2009 Florida Morbidity Statistics

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Division of Disease Control
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Acknowledgements

Disease control and prevention are core functions of any public health agency. In fact, the mission of the Florida Department of Health is “to promote, protect, and improve the health of all people in Florida.” The Florida Department of Health’s ability to identify, prevent, and control the spread of disease was challenged throughout 2009 with the emergence of an influenza pandemic. Novel influenza A H1N1 was first detected in the U.S. in California in April of 2009 and spread throughout the country. Florida felt the impact of this pandemic through the summer and fall of 2009. The Department’s response to this pandemic was time consuming and resource intensive, and required the collaboration of county health departments and many bureaus, divisions, and public health partners. This collaboration was essential to ensure an efficient and effective response to the influenza pandemic while also completing regular daily operations of the Department that are essential to protecting the public’s health.

Protection of the public’s health from emerging diseases, including the recent example of novel influenza, requires diligence in all aspects of public health. Our most important partners in identifying and characterizing emerging trends in disease are the physicians, nurses, laboratorians, hospital infection control practitioners and other healthcare professionals who participate in reportable disease surveillance. Without their participation, our ability to recognize and intervene in emerging public health issues would be limited.

The Division of Disease Control and the Bureau of Epidemiology would like to thank the other program areas within the Florida Department of Health that contributed information to this report including the Bureau of Immunization, Bureau of HIV/AIDS, Bureau of Sexually Transmitted Diseases Prevention and Control, Bureau of Tuberculosis and Refugee Health, Bureau of Environmental Public Health Medicine, and Bureau of Laboratories. Finally, we extend grateful recognition to the county health department staff and other public health professionals who are involved in reportable disease surveillance, through disease control activities, case investigations, data collection, or other essential functions.

We hope readers will find this document useful when setting priorities and directions for action at the individual and community levels to improve the health of all people in Florida.

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Introduction

Purpose
The Florida morbidity report is compiled to:

1. summarize annual morbidity from reportable acute communicable and environmental diseases, and cancer in Florida,
2. describe patterns of disease as an aid in directing future disease prevention and control efforts; and,
3. provide a resource to medical and public health authorities at county, state, and national levels.

Report Format
This report is divided into 9 sections:
Section 1: Summary of Selected Notifiable Diseases and Conditions
Section 2: Selected Notifiable Diseases and Conditions
Section 3: Summary of Foodborne Disease Outbreaks
Section 4: Summary of Antimicrobial Resistance Surveillance
Section 5: Summary of 2009 H1N1 Influenza A Surveillance
Section 6: Summary of Notable Outbreaks and Case Investigations
Section 7: Recently Published Papers and Reports
Section 8: Summary of Cancer Data, 2007
Section 9: Laboratory Status Report

Data Sources
Data presented in this report are based on reports received by county and state health department staff from physicians, hospitals, and laboratories throughout the state. Data on occurrence of reportable diseases in Florida were obtained through passive and sometimes active surveillance. Reporting suspected and confirmed cases of notifiable diseases or conditions in the State of Florida is mandated under Florida Statute 381.0031, and Chapter 64D-3, *Florida Administrative Code* (*F.A.C.*). People in charge of laboratories, practitioners, hospitals, medical facilities, or other locations providing health services (can include schools, nursing homes, and state institutions) are required to report diseases or conditions and the associated laboratory test results listed in the Table of Notifiable Diseases or Conditions, Chapter 64D-3, *F.A.C*. Reporting test results by a laboratory does not nullify the practitioner's obligation to also report the disease or condition. These data are the basis for providing useful information on reportable diseases and conditions in Florida to public health and healthcare workers and policymakers, and would not be possible without the cooperation of the extensive network involving both private and public sector participants.

1. Passive surveillance relies on physicians, laboratories, and other healthcare providers to report diseases to the Florida Department of Health (FDOH), using a confidential morbidity report form, electronically, by telephone, or by facsimile.
2. Active surveillance entails FDOH staff regularly contacting hospitals, laboratories, and physicians in an effort to identify all cases of a given disease.
3. Increasingly, information about cases of reportable diseases is passed from providers, especially laboratories, to the FDOH as electronic records, which occurs automatically.

Interpreting the Data

This report should be interpreted considering the following limitations.

1. Under-Reporting
Evaluations of infectious disease reporting systems have, in general, indicated that the completeness of reporting varies by disease. The less common, more severe reportable diseases such as bacterial meningitis, diphtheria, polio, botulism, anthrax, tuberculosis, and congenital syphilis are more completely reported than the more common but (individually) less severe diseases such as hepatitis A or campylobacteriosis. Variation in reported disease incidence at the local level probably reflects, to varying degrees, both differences in the true incidence of disease and differences in the vigor with which surveillance is performed.

2. Reliability of Rates
All incidence rates in this report are expressed as the number of reported cases of a disease per 100,000 population unless otherwise specified. Animal rabies is only reported as the number of cases, because no reliable denominators exist for animal populations. Rates for diseases with only a few cases reported per year can be unstable and should be interpreted with caution. The observation of zero events is especially difficult to interpret. All rates in the report based on fewer than 19 events should be considered unreliable. This translates into a relative standard error of the rate of 23% or more, which is the cut-off for rate reliability used by the National Center for Health Statistics.

3. Reporting Period
The data in this report are aggregated by the date the case was reported to the Bureau of Epidemiology for each of the years presented, beginning January 1 and ending December 31. Frequency counts include only cases reported during this time. Some cases reported in 2009 may have onset or diagnosis dates in 2008, and some with onset in 2009 may have been reported in 2010.

4. Case Definition
Cases are classified as confirmed, probable, or suspected at the local level, using a published set of surveillance case definitions (Surveillance Case Definitions for Select Reportable Diseases in Florida, available at http://www.doh.state.fl.us/disease_ctrl/epi/surv/CaseDefinitions.html). For cases of most diseases, these classifications are reviewed at the state level. In this report confirmed and probable cases have been included for all diseases, but no suspected cases have been included.

