595	0	0.0	0	0.0	0	0.0
Wise Co., Norton	45,619	0	0.0	0	0.0	1	2.2
Wythe County	29,204	0	0.0	0	0.0	0	0.0
York Co., Poquoson	78,134	0	0.0	1	1.3	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:

LOCALITY/DISTRICT/REGION	2011 POPULATION	Streptococcal Disease, Group A, Invasive or TSS: REPORTED CASES	Streptococcal Disease, Group A, Invasive or TSS: RATE PER 100,000	Syphilis, Early: REPORTED CASES	Syphilis, Early: RATE PER 100,000	Tuberculosis: REPORTED CASES	Tuberculosis: RATE PER 100,000
VIRGINIA TOTAL	8,096,604	168	2.1	593	7.3	235	2.9
LOCALITY							
Alexandria	144,301	2	1.4	35	24.3	6	4.2
Bristol	17,750	1	5.6	0	0.0	0	0.0
Buena Vista	6,636	0	0.0	0	0.0	0	0.0
Chesapeake	225,050	5	2.2	16	7.1	2	0.9
Colonial Heights	17,440	0	0.0	0	0.0	1	5.7
Danville	42,852	1	2.3	2	4.7	1	2.3
Franklin City	8,588	0	0.0	0	0.0	0	0.0
Fredericksburg	25,691	0	0.0	4	15.6	1	3.9
Galax	6,983	0	0.0	1	14.3	0	0.0
Hampton	136,401	3	2.2	23	16.9	4	2.9
Hopewell	22,580	0	0.0	2	8.9	1	4.4
Lynchburg	76,504	2	2.6	7	9.1	0	0.0
Newport News	179,611	2	1.1	29	16.1	5	2.8
Norfolk	242,628	8	3.3	44	18.1	7	2.9
Petersburg	32,326	0	0.0	8	24.7	0	0.0
Portsmouth	95,684	3	3.1	23	24.0	1	1.0
Radford	16,414	3	18.3	1	6.1	0	0.0
Richmond City	205,533	7	3.4	77	37.5	7	3.4
Roanoke City	96,714	1	1.0	16	16.5	2	2.1
Salem	24,961	0	0.0	3	12.0	0	0.0
Suffolk	84,930	2	2.4	6	7.1	4	4.7
Virginia Beach	442,707	7	1.6	49	11.1	8	1.8
Waynesboro	21,311	2	9.4	2	9.4	1	4.7
Williamsburg	14,444	0	0.0	1	6.9	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2012:		**Streptococcal Disease, Group A, Invasive or TSS**		**Syphilis, Early**		**Tuberculosis**	
LOCALITY/DISTRICT/REGION	2011 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,096,604	168	2.1	593	7.3	235	2.9
DISTRICT/REGION							

Central Shenandoah	288,121	7	2.4	6	2.1	5	1.7
Lord Fairfax	224,507	9	4.0	0	0.0	2	0.9
Rappahannock	334,986	6	1.8	17	5.1	3	0.9
Rappahannock/Rapidan	168,098	3	1.8	1	0.6	2	1.2
Thomas Jefferson	237,277	14	5.9	8	3.4	3	1.3
Northwest Region	1,252,989	39	3.1	32	2.6	15	1.2

Alexandria	144,301	2	1.4	35	24.3	6	4.2
Arlington	216,004	5	2.3	35	16.2	13	6.0
Fairfax	1,135,992	14	1.2	64	5.6	92	8.1
Loudoun	325,405	4	1.2	11	3.4	15	4.6
Prince William	473,638	8	1.7	23	4.9	16	3.4
Northern Region	2,295,340	33	1.4	168	7.3	142	6.2

Alleghany	177,842	1	0.6	7	3.9	0	0.0
Central Virginia	254,171	6	2.4	10	3.9	1	0.4
Cumberland Plateau	112,786	1	0.9	0	0.0	1	0.9
Lenowisco	93,891	0	0.0	1	1.1	3	3.2
Mount Rogers	192,920	3	1.6	2	1.0	1	0.5
New River	177,865	3	1.7	3	1.7	5	2.8
Pittsylvania/Danville	105,696	3	2.8	3	2.8	1	0.9
Roanoke City	96,714	1	1.0	16	16.5	2	2.1
West Piedmont	142,109	4	2.8	1	0.7	0	0.0
Southwest Region	1,353,994	22	1.6	43	3.2	14	1.0

Chesterfield	365,827	13	3.6	21	5.7	6	1.6
Chickahominy	148,288	2	1.3	1	0.7	2	1.3
Crater	156,380	0	0.0	14	9.0	1	0.6
Henrico	310,445	12	3.9	30	9.7	8	2.6
Piedmont	104,614	6	5.7	1	1.0	5	4.8
Richmond City	205,533	7	3.4	77	37.5	7	3.4
Southside	85,882	3	3.5	5	5.8	1	1.2
Central Region	1,376,969	43	3.1	149	10.8	30	2.2

Chesapeake	225,050	5	2.2	16	7.1	2	0.9
Eastern Shore	45,713	0	0.0	0	0.0	2	4.4
Hampton	136,401	3	2.2	23	16.9	4	2.9
Norfolk	242,628	8	3.3	44	18.1	7	2.9
Peninsula	340,389	3	0.9	33	9.7	5	1.5
Portsmouth	95,684	3	3.1	23	24.0	1	1.0
Three Rivers	141,458	0	0.0	6	4.2	1	0.7
Virginia Beach	442,707	7	1.6	49	11.1	8	1.8
Western Tidewater	147,282	2	1.4	7	4.8	4	2.7
Eastern Region	1,817,312	31	1.7	201	11.1	34	1.9