5. Place of Acquisition of Disease or Condition
The distribution of cases among Florida counties is determined by the patient's reported county of residence. Cases are allocated to their county of residence regardless of where they became ill or are/were hospitalized, diagnosed, or exposed. Cases in people whose official residence is outside the state of Florida, but who became ill or are/were hospitalized or diagnosed in Florida, are not included. These cases are referred through an interstate reciprocal notification system to the state where the patient resides.

6. Population Estimates

All population estimates are from the Community Health Assessment Resource Tool Set (CHARTS). The CHARTS system receives its estimates from the Florida Legislature's Office of Economic and Demographic Research (EDR). Estimates are updated once per year in the CHARTS system. Note that previous editions of this report may show somewhat different populations for a given year than the ones shown here, as these estimates are revised periodically.

7. Incomplete Case Information

Certain analyses may not include all reportable cases of a specific disease due to incomplete case information. For graphs denoting month of onset, it is important to note that only those cases of disease for which an onset date could be determined are included.

Florida County Boundaries

Table A. Florida Population by Year and County, 1999-2009, *(Source - Florida CHARTS; accessed February 2010)*

County	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
State Total	15,679,606	16,074,896	16,412,296	16,772,201	17,164,199	17,613,368	18,018,497	18,440,700	18,731,287	18,896,559	18,818,998
Alachua	213,346	219,239	224,397	229,524	232,110	237,374	241,858	244,648	248,183	249,788	254,690
Baker	21,498	22,388	22,641	23,105	23,472	24,069	23,980	25,216	25,692	25,905	26,049
Bay	147,075	148,692	150,748	152,818	155,414	159,108	162,499	166,160	167,881	168,817	169,955
Bradford	25,767	26,110	26,136	26,649	27,084	27,865	28,195	28,685	29,131	29,304	29,108
Brevard	469,515	478,541	487,131	497,429	510,622	524,046	534,596	545,460	553,481	557,741	555,944
Broward	1,590,361	1,631,445	1,654,923	1,673,972	1,706,363	1,730,580	1,746,603	1,755,392	1,767,538	1,775,101	1,748,279
Calhoun	12,863	13,038	13,101	13,286	13,491	13,636	14,011	14,192	14,545	14,688	14,309
Charlotte	139,032	142,357	145,481	149,486	152,865	158,006	153,788	161,731	165,061	166,473	166,298
Citrus	116,208	118,689	121,078	123,704	126,475	129,822	133,472	137,690	140,652	142,143	143,857
Clay	137,357	141,331	144,161	151,746	157,325	164,868	171,118	178,922	186,014	189,667	185,678
Collier	242,408	254,571	267,632	281,148	295,848	309,369	320,859	327,945	335,235	340,589	332,204
Columbia	55,446	56,683	57,354	58,537	59,218	60,821	61,744	64,052	65,658	66,429	67,161
Dade	2,219,329	2,262,902	2,292,316	2,320,465	2,354,404	2,388,138	2,432,276	2,442,170	2,466,645	2,478,585	2,477,019
Desoto	31,436	32,404	32,741	32,959	33,912	34,220	32,391	33,353	34,086	34,294	34,893
Dixie	13,559	13,883	14,154	14,530	14,768	15,054	15,482	15,715	15,826	15,927	16,080
Duval	767,860	782,691	797,566	813,817	829,937	843,772	865,965	883,875	900,608	908,378	908,562
Escambia	292,937	294,911	297,321	300,421	304,165	308,068	303,240	310,617	311,701	311,924	314,698
Flagler	47,559	50,620	53,881	58,004	62,511	71,004	80,559	90,663	94,199	96,912	95,214
Franklin	9,710	9,871	9,974	10,250	10,530	10,682	10,909	12,082	12,257	12,286	12,427
Gadsden	45,312	45,070	45,419	46,073	46,600	46,965	47,883	48,380	49,630	50,152	51,430
Gilchrist	13,980	14,533	14,759	15,140	15,637	16,016	16,303	16,812	17,171	17,375	17,502
Glades	10,407	10,595	10,624	10,675	10,759	10,763	10,743	10,849	11,113	11,301	11,520
Gulf	13,559	14,785	15,101	15,290	15,691	16,235	16,543	16,565	16,875	17,001	16,885
Hamilton	12,831	13,457	13,792	13,952	14,039	14,346	14,319	14,571	14,725	14,763	14,769
Hardee	26,543	26,952	27,021	27,474	27,434	27,898	27,277	27,240	27,574	27,650	28,359
Hendry	35,608	36,300	36,256	36,174	36,739	37,800	38,610	38,870	39,846	40,295	41,997
Hernando	128,733	131,298	133,497	137,613	141,574	146,118	152,049	158,441	163,035	165,329	166,850
Highlands	85,892	87,676	88,373	89,343	90,770	92,456	93,807	97,336	98,987	99,760	100,834
Hillsborough	978,079	1,005,808	1,034,164	1,062,140	1,085,318	1,114,774	1,137,583	1,171,585	1,197,312	1,209,978	1,202,309
Holmes	18,371	18,620	18,713	18,746	18,983	19,027	19,189	19,525	19,432	19,406	19,943
Indian River	110,142	113,755	116,291	118,884	121,887	127,831	130,849	136,546	140,469	142,452	141,926
Jackson	46,050	46,998	47,534	47,963	49,218	48,891	49,883	50,286	50,482	51,106	53,663

Table A. (Continued) Florida Population by Year and County, 1999-2009, *(Source - Florida CHARTS; accessed February 2010)*