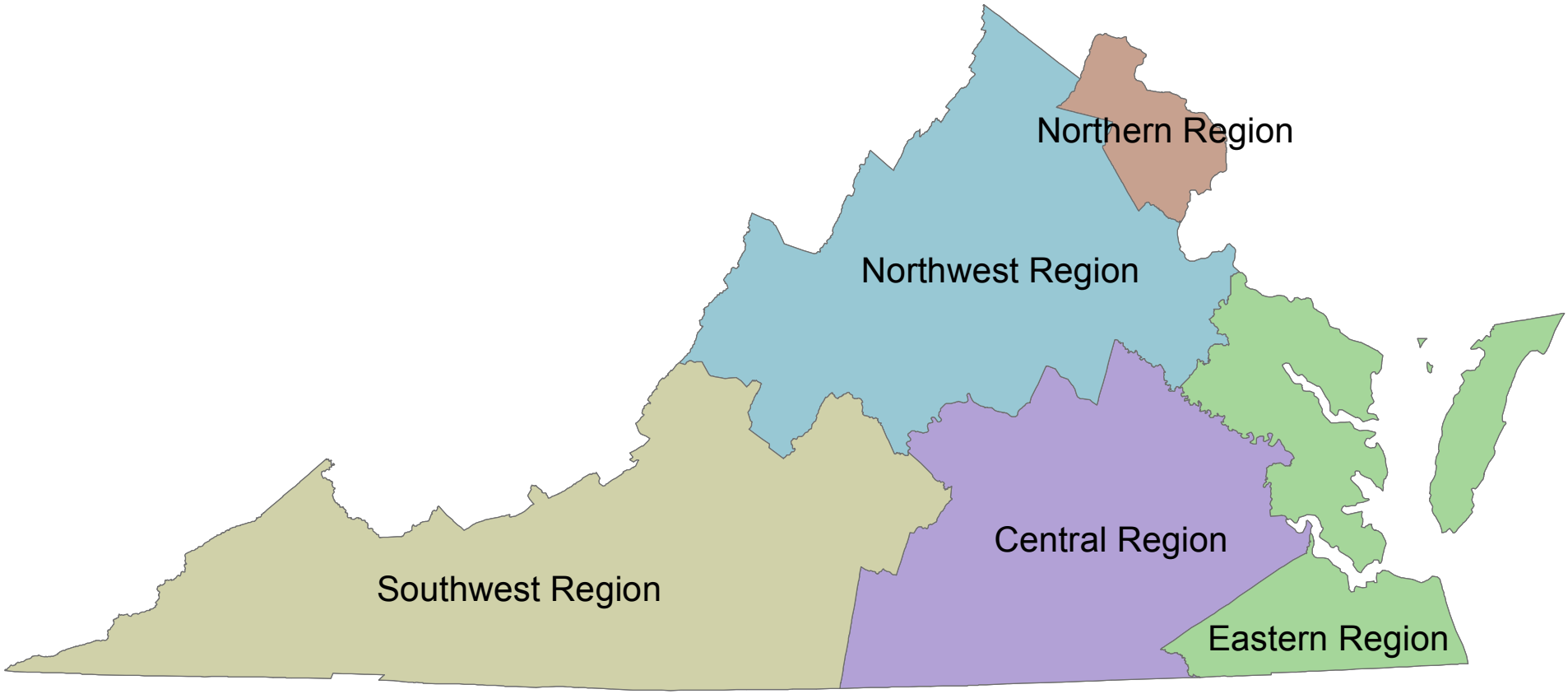
MAPS OF INCIDENCE RATES

OF

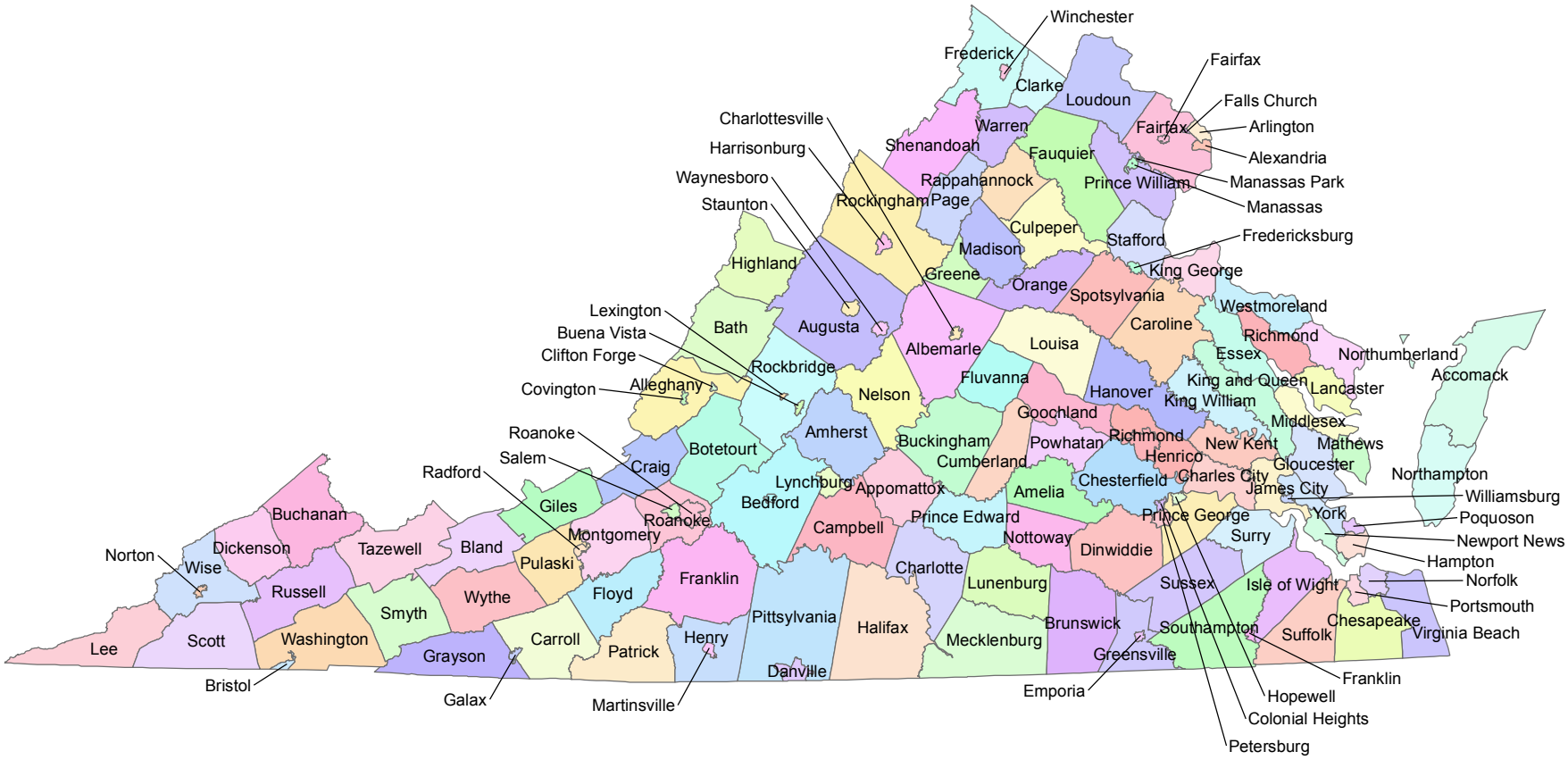
SELECTED DISEASES

BY LOCALITY

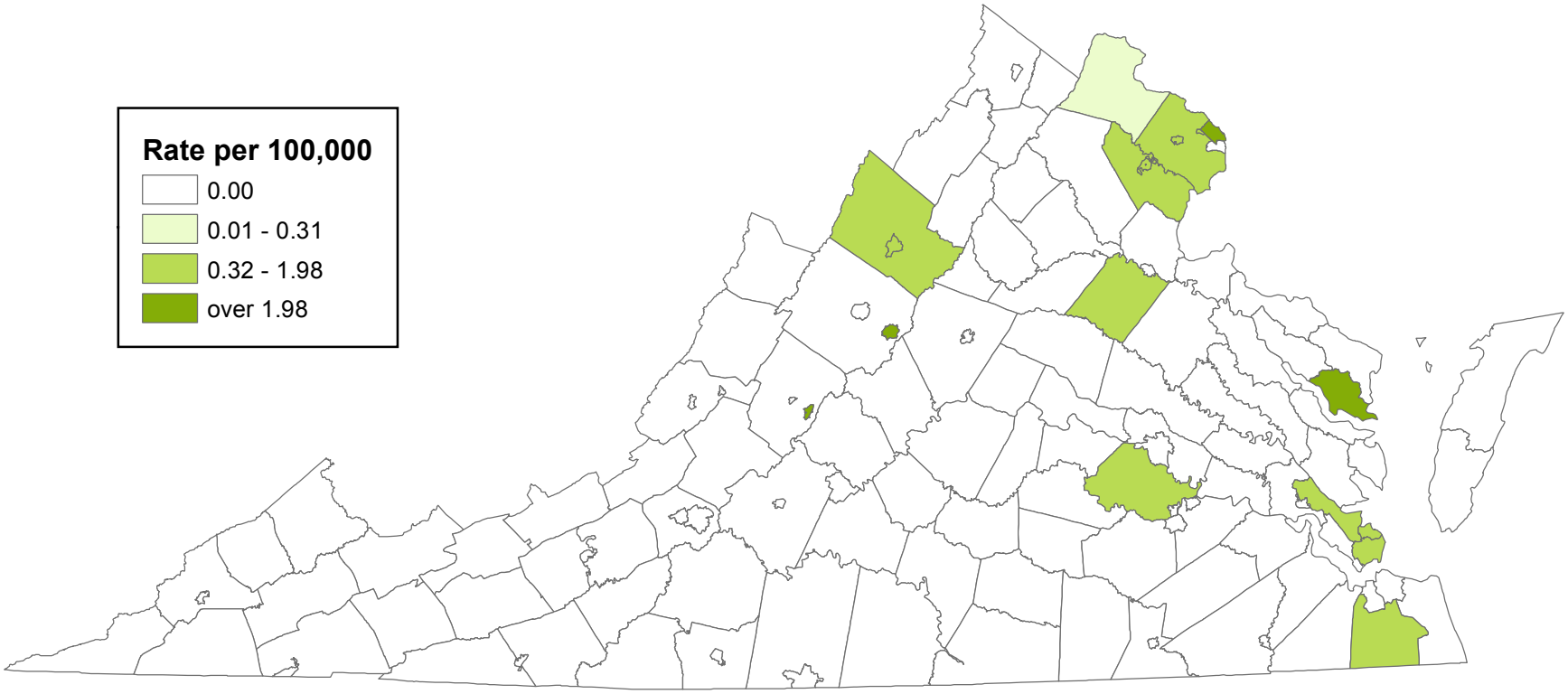
Health Planning Regions in Virginia



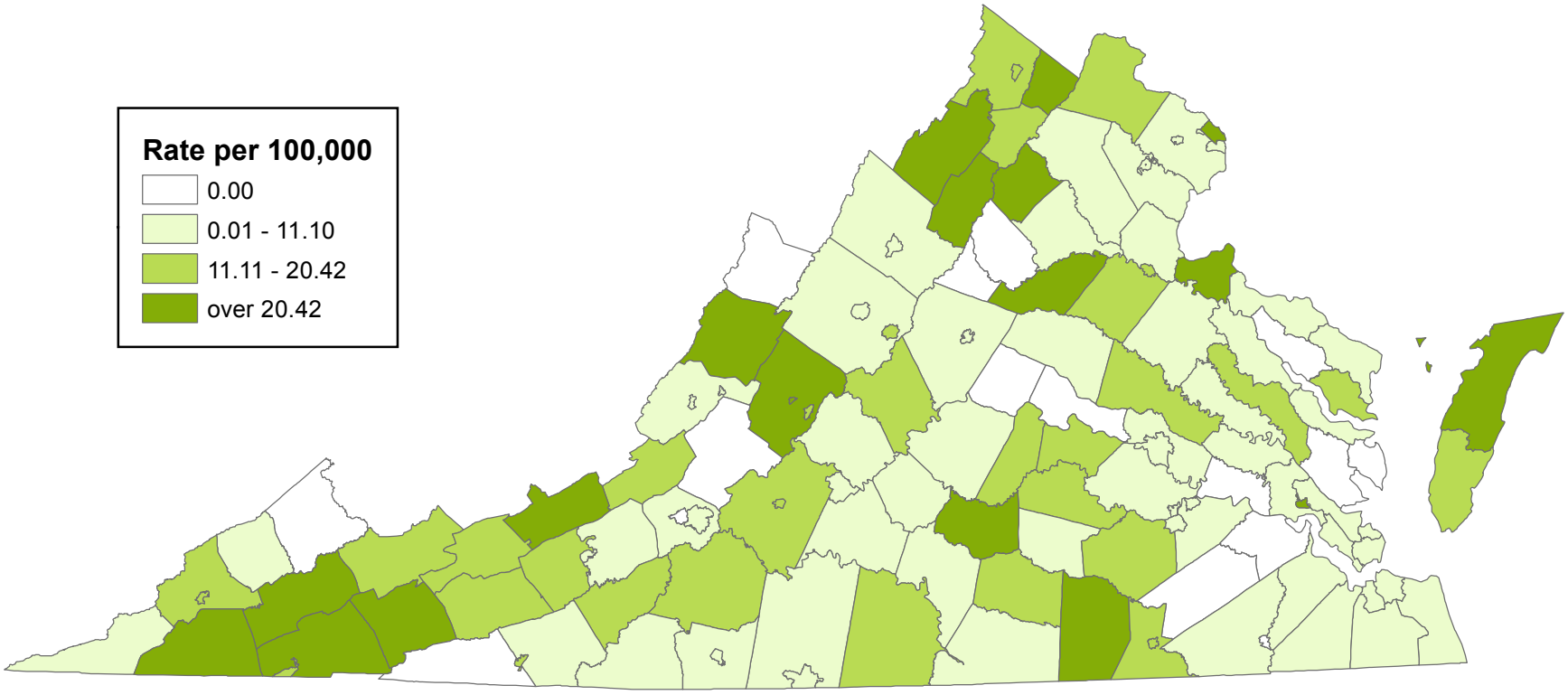
Virginia Localities



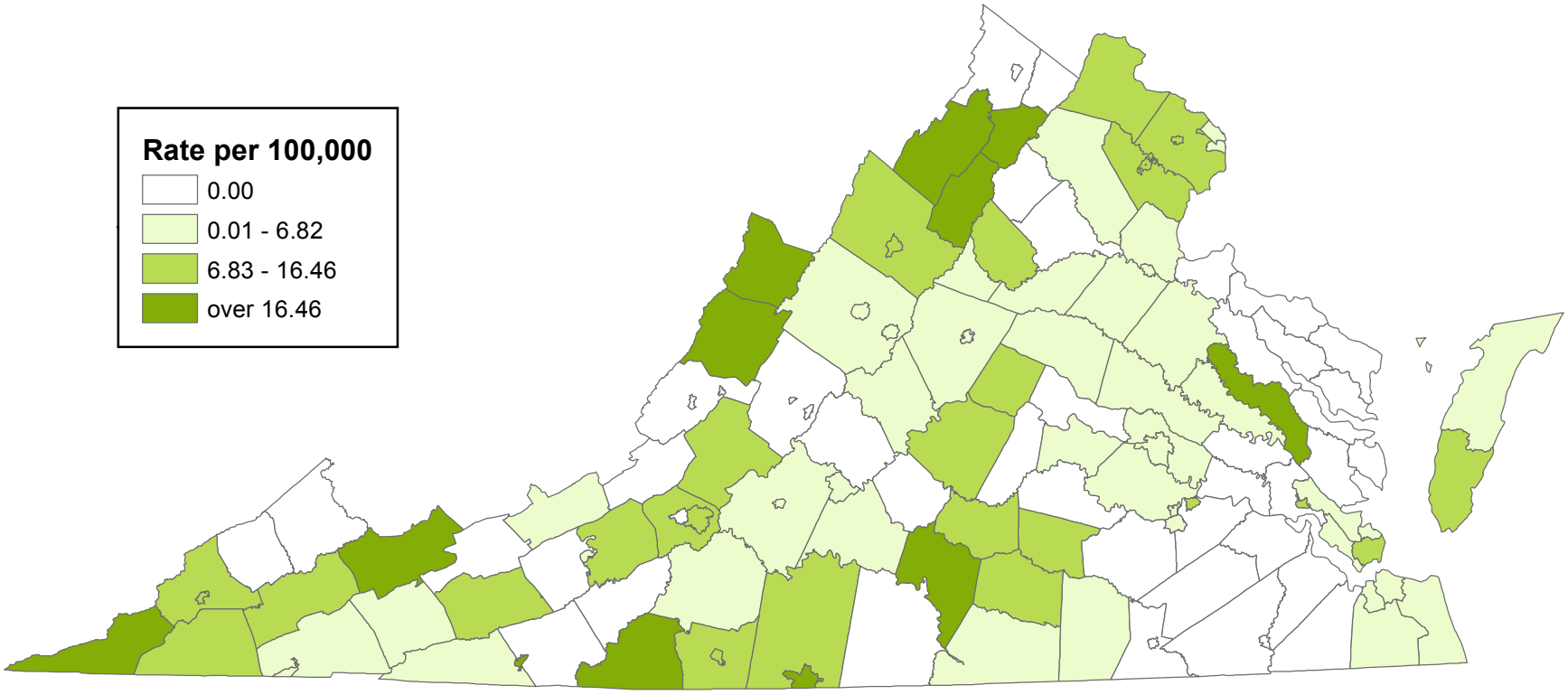
Amebiasis Incidence Rate by Locality
Virginia, 2012



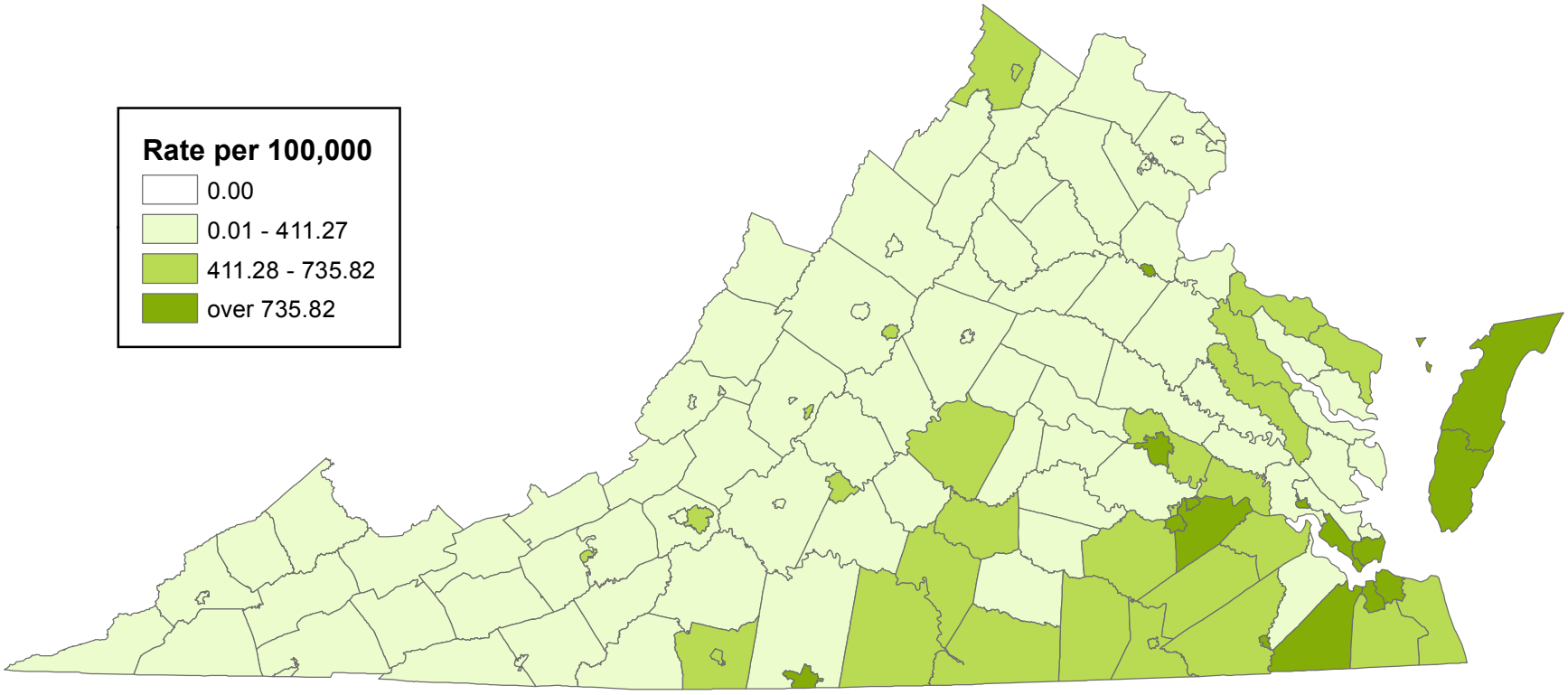
Campylobacteriosis Incidence Rate by Locality
Virginia, 2012



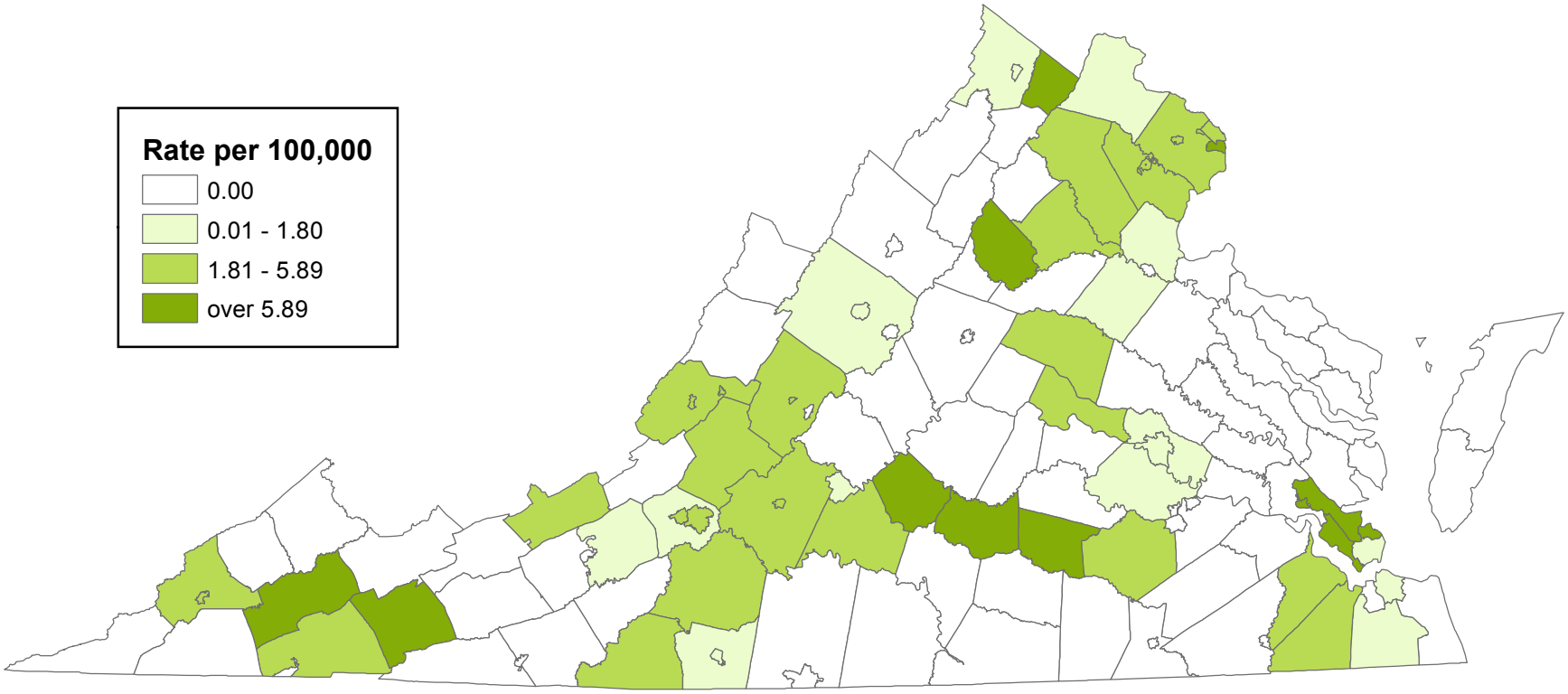
Chickenpox Incidence Rate by Locality
Virginia, 2012