County	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Jefferson	13,307	12,874	13,107	13,329	13,618	14,110	14,265	14,390	14,513	14,562	14,732
Lafayette	6,703	7,061	7,076	7,245	7,394	7,559	8,064	8,092	8,273	8,571	8,981
Lake	204,152	212,823	222,988	233,622	242,919	254,246	265,716	279,583	288,078	293,216	292,605
Lee	430,644	444,151	459,278	481,014	499,387	526,157	555,874	594,219	620,778	634,660	620,966
Leon	236,658	240,631	245,070	249,744	256,921	265,258	272,749	272,573	272,938	273,741	275,369
Levy	33,759	34,626	35,325	36,197	36,856	37,691	38,136	39,277	40,219	40,677	41,064
Liberty	6,967	7,045	7,145	7,165	7,248	7,372	7,623	7,784	7,763	7,767	8,580
Madison	18,596	18,775	18,878	18,974	19,183	19,564	19,738	19,846	19,960	20,018	20,266
Manatee	259,039	265,701	272,342	279,366	288,888	297,037	306,557	309,952	317,395	321,323	318,765
Marion	253,235	260,407	265,629	273,602	284,232	295,550	307,646	317,755	326,791	331,843	330,749
Martin	124,952	127,430	129,415	132,009	135,280	138,329	141,871	142,859	143,914	144,736	143,588
Monroe	79,875	79,721	80,850	81,030	80,473	81,336	82,628	80,055	78,729	78,157	75,213
Nassau	56,022	58,037	59,452	61,643	63,523	65,478	66,019	68,662	69,745	70,447	73,732
Okaloosa	167,880	171,264	174,228	178,036	182,020	186,744	189,766	193,668	197,164	198,884	196,622
Okeechobee	35,452	35,998	36,211	36,715	37,377	38,153	37,752	38,821	39,038	39,116	40,133
Orange	864,197	906,000	936,749	962,531	989,962	1,021,215	1,050,939	1,087,172	1,109,714	1,123,324	1,115,169
Osceola	166,024	174,107	182,202	197,901	213,723	228,755	237,659	259,521	267,510	273,266	277,731
Palm Beach	1,107,053	1,137,532	1,160,977	1,190,653	1,218,508	1,249,598	1,272,335	1,290,600	1,295,586	1,302,077	1,289,159
Pasco	337,348	346,882	354,196	364,900	378,085	392,507	410,758	427,594	435,913	441,188	437,880
Pinellas	917,331	923,308	930,602	935,274	941,435	944,966	948,925	947,122	942,911	940,645	932,909
Polk	475,268	487,183	498,011	504,381	514,247	531,472	545,064	570,067	583,315	589,784	584,978
Putnam	70,029	70,532	70,929	71,481	72,114	73,435	73,897	74,549	74,816	74,903	74,777
Saint Johns	118,249	124,613	129,880	135,467	141,216	151,114	159,168	167,553	175,521	179,857	186,142
Saint Lucie	189,330	194,062	199,390	205,396	213,614	228,480	243,061	263,319	273,868	279,469	274,460
Santa Rosa	115,333	118,605	122,252	125,947	129,842	134,761	137,245	142,004	142,094	142,991	145,579
Sarasota	319,980	328,135	335,428	341,784	350,664	360,214	370,123	381,828	388,641	392,262	391,997
Seminole	357,714	368,231	380,763	389,549	396,934	405,565	413,937	422,288	426,364	429,244	423,947
Sumter	50,539	54,203	58,083	61,979	63,522	67,221	75,660	84,687	90,996	94,125	96,033
Suwannee	34,226	35,091	35,744	35,815	37,479	37,863	38,319	39,008	39,816	40,773	42,181
Taylor	19,264	19,297	19,594	19,878	20,794	20,977	21,395	21,696	22,721	23,062	23,701
Union	13,335	13,473	13,660	13,786	13,793	14,752	15,135	15,160	15,865	16,112	16,157
Volusia	436,218	445,676	453,840	462,377	473,185	486,874	497,224	505,317	508,468	511,094	508,844
Wakulla	21,917	23,150	23,936	24,340	25,141	25,692	27,193	28,727	29,632	30,575	31,931
Walton	39,387	40,990	43,270	46,052	47,472	51,167	54,218	56,199	57,318	58,264	58,046
Washington	20,850	21,069	21,516	21,702	21,987	22,534	23,255	23,179	23,876	24,307	25,600

Table B. Florida Population by Age Group, 2009

Age Group	2009
< 1	227,360
1-4	909,441
5-9	1,137,318
10-14	1,148,339
15-17	727,914
18-19	475,228
20-24	1,210,398
25-29	1,165,740
30-34	1,116,001
35-39	1,179,711
40-44	1,259,170
45-49	1,361,401
50-54	1,312,357
55-59	1,201,967
60-64	1,084,043
65-69	879,955
70-74	732,260
75-79	639,798
80-84	526,308
85+	524,289
Total	18,818,998

Table C. Florida Population by Gender, 2009

Gender	2009
Male	9,225,158
Female	9,593,840
Total	18,818,998

Table D. Florida Population by Race, Aggregated to White, Black, and Other Non-White, 2009

Race	2009
White	15,180,146
Black	3,101,145
Other Non-White	537,707
Total	18,818,998

List of Reportable Diseases and Conditions in Florida, 2009

Section 381.0031 (1,2), Florida Statutes, provides that "Any practitioner, licensed in Florida to practice medicine, osteopathic medicine, chiropractic, naturopathy, or veterinary medicine, who diagnoses or suspects the existence of a disease of public health significance shall immediately report the fact to the Department of Health." County health departments serve as the Department's representative in this reporting requirement. Furthermore, this Section provides that "Periodically the Department shall issue a list of diseases determined by it to be of public health significance…and shall furnish a copy of said list to the practitioners…". This list reflects diseases and conditions that were reportable in 2009. However, additional updates will be made in future years and Annual Morbidity Reports for subsequent years will reflect changes in the list.