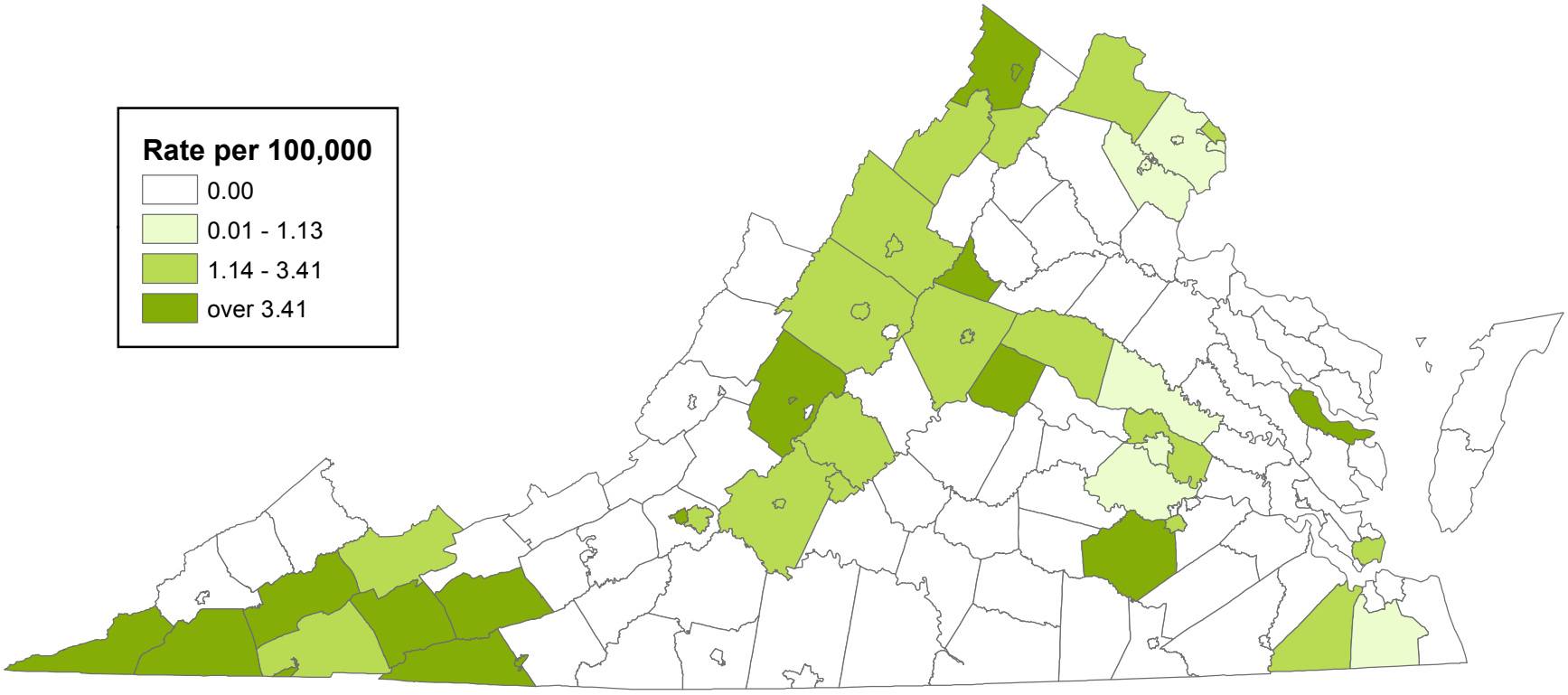
Chlamydia trachomatis Infection Incidence Rate by Locality Virginia, 2012



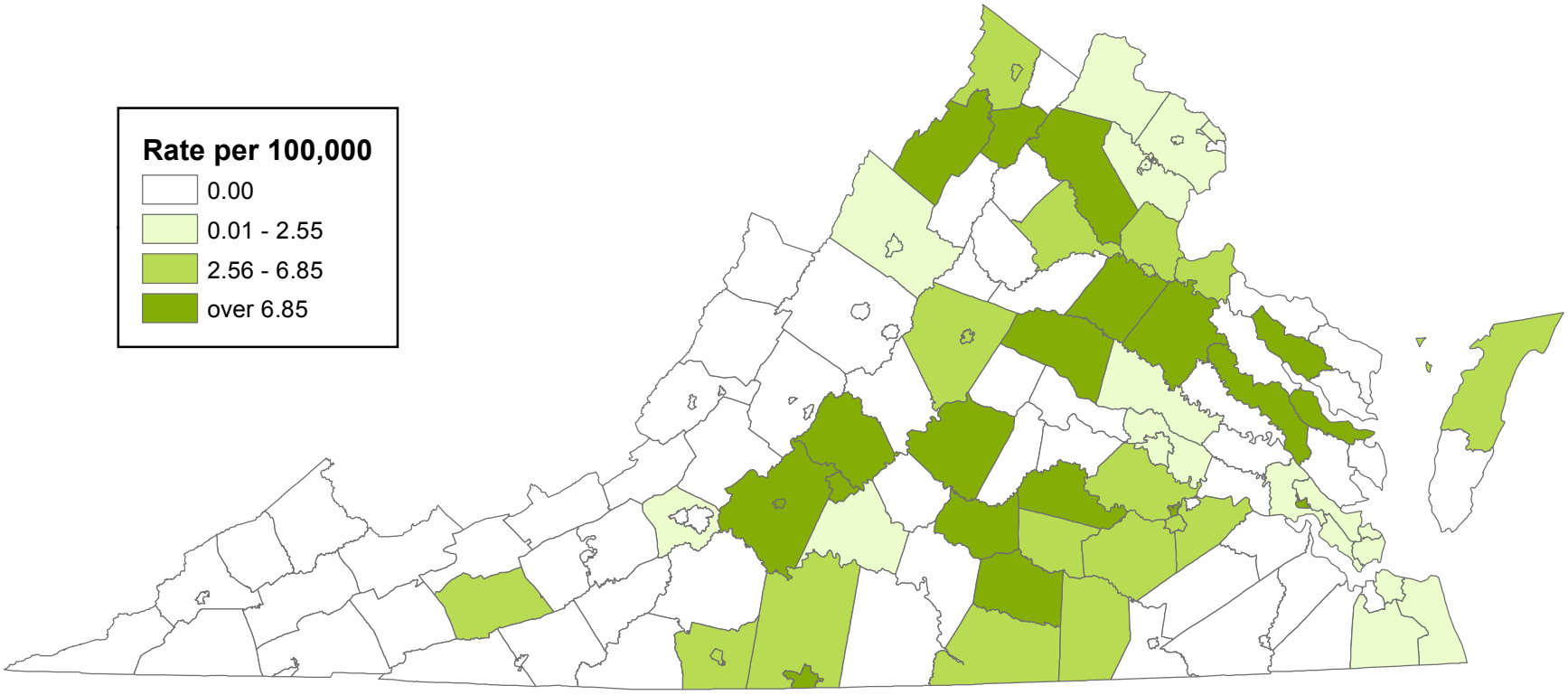
Cryptosporidiosis Incidence Rate by Locality
Virginia, 2012



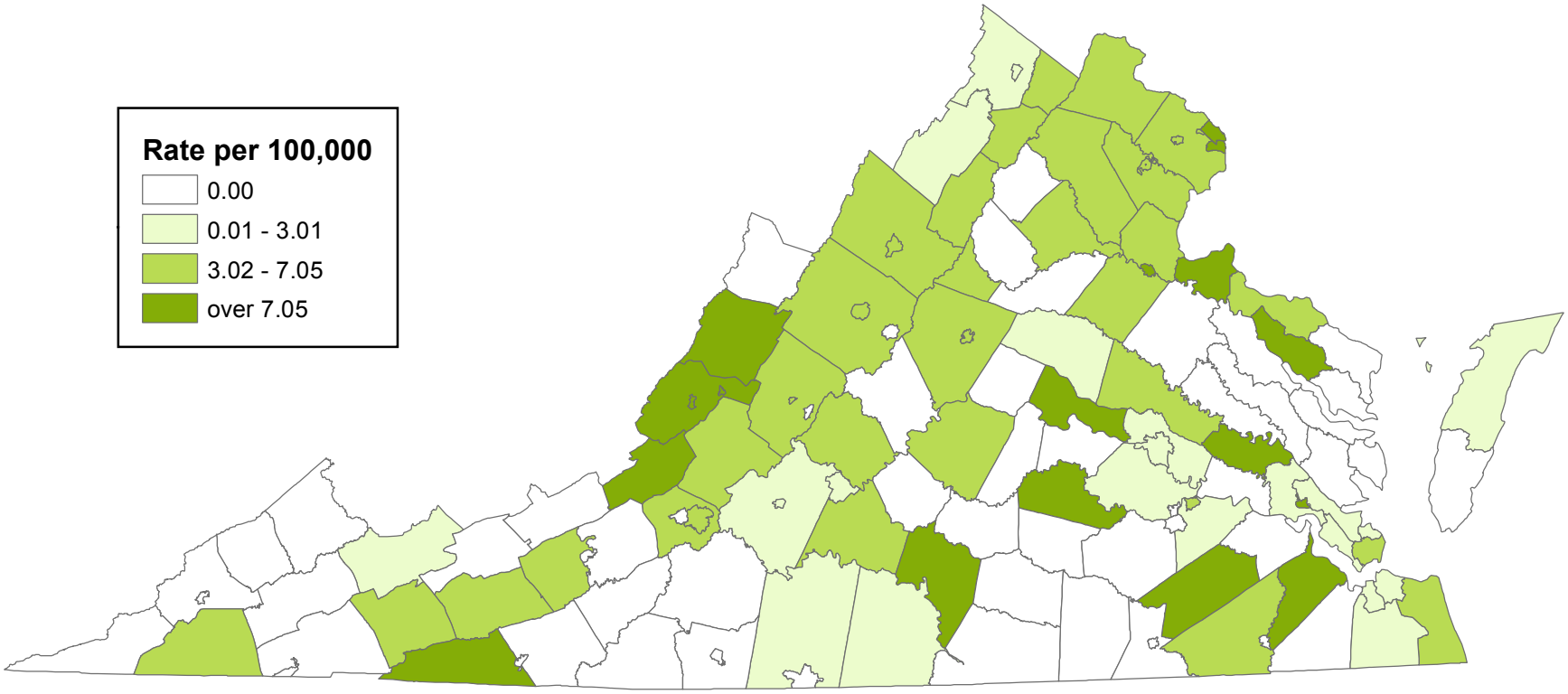
Escherichia coli Infection, Shiga Toxin-Producing Incidence Rate by Locality, Virginia, 2012



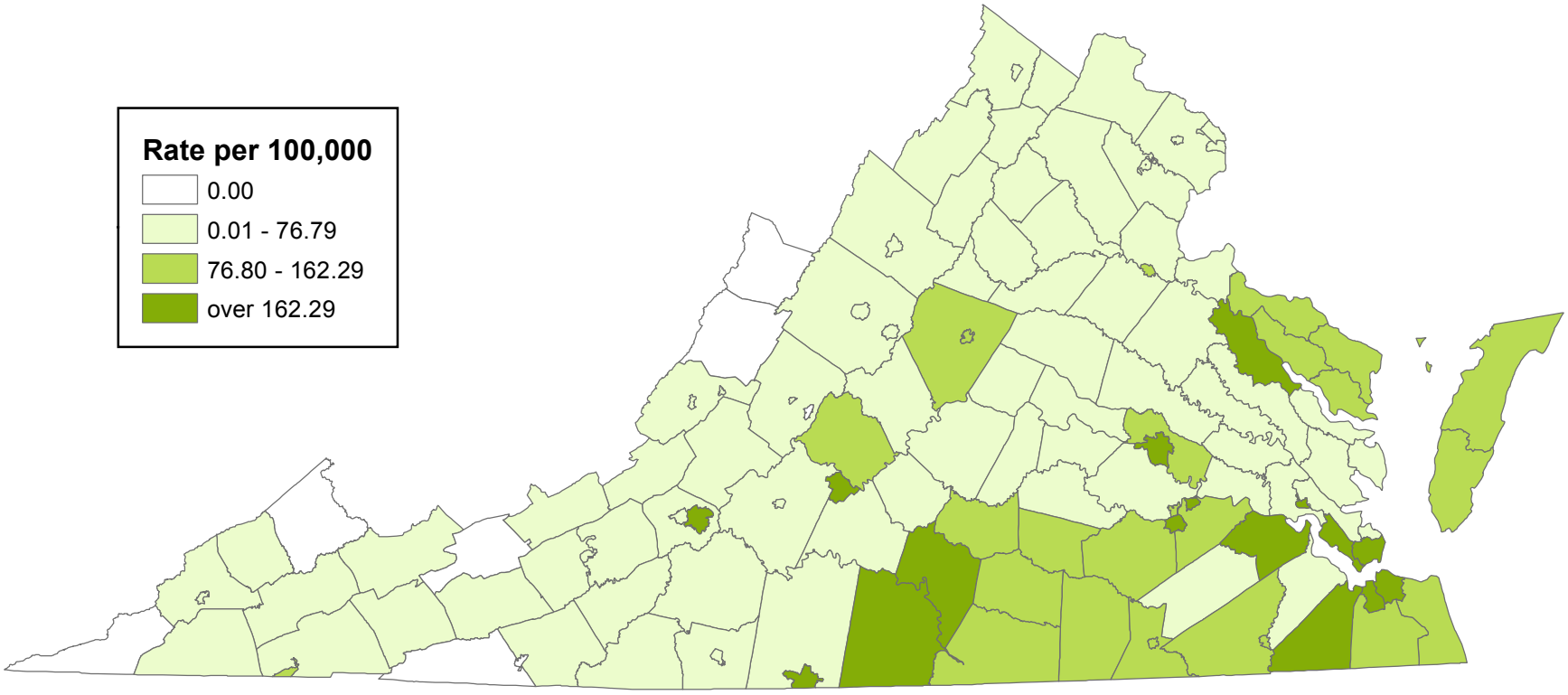
Ehrlichiosis / Anaplasmosis Incidence Rate by Locality
Virginia, 2012