Acquired Immune Deficiency Syndrome (AIDS)
Amebic encephalitis
Anthrax
Arsenic Poisoning
Botulism
Brucellosis
California serogroup virus (neuroinvasive and non-neuroinvasive)
Campylobacteriosis
Cancer (except non-melanoma skin cancer, and including benign and borderline intracranial and CNS tumors)
Carbon Monoxide Poisoning
Chancroid
Chlamydia
Cholera
Ciguatera fish poisoning (Ciguatera)
Congenital anomalies
Conjunctivitis (in neonates $\le$ 14 days old)
Creutzfeldt-Jakob Disease (CJD)
Cryptosporidiosis
Cyclosporiasis
Dengue
Diphtheria
Eastern equine encephalitis virus disease (neuroinvasive and non-neuroinvasive)
Ehrlichiosis/Anaplasmosis [human granulocytic (HGA), human monocytic (HME), human other or unspecified agent]
Encephalitis, other (non-arboviral)
Enteric diseases due to:
Escherichia coli, O157:H7
Escherichia coli, Other (known serotypes)
Giardiasis
Glanders
Gonorrhea
Granuloma Inguinale
Haemophilus influenzae (meningitis and invasive disease)
Hansen's Disease (Leprosy)
Hantavirus infection
Hemolytic Uremic Syndrome
Hepatitis A
Hepatitis B, C, D, E, and G
Hepatitis B surface antigen (HBsAg) positive in a pregnant woman or a child $\le$ 24 months of age
Herpes Simplex Virus (HSV) [in Infants to 6 months of age; anogenital in children $\le$ 12 yrs]
Human Immunodeficiency Virus (HIV)
Human papillomavirus (HPV) [in children $\le$ 6 years; anogenital in children $\le$ 12 yrs, cancer associated strains]
Influenza due to novel or pandemic strains
Influenza-associated pediatric mortality (in persons aged $<$ 18 yrs)
Lead Poisoning
Legionellosis
Leptospirosis
Listeriosis
Lyme Disease
Lymphogranuloma Venereum (LGV)
Malaria
Measles (Rubeola)
Melioidosis
Meningitis (bacterial, cryptococcal, mycotic)
Meningococcal Disease (includes meningitis and meningococcemia)
Mercury Poisoning
Mumps
Neurotoxic Shellfish Poisoning
Pertussis
Pesticide-Related Illness and Injury
Plague
Poliomyelitis
Psittacosis (Ornithosis)
Q Fever
Rabies (human, animal)
Rabies (possible exposure)
Ricin toxicity
Rocky Mountain spotted fever
Rubella (including congenital)
St. Louis encephalitis (SLE) virus disease (neuroinvasive and non-neuroinvasive)
Salmonellosis
Saxitoxin Poisoning (including paralytic shellfish poisoning)
Severe Acute Respiratory Syndrome-associated *Coronavirus* (SARS-CoV) disease
Shigellosis
Smallpox
Staphylococcus aureus (with intermediate or full resistance to vancomycin, VISA, VRSA)
Staphylococcus aureus, methicilin resistant (MRSA), community associated mortalities
Staphylococcus enterotoxin B
Streptococcal Disease (invasive, Group A)
Streptococcus pneumoniae (invasive disease)
Syphilis
Tetanus
Toxoplasmosis (acute)
Trichinosis
Tuberculosis
Tularemia
Typhoid Fever
Typhus Fever (epidemic and endemic)
Vaccinia Disease
Varicella (chickenpox)
Varicella mortality
Venezuelan equine encephalitis virus disease (neuroinvasive and non-neuroinvasive)
Vibriosis (*Vibrio* infections)
Viral hemorrhagic fevers (Ebola, Marburg, Lassa, Machupo)
West Nile virus disease (neuroinvasive and non-neuroinvasive)
Western equine encephalitis virus disease (neuroinvasive and non-neuroinvasive)
Yellow Fever
Any disease outbreak
Any grouping or clustering

Selected Florida Department of Health Contacts

Division of Disease Control

Bureau of Epidemiology	(850) 245-4401 (accessible 24/7/365)
Bureau of Immunization	(850) 245-4342
Bureau of HIV/AIDS	(850) 245-4334
Bureau of Sexually Transmitted Disease Prevention and Control	(850) 245-4303
Bureau of Tuberculosis and Refugee Health	(850) 245-4350

Division of Environmental Health

Bureau of Environmental Public Health Medicine	(850) 245-4277

Section 1

Summary of Selected Notifiable Diseases

Table 1.1. Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases, Florida, 2000-2009

Selected Notifiable Diseases	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome[1]	4,609	28.67	4,620	28.15	4,675	27.87	4,429	25.80	5,421	30.78	4,755	26.39	4,960	26.92	3,896	20.77	4,957	26.23	4,429	23.53
Campylobacteriosis	1,051	6.54	895	5.45	995	5.93	1,056	6.15	1,009	5.73	894	4.96	941	5.11	1,017	5.42	1,118	5.92	1,120	5.95
Chlamydia	33,390	207.72	37,625	229.25	42,058	250.76	42,381	246.92	42,554	241.60	43,372	240.71	48,955	265.74	57,580	306.90	70,751	374.41	72,937	387.57
Cryptosporidiosis	241	1.50	89	0.54	106	0.63	128	0.75	149	0.85	350	1.94	717	3.89	738	3.93	549	2.91	495	2.64
Cyclosporiasis	9	0.06	48	0.29	32	0.19	14	0.08	9	0.05	524	2.91	31	0.17	32	0.17	59	0.31	40	0.21
Escherichia coli, Shiga toxin-producing[2]	112	0.70	66	0.40	89	0.53	72	0.42	78	0.44	114	0.63	38	0.21	47	0.25	65	0.34	94	0.50
Giardiasis	1,532	9.53	1,150	7.01	1,318	7.86	1,132	6.60	1,126	6.39	987	5.48	1,165	6.32	1,268	6.76	1,391	7.36	1,981	10.53
Gonorrhea	22,781	141.72	21,531	131.19	21,348	127.28	18,974	110.54	18,580	105.49	20,225	112.25	23,976	130.15	23,308	124.23	23,237	122.97	20,879	110.95
Hemophilus influenzae, Invasive Disease[3]	72	0.45	70	0.43	82	0.49	99	0.58	99	0.56	117	0.65	142	0.77	127	0.68	162	0.86	222	1.18
Hepatitis A	657	4.09	847	5.16	1,056	6.30	399	2.32	295	1.67	289	1.60	233	1.26	171	0.91	165	0.87	191	1.01
Hepatitis B (+HBsAg in Pregnant Women)	512	14.83	437	12.53	631	17.93	555	15.39	599	16.35	530	14.16	448	11.78	644	16.85	599	15.69	598	17.06
Hepatitis B, Acute	610	3.79	502	3.06	543	3.24	631	3.68	527	2.99	510	2.83	446	2.42	366	1.95	358	1.89	318	1.69
Hepatitis C, Acute	47	0.29	43	0.26	76	0.45	69	0.40	53	0.30	39	0.22	49	0.27	46	0.25	53	0.28	77	0.41
Human Immunodeficiency Virus	5,788	36.01	5,917	36.05	6,602	39.36	6,198	36.11	5,987	33.99	5,514	30.60	5,224	28.36	6,235	33.23	7,588	40.16	5,608	29.80
Legionellosis	54	0.34	97	0.59	85	0.51	147	0.86	141	0.80	119	0.66	167	0.91	153	0.82	148	0.78	193	1.03
Listeriosis[4]	40	0.25	19	0.12	28	0.17	37	0.22	28	0.16	61	0.34	47	0.26	34	0.18	49	0.26	25	0.13
Lyme Disease	57	0.35	57	0.35	77	0.46	43	0.25	46	0.26	47	0.26	34	0.18	30	0.16	88	0.47	110	0.58
Malaria	90	0.56	61	0.37	76	0.45	92	0.54	93	0.53	68	0.38	61	0.33	56	0.30	65	0.34	93	0.49
Meningitis, Other	109	0.68	110	0.67	131	0.78	158	0.92	128	0.73	127	0.70	162	0.88	135	0.72	199	1.05	210	1.12
Meningococcal Disease[5]	136	0.85	124	0.76	128	0.76	106	0.62	107	0.61	84	0.47	79	0.43	67	0.36	51	0.27	52	0.28
Pertussis	67	0.42	30	0.18	53	0.32	113	0.66	132	0.75	208	1.15	228	1.24	211	1.12	314	1.66	497	2.64
Rabies, Animal	161	NA	157	NA	181	NA	188	NA	205	NA	201	NA	176	NA	128	NA	144	NA	154	NA
Rabies, Possible Exposure	475	2.95	1,100	6.70	1,082	6.45	1,051	6.12	1,128	6.40	1,215	6.74	1,244	6.75	1,474	7.86	1,618	8.56	1,853	9.85
Salmonellosis	2,830	17.61	3,104	18.91	4,651	27.73	4,669	27.20	4,276	24.28	5,552	30.81	4,928	26.75	5,022	26.77	5,312	28.11	6,741	35.82
Shigellosis	1,522	9.47	1,052	6.41	2,538	15.13	2,845	16.58	965	5.48	1,270	7.05	1,646	8.93	2,288	12.19	801	4.24	461	2.45
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	1,162	7.23	799	4.87	610	3.64	606	3.53	581	3.30	614	3.41	774	4.20	725	3.86	792	4.19	779	4.14
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	NR	-	NR	-	NR	-	201	1.17	606	3.44	598	3.32	620	3.37	622	3.32	704	3.73	701	3.72
Streptococcal Disease, Invasive Group A	149	0.93	159	0.97	201	1.20	229	1.33	219	1.24	260	1.44	312	1.69	309	1.65	275	1.46	279	1.48
Syphilis	2,728	16.97	2,877	17.53	3,251	19.38	3,256	18.97	2,948	16.74	2,872	15.94	2,924	15.87	3,928	20.94	4,578	24.23	3,864	20.53
Toxoplasmosis	14	0.09	35	0.21	45	0.27	31	0.18	24	0.14	2	0.01	4	0.02	9	0.05	14	0.07	4	0.02
Tuberculosis	1,171	7.28	1,145	6.98	1,086	6.47	1,046	6.09	1,076	6.11	1,094	6.07	1,038	5.63	989	5.27	953	5.04	821	4.36
Vibrio Infections[6]	61	0.38	55	0.34	87	0.52	115	0.67	107	0.61	103	0.57	99	0.54	97	0.52	94	0.49	112	0.60
West Nile Virus	NR	-	11	0.07	36	0.21	93	0.54	45	0.26	22	0.12	3	0.02	3	0.02	3	0.02	3	0.02

1 Data for Acquired Immune Deficiency Syndrome and Humman Immunodeficiency Virus are presented here by report date which corresponds to other diseases in this table. However, cases can be added or removed from a previous year based on additional laboratory results or updated demographic data. As such, historical year numbers may differ in this table to the data presented in their program specific summary in Section 2.
2 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrpouped non-O157, and *E. coli*, Shiga toxin-producing.
3 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
4 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
5 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
6 Includes reported cases of *V. alginolyticus*, *V. cholerae* non-O1, *V. fluvialis*, *V. hollisae*, *V. mimicus*, *V. parahaemolyticus*, *V. vulnificus*, and *V.* other.
NA - Not applicable