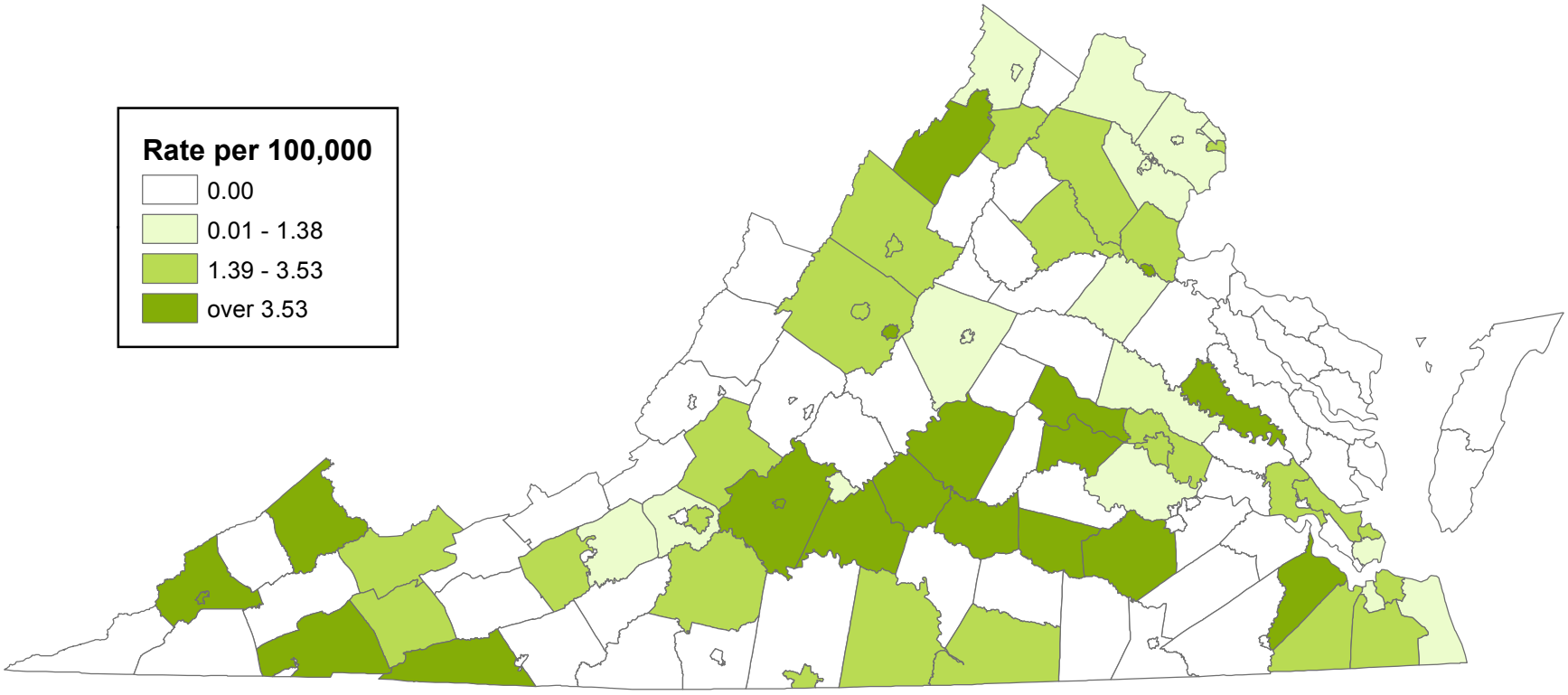
Giardiasis Incidence Rate by Locality
Virginia, 2012



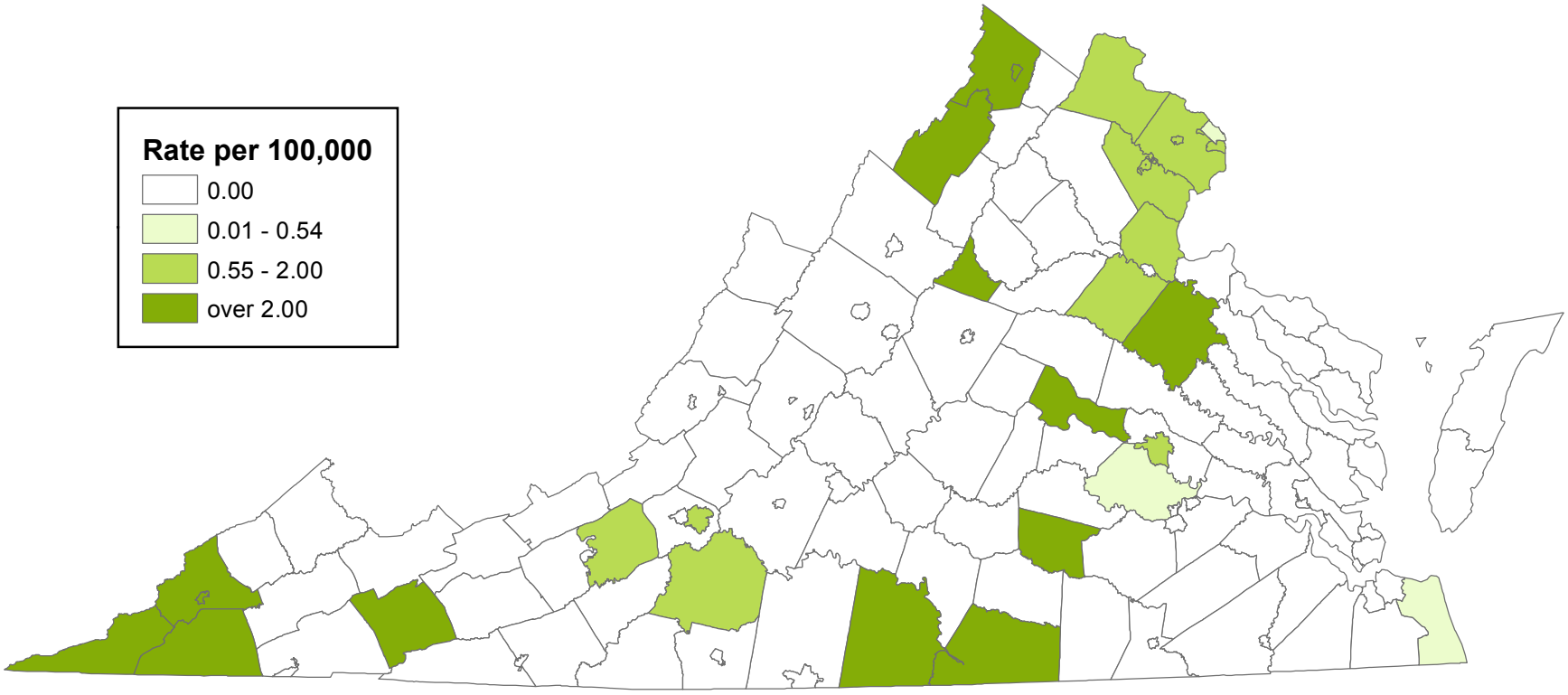
Gonorrhea Incidence Rate by Locality
Virginia, 2012



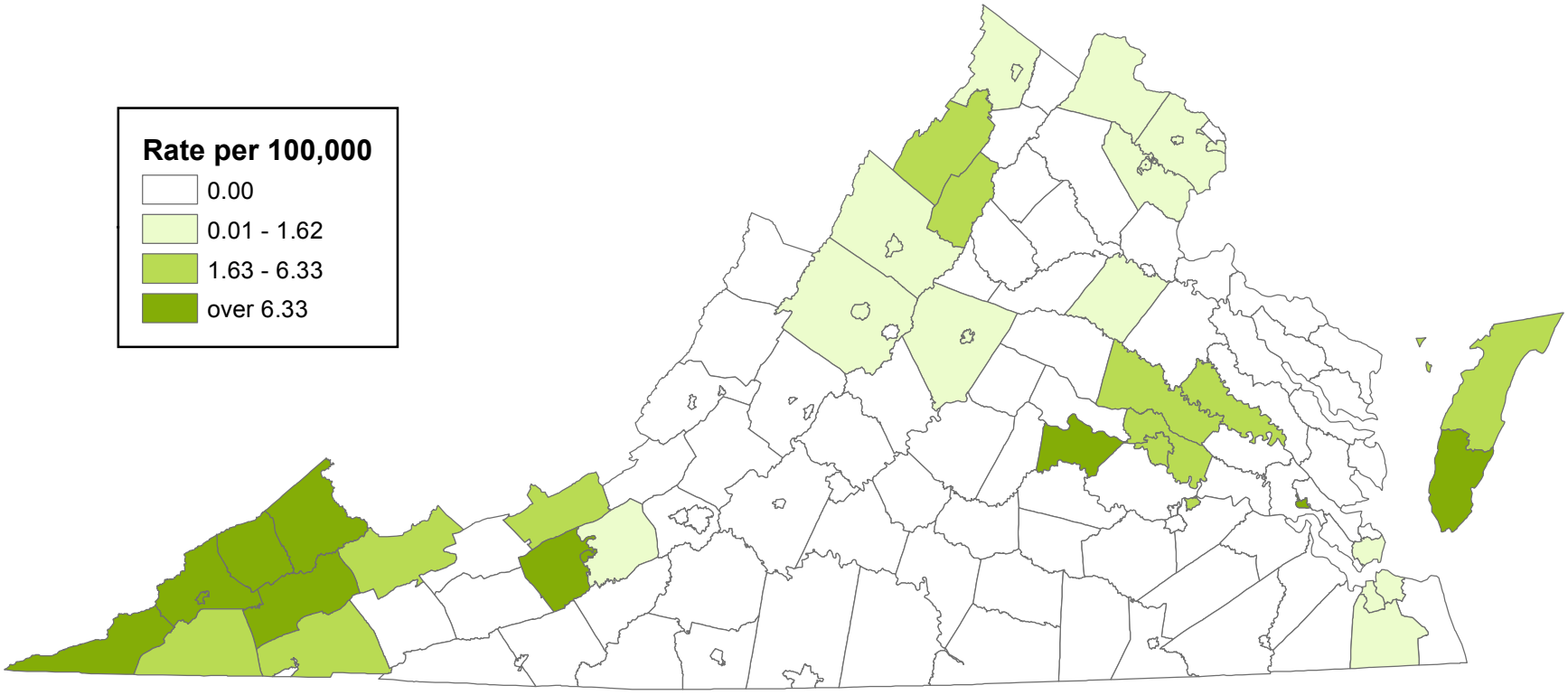
Haemophilus influenzae Infection, Invasive Incidence Rate by Locality, Virginia, 2012



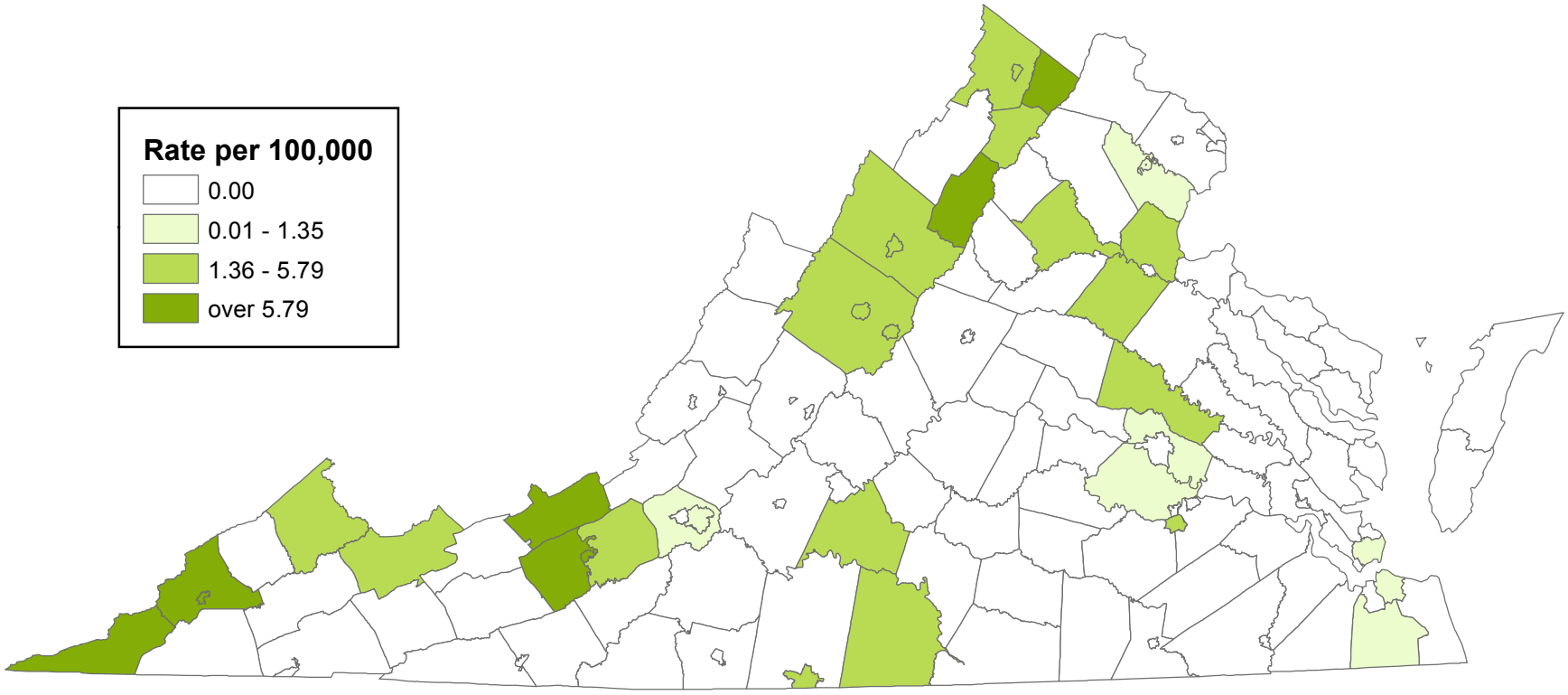
Hepatitis A Incidence Rate by Locality
Virginia, 2012