Table 1.2. Reported Confirmed and Probable Cases of Notifiable Diseases of Infrequent Occurrence, Florida, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Amebic Encephalitis	NR	NR	NR	NR	NR	NR	NR	NR	-	3
Anaplasmosis, Human Granulocytic	NR	-	1	5	3	1	1	3	2	3
Anthrax	-	2	-	-	-	-	-	-	-	-
Botulism, Foodborne	-	-	-	-	-	-	1	-	-	-
Botulism, Infant	-	-	-	-	1	1	-	1	1	1
Botulism, Other	-	-	-	-	2	-	-	-	-	-
Botulism, Wound	-	-	-	-	-	-	-	-	-	-
Brucellosis	6	5	6	10	8	3	5	10	10	9
California serogroup virus	-	-	-	-	4	-	1	1	1	-
Chancroid	-	2	7	2	1	1	1	3	-	-
Ciguatera	14	13	7	7	4	10	32	29	53	49
Creutzfeldt-Jakob Disease (CJD)	NR	NR	NR	4	14	17	14	12	23	15
Dengue Fever	13	12	21	16	13	19	20	46	33	55
Diphtheria	-	-	-	-	-	-	-	-	-	-
Eastern Equine Encephalitis	-	3	1	2	1	5	-	-	1	-
Ehrlichiosis, Human[1]	-	NR	NR	NR	NR	NR	NR	-	-	-
Ehrlichiosis, Human Monocytic	10	8	4	8	4	4	5	18	10	11
Encephalitis, Other	19	12	20	10	8	8	5	18	5	27
Glanders	NR	NR	NR	-	-	-	-	-	-	-
Granuloma inguinale	-	-	-	-	-	-	-	-	-	-
Hantavirus Infection	-	-	-	-	-	-	-	-	-	-
Hemolytic Uremic Syndrome	20	5	5	6	6	20	5	6	5	5
Hemorrhagic Fever	-	-	-	-	-	-	-	-	-	-
Hepatitis B, Perinatal	2	7	6	2	-	2	6	2	3	-
Hepatitis Non-A or B	6	6	8	4	8	5	36	NR	NR	NR
Hepatitis Unspecified, Acute	7	6	1	3	-	2	2	NR	NR	NR
Hepatitis D	NR	NR	NR	NR	NR	NR	NR	1	-	1
Hepatitis E	NR	NR	NR	NR	NR	NR	NR	1	-	2
Hepatitis G	NR	NR	NR	NR	NR	NR	NR	-	-	1
Leprosy (Hansen's disease)	4	1	4	9	5	2	7	10	10	7
Leptospirosis	3	1	-	1	1	2	2	1	-	1
Lymphogranuloma venereum	1	2	4	2	-	3	-	-	-	-

1 Includes codes for human ehrlichiosis (NR after 1999), ehrlichiosis caused by *E. ewingii*, and ehrlichiosis unspecified.
NR - Not Reportable

Table 1.2. (Continued) Reported Confirmed and Probable Cases of Notifiable Diseases of Infrequent Occurrence, Florida, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Measles	2	-	3	-	1	-	4	5	1	5
Melioidosis	NR	NR	NR	-	-	1	1	-	-	-
Meningitis, Group B Streptococcus	21	18	19	15	15	23	23	30	11	NR
Mumps	7	8	7	7	9	8	15	21	16	18
Neurotoxic Shellfish Poisoning	-	-	-	-	-	4	16	1	-	-
Plague	-	-	-	-	-	-	-	-	-	-
Poliomyelitis	-	-	-	-	-	-	-	-	-	-
Psittacosis	4	1	3	3	1	-	1	-	2	-
Q Fever	-	1	2	6	2	1	8	2	1	1
Rabies, Human	-	-	-	-	1	-	-	-	-	-
Ricin Toxin	NR	NR	NR	-	-	-	-	-	-	-
Rocky Mountain Spotted Fever	12	8	15	17	22	14	21	19	19	10
Rubella	2	3	5	-	-	-	1	-	3	-
Rubella, Congenital	1	-	-	-	-	-	-	-	-	-
Saxitoxin Poisoning	-	-	-	-	1	-	-	-	-	-
Smallpox	-	-	-	-	-	-	-	-	-	-
St. Louis Encephalitis	-	-	1	-	-	-	-	-	-	-
Staphylococcus aureus (GISA/VISA)	-	-	-	-	-	-	-	1	3	6
Staphylococcus aureus (GRSA/VRSA)	-	-	-	-	-	-	-	-	-	-
Staphylococcus enterotoxin B	NR	NR	NR	-	-	-	-	-	2	-
Tetanus	1	3	3	3	4	3	2	5	2	-
Trichinosis	1	-	-	-	-	1	1	-	1	-
Tularemia	-	-	-	-	-	1	-	-	-	-
Typhoid Fever	12	12	19	15	10	11	16	15	18	19
Typhus Fever	-	-	-	-	1	-	2	1	-	1
Vaccinia Disease	-	-	-	1	-	-	-	-	-	-
Venezuelan Equine Encephalitis	-	-	-	-	-	-	-	-	-	-
Vibrio cholerae type O1	-	-	-	-	-	-	-	-	1	-
Western Equine Encephalitis	-	-	-	-	-	-	-	-	-	-
Yellow Fever	-	-	-	-	-	-	-	-	-	-

NR - Not Reportable

Table 1.3. Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Alachua County		Baker County		Bay County		Bradford County		Brevard County		Broward County		Calhoun County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	51	20.02	2	7.68	25	14.71	2	6.87	39	7.02	819	46.85	1	6.99
Campylobacteriosis	21	8.25	5	19.19	10	5.88	2	6.87	36	6.48	89	5.09	1	6.99
Chlamydia	1,084	425.62	125	479.86	587	345.39	101	346.98	1,600	287.80	6,949	397.48	45	314.49
Cryptosporidiosis	13	5.10	1	3.84	20	11.77	2	6.87	35	6.30	16	0.92	-	0.00
Cyclosporiasis	1	0.39	-	0.00	-	0.00	-	0.00	2	0.36	4	0.23	-	0.00
Escherichia coli, Shiga toxin-producing[1]	3	1.18	-	0.00	-	0.00	-	0.00	-	0.00	8	0.46	-	0.00
Giardiasis	33	12.96	1	3.84	22	12.94	4	13.74	30	5.40	134	7.66	1	6.99
Gonorrhea	392	153.91	8	30.71	240	141.21	7	24.05	354	63.68	1,966	112.45	17	118.81
Hemophilus influenzae, Invasive[2]	4	1.57	1	3.84	-	0.00	-	0.00	13	2.34	25	1.43	1	6.99
Hepatitis A	6	2.36	-	0.00	-	0.00	-	0.00	3	0.54	33	1.89	-	0.00
Hepatitis B (+HBsAg in Pregnant Women)	8	3.14	-	0.00	-	0.59	1	3.44	3	0.54	75	4.29	-	0.00
Hepatitis B, Acute	1	0.39	-	0.00	-	0.59	2	6.87	6	1.08	40	2.29	-	0.00
Hepatitis C, Acute	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	1	0.06	-	0.00
Human Immunodeficiency Virus	56	21.99	2	7.68	33	19.42	4	13.74	50	8.99	956	54.68	2	13.98
Legionellosis	1	0.39	-	0.00	1	0.59	-	0.00	8	1.44	14	0.80	-	0.00
Listeriosis[3]	-	0.00	-	0.00	1	0.59	-	0.00	2	0.36	2	0.11	-	0.00
Lyme disease	1	0.39	-	0.00	1	0.59	-	0.00	1	0.18	4	0.23	-	0.00
Malaria	2	0.79	-	0.00	-	0.00	-	0.00	-	0.00	24	1.37	-	0.00
Meningitis, Other (bacterial, cryptococcal, mycotic)	7	2.75	-	0.00	-	0.00	-	0.00	2	0.36	17	0.97	-	0.00
Meningococcal Disease[4]	2	0.79	-	0.00	-	0.00	-	0.00	2	0.36	3	0.17	-	0.00
Pertussis	14	5.50	-	0.00	-	0.00	-	0.00	1	0.18	7	0.40	-	0.00
Rabies, Possible Exposure	59	23.17	4	15.36	53	31.18	4	13.74	67	12.05	12	0.69	-	0.00
Salmonellosis	89	34.94	7	26.87	124	72.96	26	89.32	338	60.80	466	26.65	10	69.89
Shigellosis	3	1.18	-	0.00	-	0.00	-	0.00	1	0.18	66	3.78	-	0.00
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	10	3.93	1	3.84	8	4.71	-	0.00	22	3.96	80	4.58	1	6.99
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	19	7.46	3	11.52	11	6.47	-	0.00	28	5.04	46	2.63	-	0.00
Streptococcal Disease, Invasive Group A	3	1.18	1	3.84	4	2.35	-	0.00	8	1.44	29	1.66	-	0.00
Syphilis	45	17.67	4	15.36	8	4.71	-	0.00	28	5.04	599	34.26	3	20.97
Toxoplasmosis	1	0.39	-	0.00	-	0.00	-	0.00	-	0.00	0	0.00	-	0.00
Tuberculosis	3	1.18	-	0.00	13	7.65	-	0.00	8	1.44	79	4.52	3	20.97
Varicella	32	12.56	4	15.36	16	9.41	1	3.44	23	4.14	30	1.72	1	6.99
Vibrio Infections[5]	1	0.39	-	0.00	3	1.77	-	0.00	8	1.44	9	0.51	-	0.00
West Nile Virus	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V.alginolyticus*, *V.cholerae* non-O1, *V.fluvialis*, *V.hollisae*, *V.mimicus*, *V.parahaemolyticus*, *V.vulnificus*, and *V.*other.