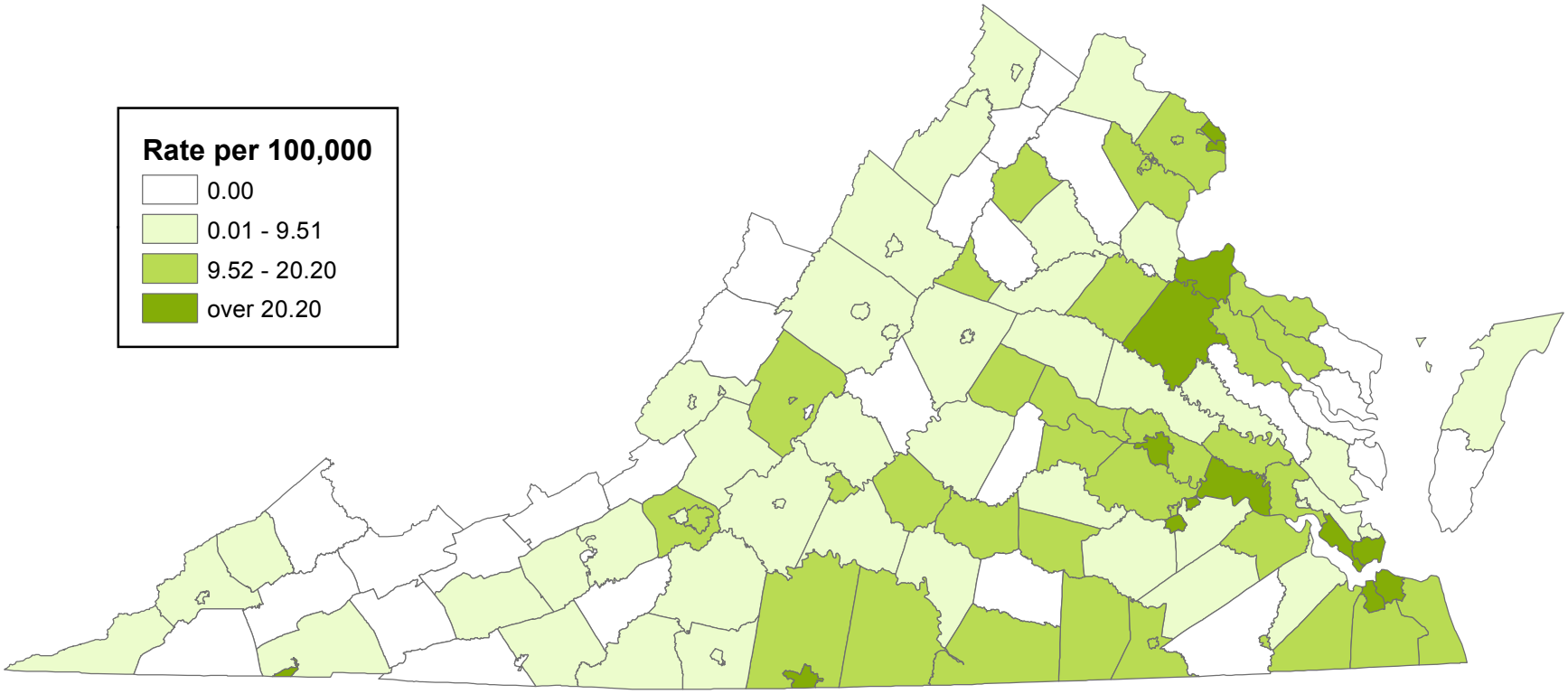
Hepatitis B, Acute, Incidence Rate by Locality
Virginia, 2012



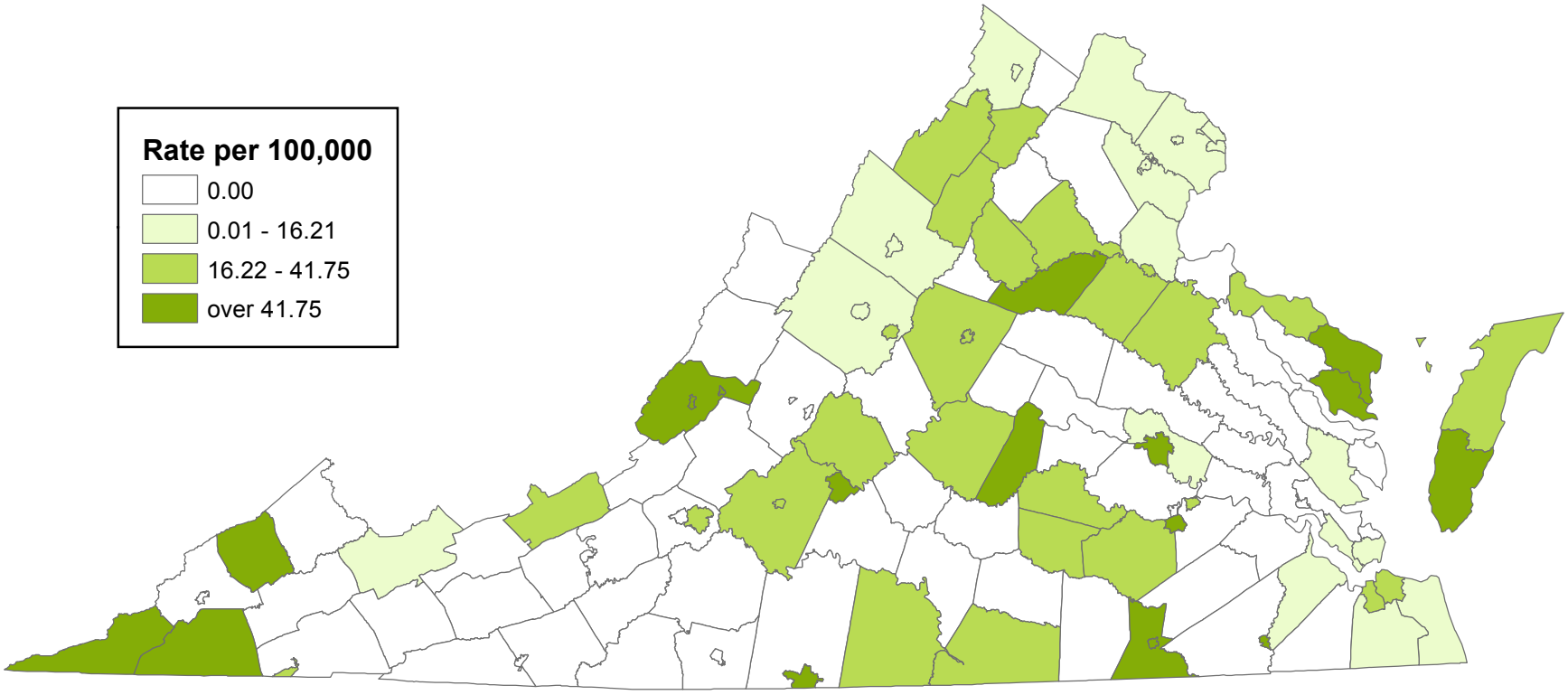
Hepatitis C, Acute, Incidence Rate by Locality
Virginia, 2012



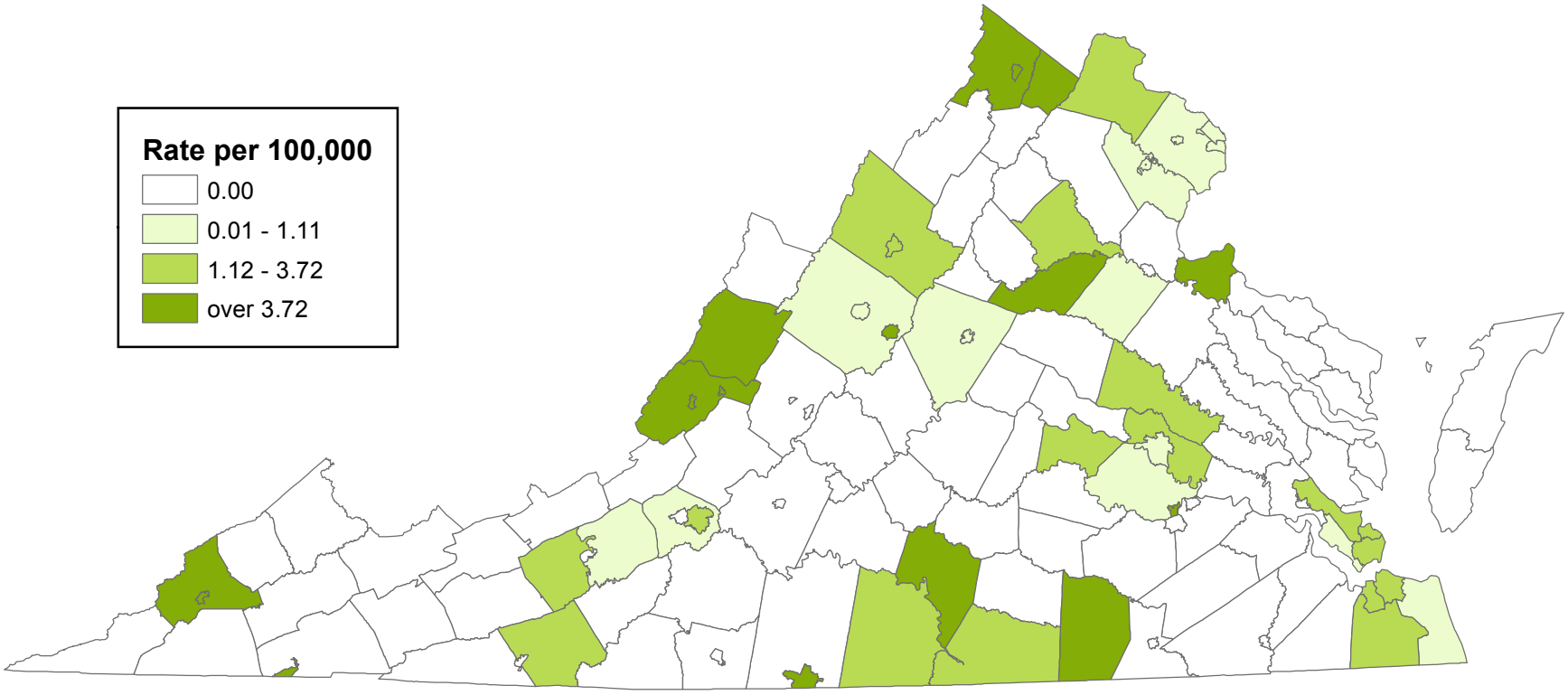
HIV Disease Incidence Rate by Locality
Virginia, 2012



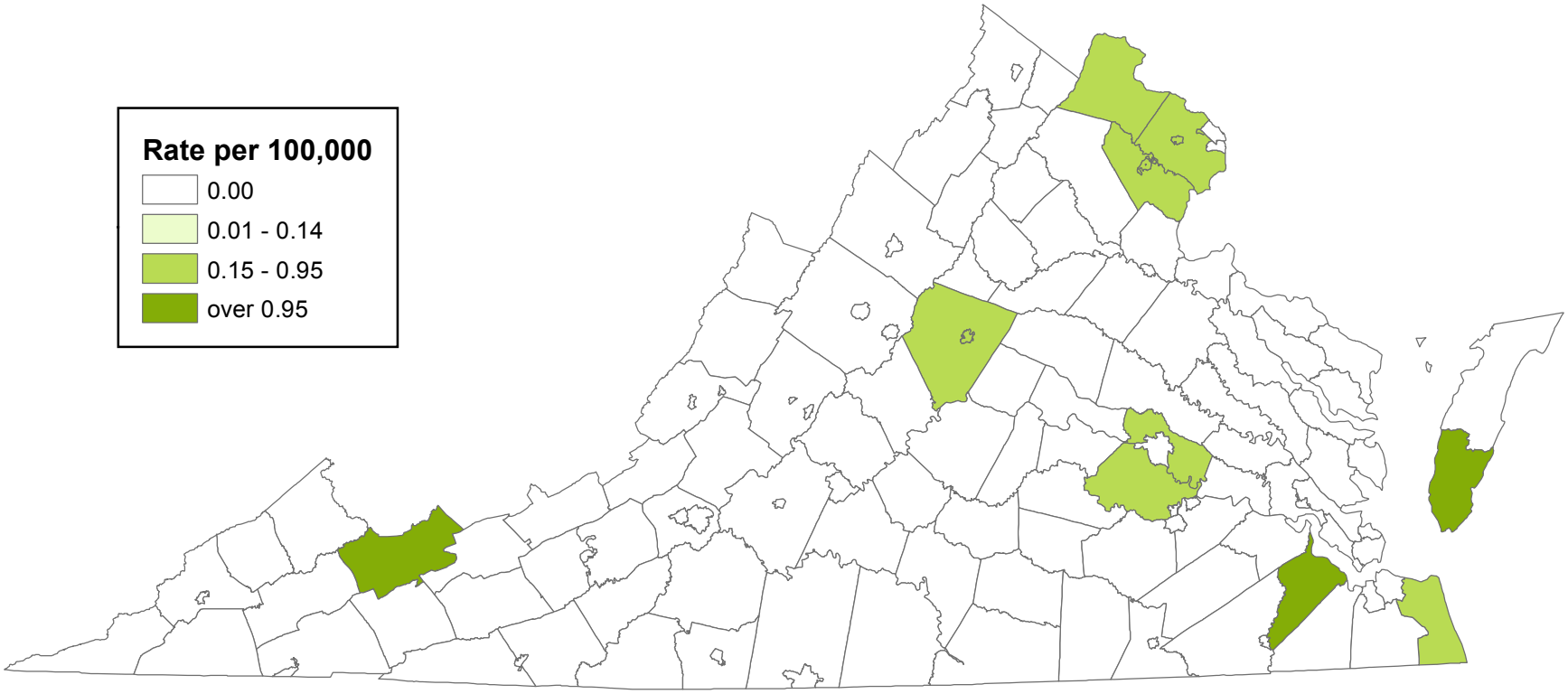
Lead - Elevated Blood Levels in Children
Incidence Rate by Locality, Virginia, 2012



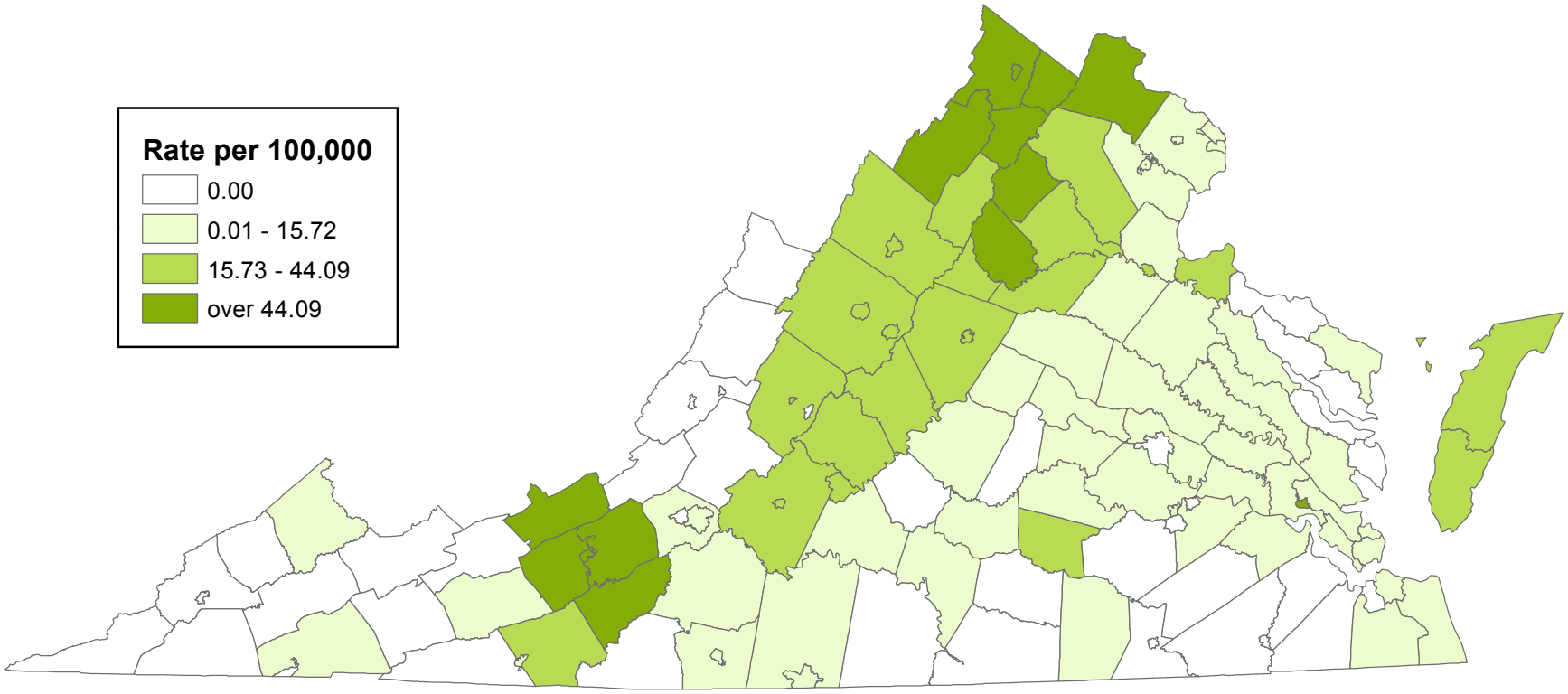
Legionellosis Incidence Rate by Locality
Virginia, 2012



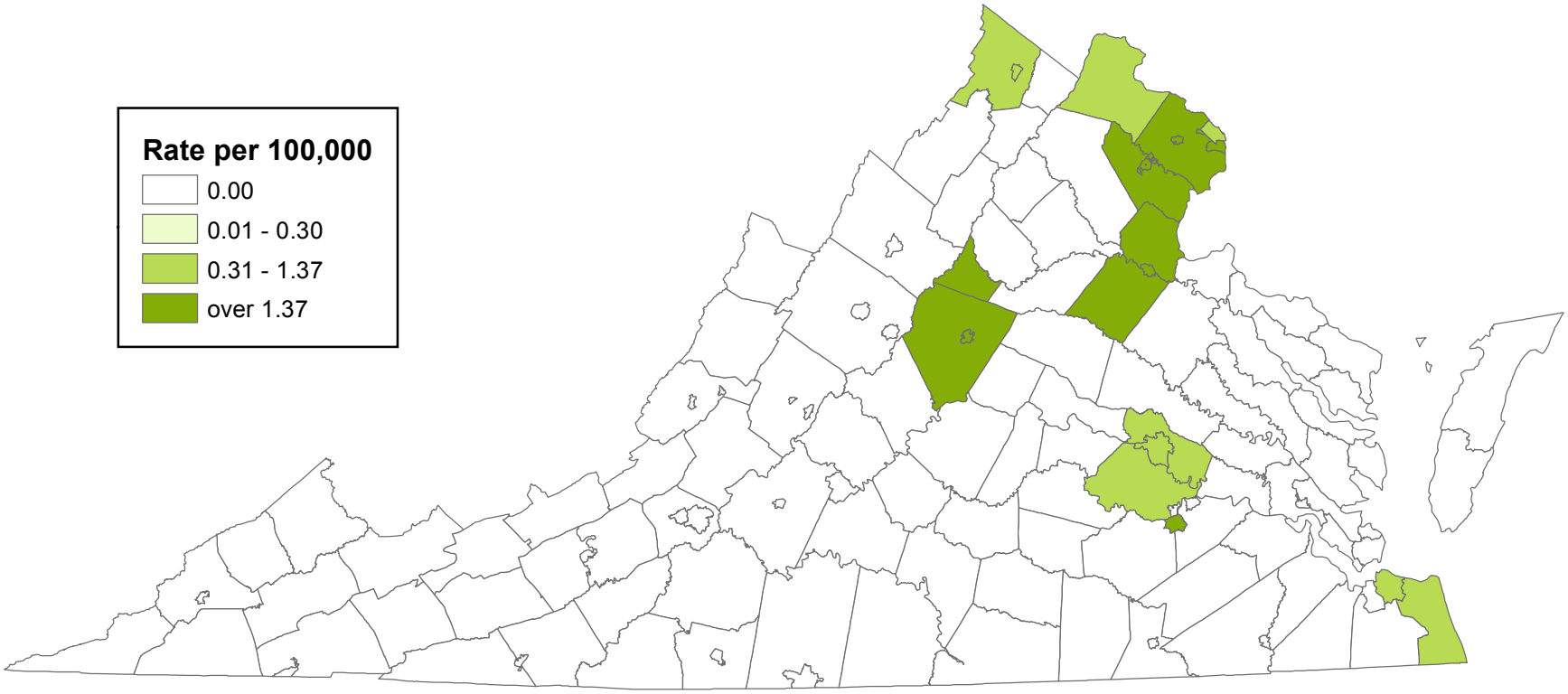
Listeriosis Incidence Rate by Locality
Virginia, 2012



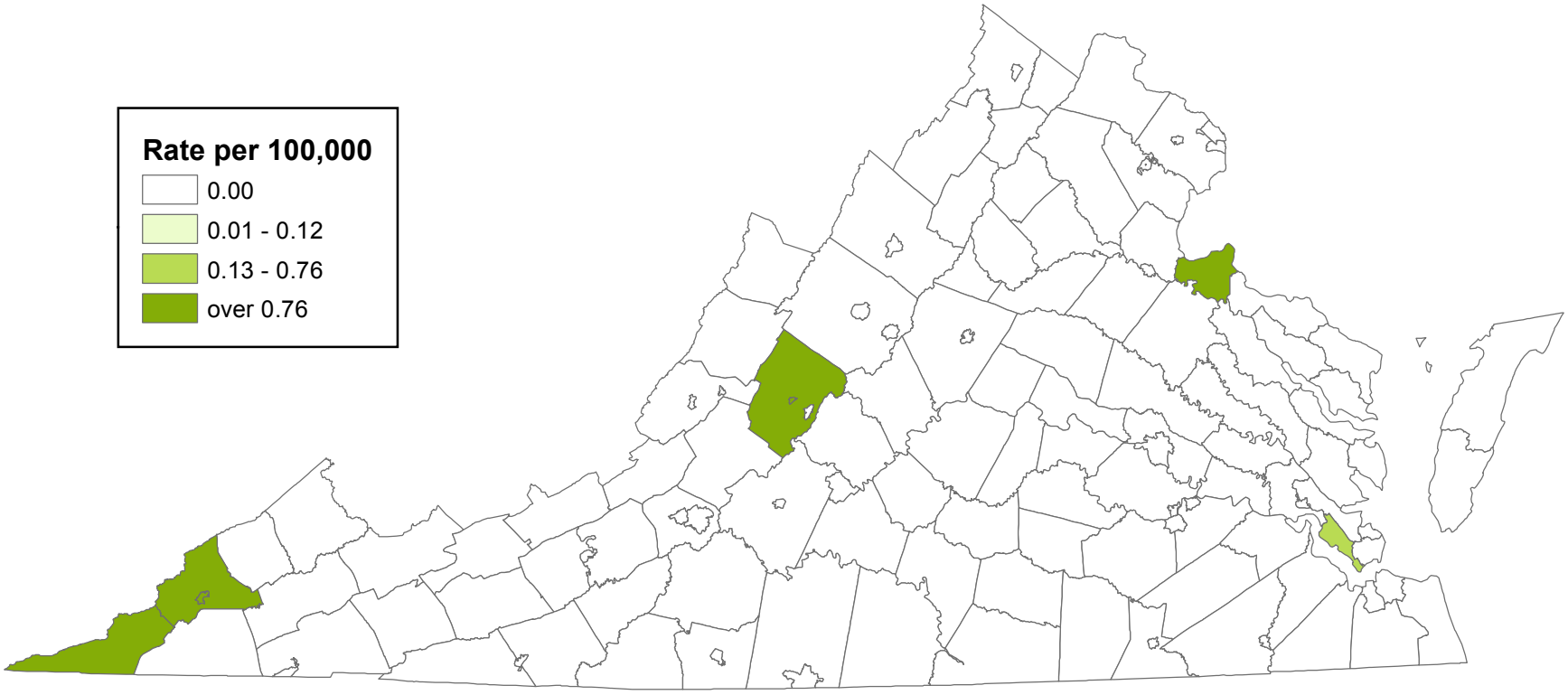
Lyme Disease Incidence Rate by Locality
Virginia, 2012



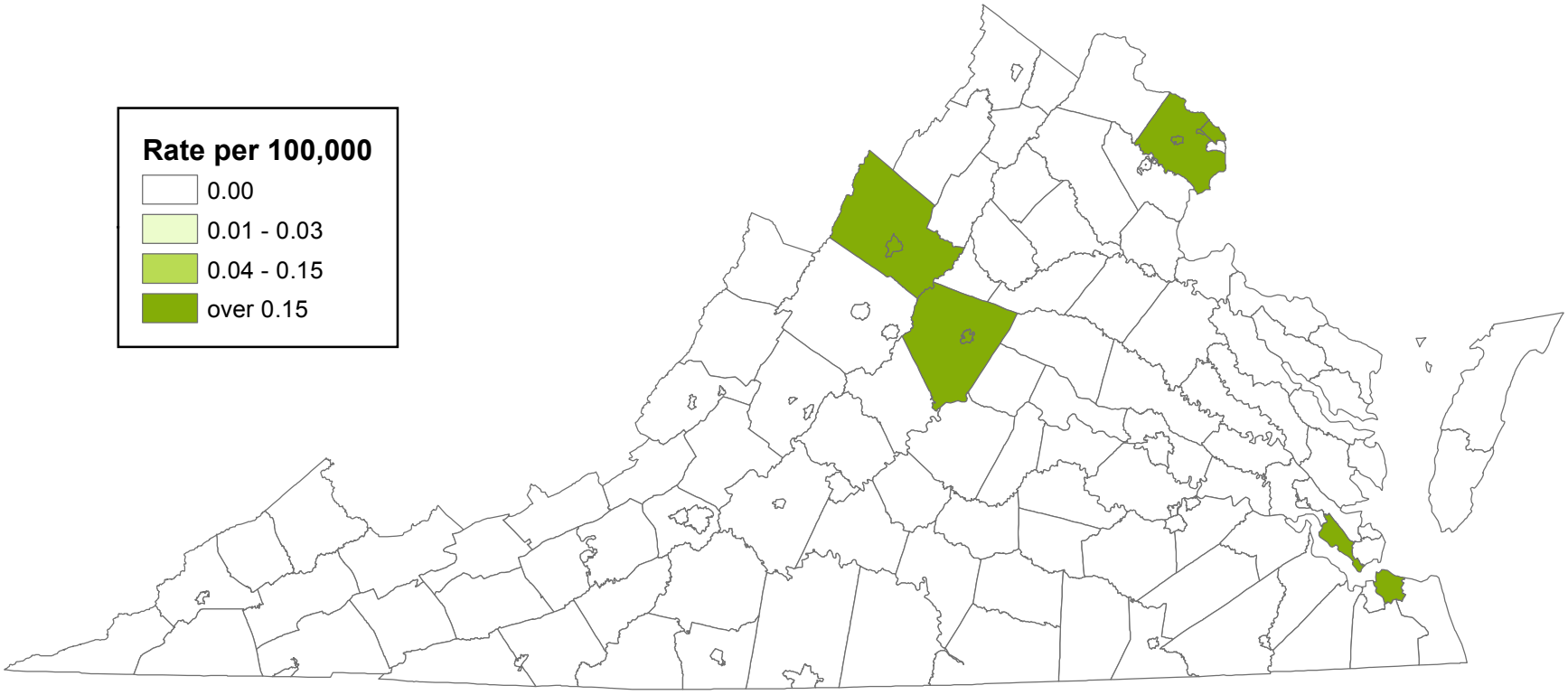
Malaria Incidence Rate by Locality
Virginia, 2012



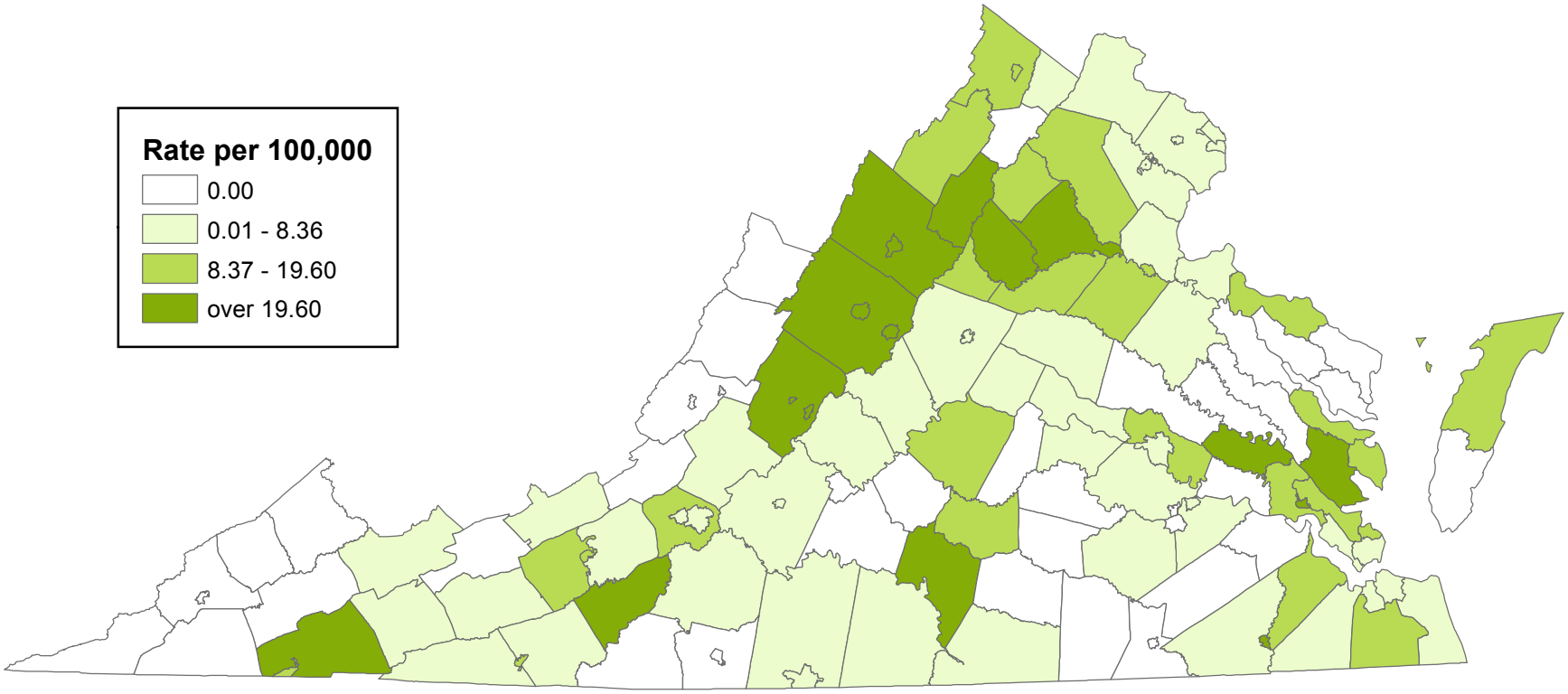
Meningococcal Disease Incidence Rate by Locality
Virginia, 2012



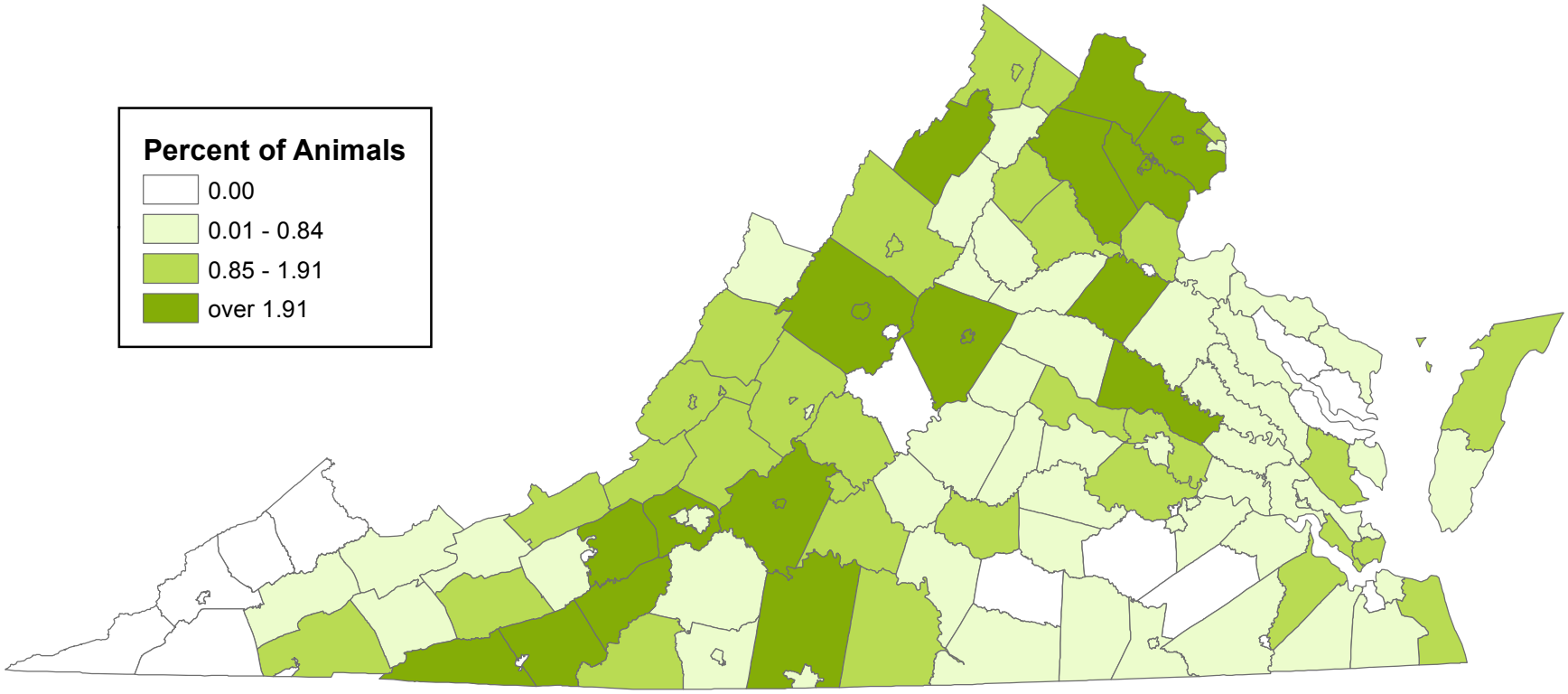
Mumps Incidence Rate by Locality
Virginia, 2012



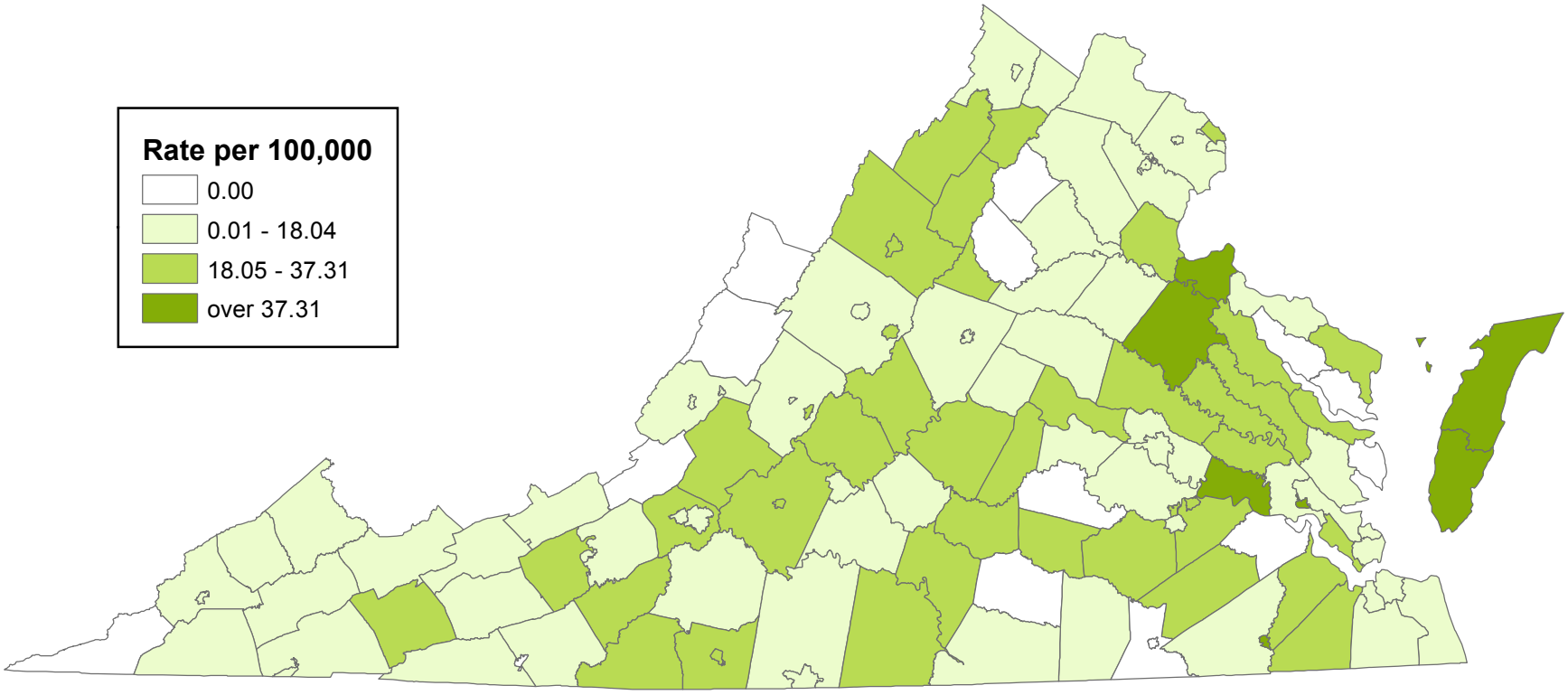
Pertussis Incidence Rate by Locality
Virginia, 2012



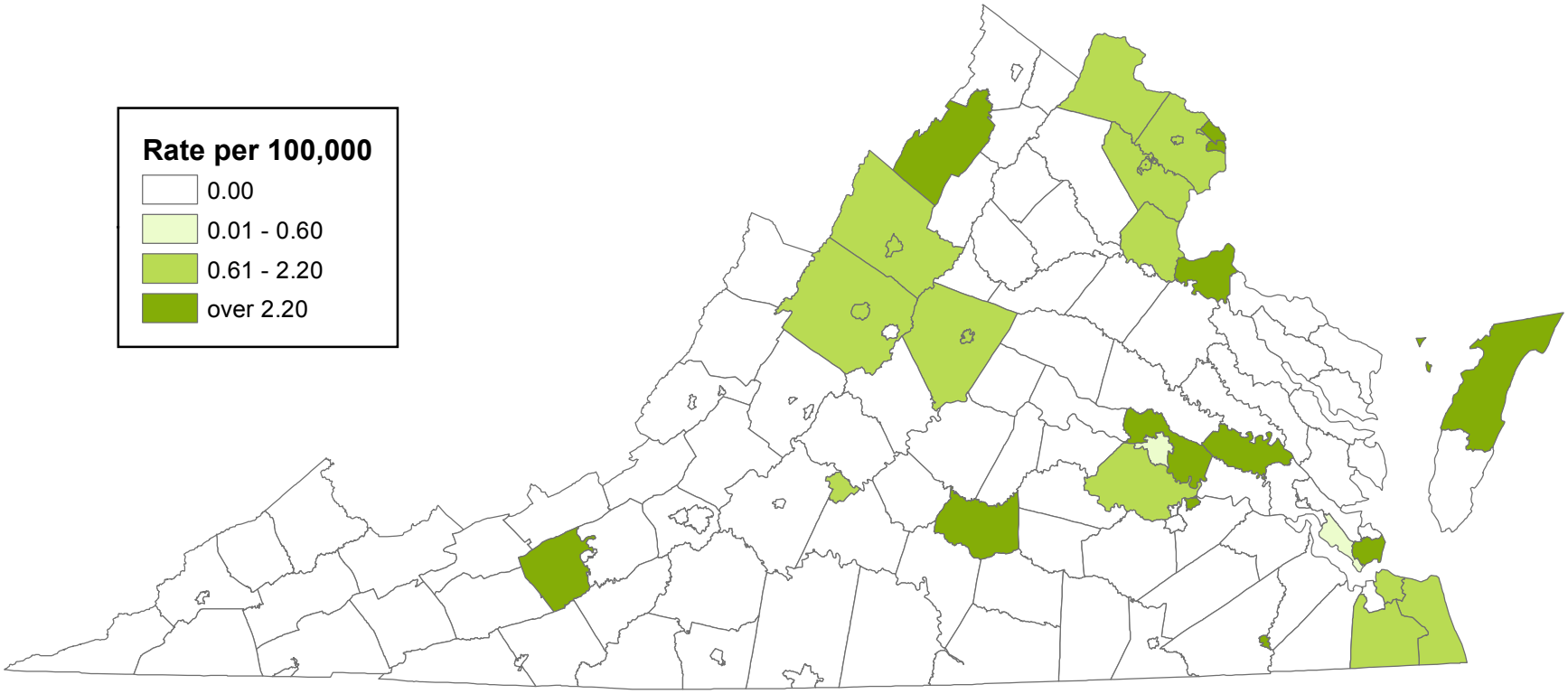
Rabies - Percent of Animals Testing Positive by Locality
Virginia, 2012



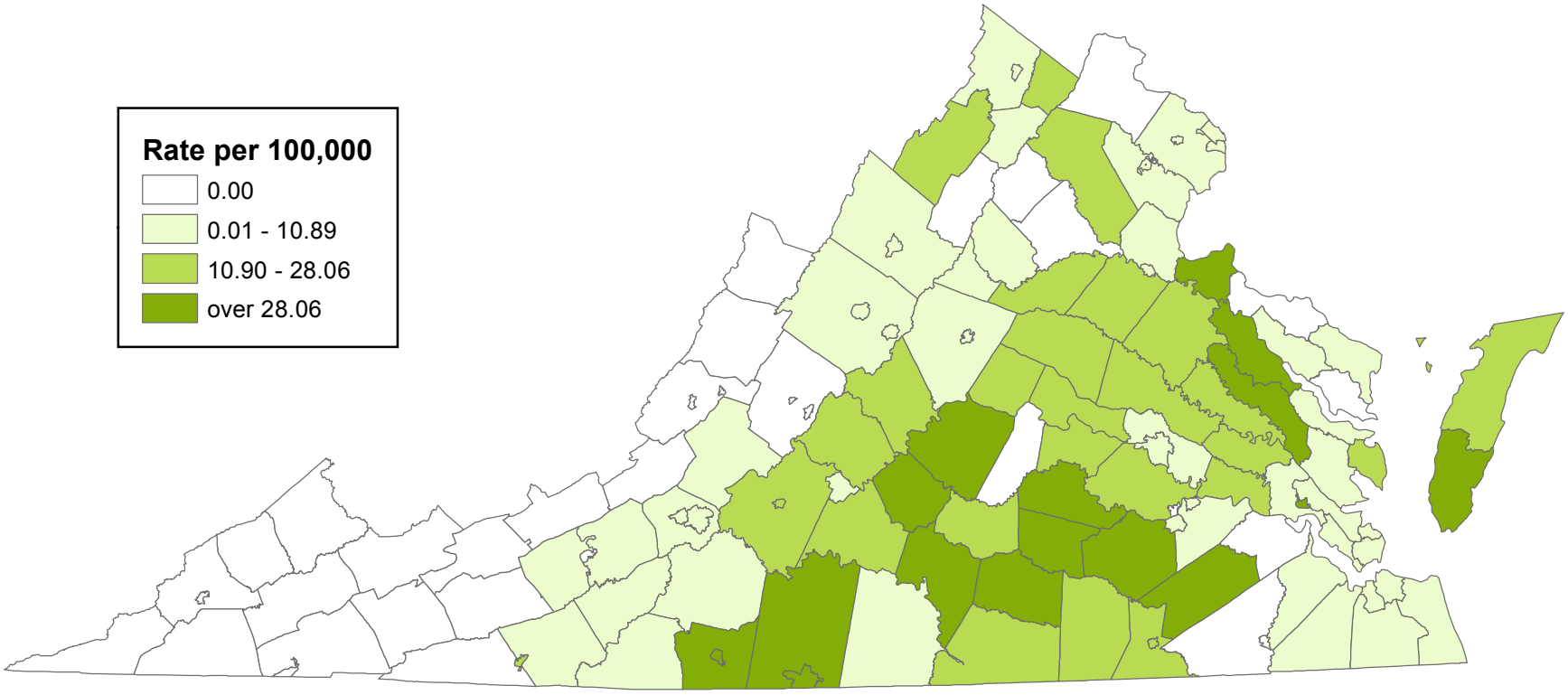
Salmonellosis Incidence Rate by Locality
Virginia, 2012



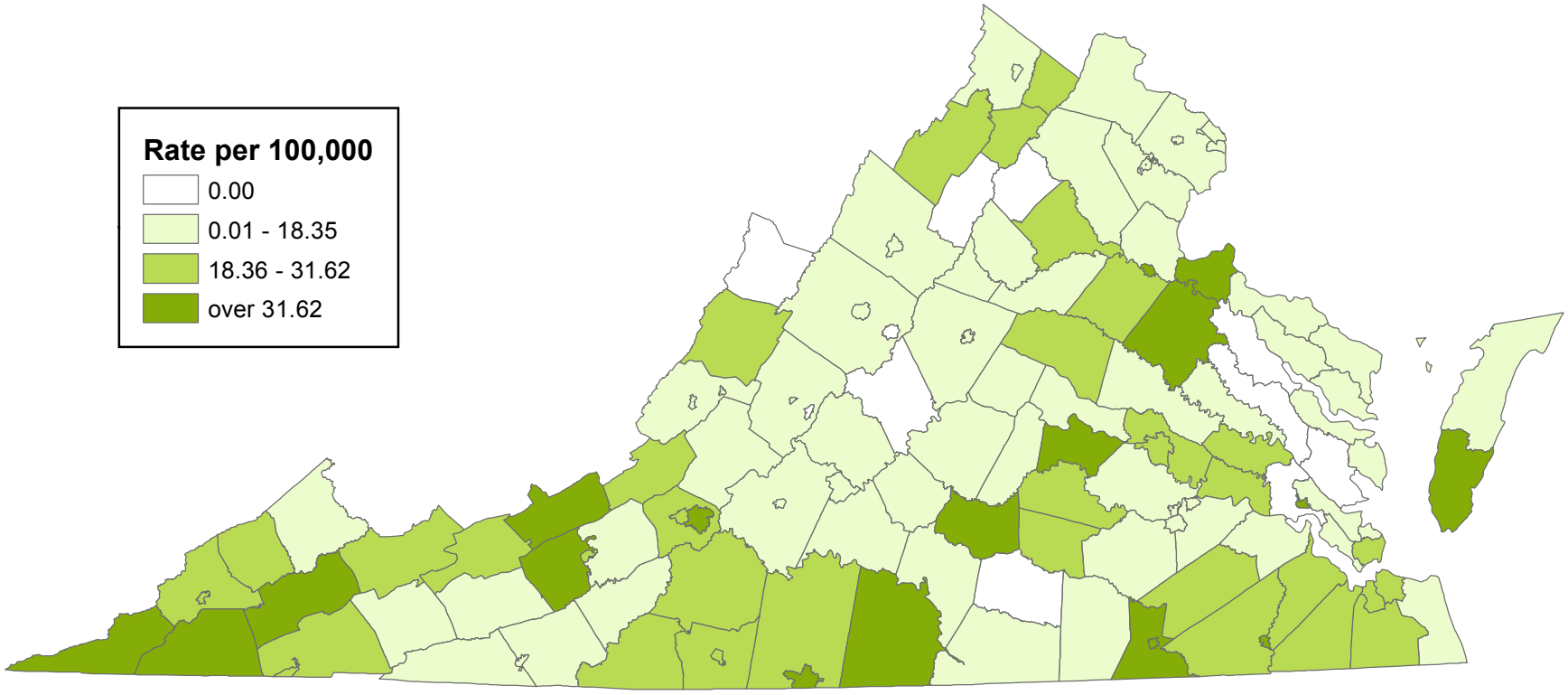
Shigellosis Incidence Rate by Locality
Virginia, 2012



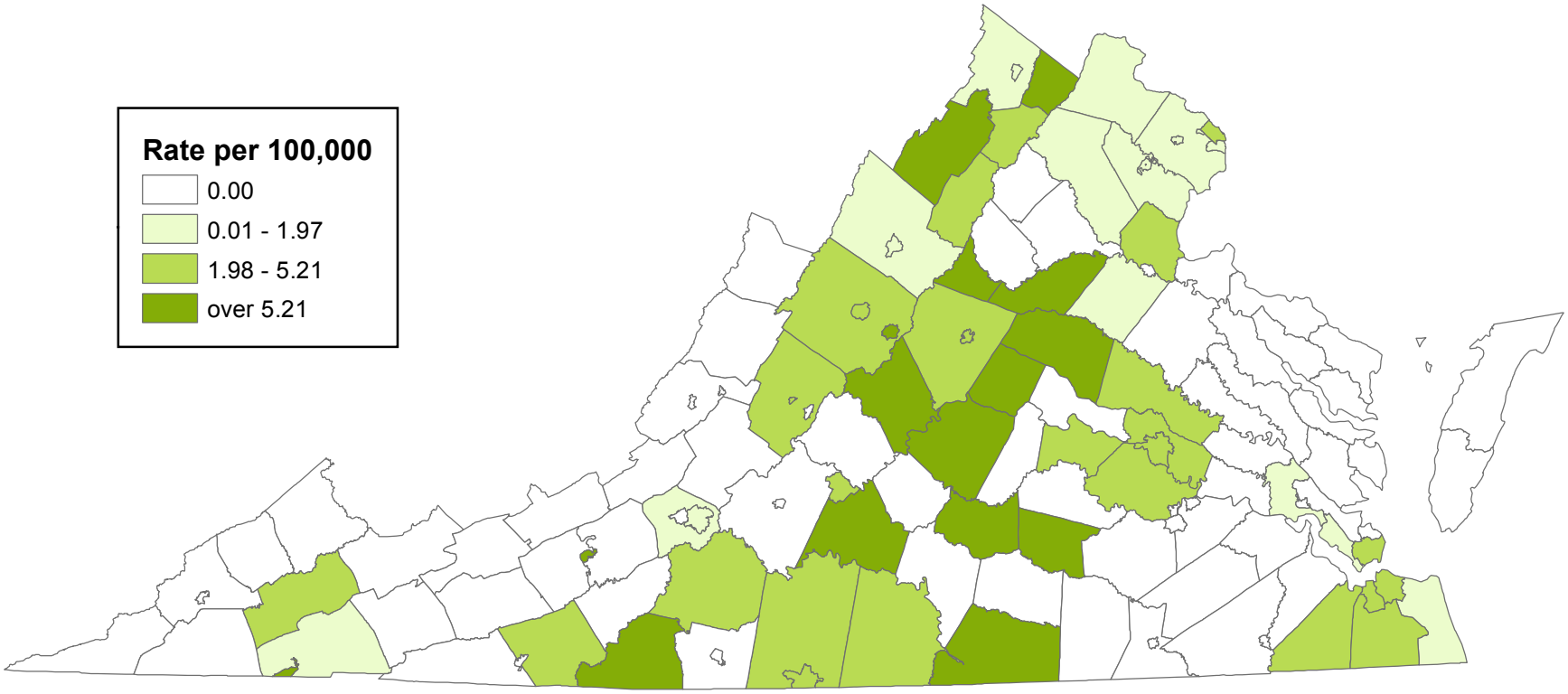
Spotted Fever Rickettsiosis, including RMSF Incidence Rate by Locality, Virginia, 2012



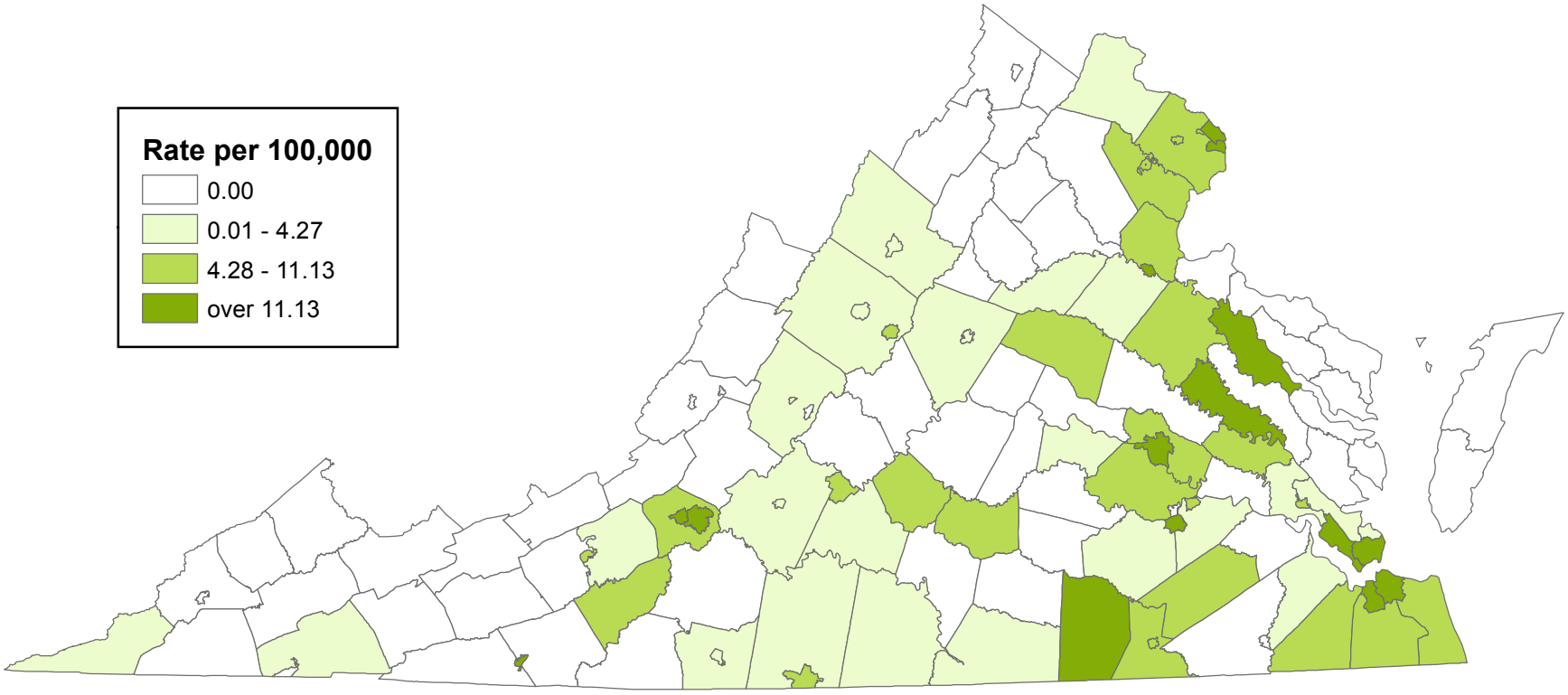
Staphylococcus aureus Infection, Invasive (MRSA) Incidence Rate by Locality, Virginia, 2012



Streptococcal Disease, Group A, Invasive Incidence Rate by Locality, Virginia, 2012



Syphilis, Early Stage, Incidence Rate by Locality
Virginia, 2012



Tuberculosis Incidence Rate by Locality
Virginia, 2012