Table 1.3. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Charlotte County		Citrus County		Clay County		Collier County		Columbia County		DeSoto County		Dixie County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	8	4.81	9	6.26	41	22.08	33	9.93	12	17.87	5	14.33	3	18.66
Campylobacteriosis	9	5.41	7	4.87	17	9.16	46	13.85	8	11.91	1	2.87	8	49.75
Chlamydia	276	165.97	296	205.76	567	305.37	778	234.19	250	372.24	107	306.65	44	273.63
Cryptosporidiosis	1	0.60	1	0.70	14	7.54	8	2.41	5	7.44	-	0.00	-	0.00
Cyclosporiasis	-	0.00	-	0.00	1	0.54	-	0.00	1	1.49	-	0.00	-	0.00
Escherichia coli, Shiga toxin-producing[1]	1	0.60	1	0.70	1	0.54	8	2.41	-	0.00	-	0.00	-	0.00
Giardiasis	4	2.41	4	2.78	17	9.16	61	18.36	7	10.42	1	2.87	4	24.88
Gonorrhea	51	30.67	48	33.37	105	56.55	74	22.28	39	58.07	31	88.84	10	62.19
Hemophilus influenzae, Invasive[2]	3	1.80	2	1.39	3	1.62	4	1.20	2	2.98	-	0.00	-	0.00
Hepatitis A	1	0.60	-	0.00	-	0.00	2	0.60	1	1.49	1	2.87	1	6.22
Hepatitis B (+HBsAg in Pregnant Women)	1	0.60	1	0.70	2	1.08	15	4.52	2	2.98	-	0.00	-	0.00
Hepatitis B, Acute	5	3.01	3	2.09	2	1.08	5	1.51	2	2.98	1	2.87	2	12.44
Hepatitis C, Acute	-	0.00	2	1.39	2	1.08	1	0.30	-	0.00	-	0.00	4	24.88
Human Immunodeficiency Virus	14	8.42	8	5.56	33	17.77	47	14.15	13	19.36	4	11.46	3	18.66
Legionellosis	1	0.60	-	0.00	-	0.00	8	2.41	-	0.00	-	0.00	-	0.00
Listeriosis[3]	-	0.00	-	0.00	-	0.00	1	0.30	-	0.00	-	0.00	-	0.00
Lyme disease	-	0.00	4	2.78	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Malaria	-	0.00	-	0.00	1	0.54	-	0.00	-	0.00	-	0.00	-	0.00
Meningitis, Other (bacterial, cryptococcal, mycotic)	-	0.00	1	0.70	2	1.08	3	0.90	3	4.47	-	0.00	-	0.00
Meningococcal Disease[4]	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Pertussis	1	0.60	2	1.39	1	0.54	3	0.90	4	5.96	-	0.00	1	6.22
Rabies, Possible Exposure	57	34.28	33	22.94	23	12.39	49	14.75	16	23.82	2	5.73	-	0.00
Salmonellosis	51	30.67	54	37.54	108	58.17	87	26.19	38	56.58	12	34.39	15	93.28
Shigellosis	-	0.00	5	3.48	8	4.31	1	0.30	-	0.00	-	0.00	1	6.22
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	3	1.80	6	4.17	12	6.46	14	4.21	3	4.47	1	2.87	2	12.44
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	3	1.80	11	7.65	6	3.23	12	3.61	11	16.38	1	2.87	1	6.22
Streptococcal Disease, Invasive Group A	3	1.80	1	0.70	4	2.15	2	0.60	1	1.49	-	0.00	-	0.00
Syphilis	9	5.41	2	1.39	12	6.46	26	7.83	3	4.47	2	5.73	-	0.00
Toxoplasmosis	-	0.00	-	0.00	-	0.00	1	0.30	-	0.00	-	0.00	-	0.00
Tuberculosis	7	4.21	4	2.78	6	3.23	20	6.02	22	32.76	3	8.60	-	0.00
Varicella	7	4.21	8	5.56	18	9.69	23	6.92	3	4.47	9	25.79	3	18.66
Vibrio Infections[5]	1	0.60	1	0.70	-	0.00	2	0.60	-	0.00	-	0.00	-	0.00
West Nile Virus	-	0.00	-	0.00	1	0.54	-	0.00	-	0.00	-	0.00	-	0.00

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V.alginolyticus*, *V.cholerae* non-O1, *V.fluvialis*, *V.hollisae*, *V.mimicus*, *V.parahaemolyticus*, *V.vulnificus*, and *V.*other.

Table 1.3. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Duval County		Escambia County		Flagler County		Franklin County		Gadsden County		Gilchrist County		Glades County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	331	36.43	59	18.75	8	8.40	1	8.40	17	33.05	1	5.71	2	17.36
Campylobacteriosis	61	6.71	26	8.26	3	3.15	-	3.15	-	0.00	3	17.14	1	8.68
Chlamydia	5,539	609.64	1,756	558.00	227	238.41	47	238.41	588	1,143.30	57	325.68	33	286.46
Cryptosporidiosis	20	2.20	1	0.32	3	3.15	1	3.15	1	1.94	1	5.71	-	0.00
Cyclosporiasis	1	0.11	1	0.32	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Escherichia coli, Shiga toxin-producing[1]	6	0.66	1	0.32	-	0.00	-	0.00	1	1.94	-	0.00	-	0.00
Giardiasis	73	8.03	19	6.04	5	5.25	3	5.25	2	3.89	2	11.43	-	0.00
Gonorrhea	1,826	200.98	782	248.49	25	26.26	6	26.26	299	581.37	7	40.00	4	34.72
Hemophilus influenzae, Invasive[2]	9	0.99	4	1.27	-	0.00	-	0.00	1	1.94	1	5.71	1	8.68
Hepatitis A	7	0.77	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	1	8.68
Hepatitis B (+HBsAg in Pregnant Women)	33	3.63	8	2.54	2	2.10	-	2.10	1	1.94	1	5.71	-	0.00
Hepatitis B, Acute	19	2.09	1	0.32	-	0.00	2	0.00	-	0.00	-	0.00	-	0.00
Hepatitis C, Acute	-	0.00	1	0.32	-	0.00	-	0.00	-	0.00	1	5.71	-	0.00
Human Immunodeficiency Virus	451	49.64	63	20.02	12	12.60	3	12.60	13	25.28	2	11.43	1	8.68
Legionellosis	10	1.10	1	0.32	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Listeriosis[3]	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Lyme disease	1	0.11	1	0.32	1	1.05	-	1.05	-	0.00	-	0.00	-	0.00
Malaria	5	0.55	1	0.32	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Meningitis, Other (bacterial, cryptococcal, mycotic)	15	1.65	14	4.45	-	0.00	-	0.00	1	1.94	-	0.00	-	0.00
Meningococcal Disease[4]	4	0.44	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Pertussis	39	4.29	81	25.74	-	0.00	-	0.00	-	0.00	-	0.00	1	8.68
Rabies, Possible Exposure	21	2.31	64	20.34	6	6.30	-	6.30	13	25.28	-	0.00	1	8.68
Salmonellosis	457	50.30	118	37.50	28	29.41	4	29.41	10	19.44	8	45.71	3	26.04
Shigellosis	6	0.66	32	10.17	-	0.00	-	0.00	3	5.83	-	0.00	1	8.68
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	42	4.62	29	9.22	3	3.15	-	3.15	1	1.94	-	0.00	-	0.00
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	48	5.28	21	6.67	1	1.05	1	1.05	5	9.72	2	11.43	1	8.68
Streptococcal Disease, Invasive Group A	23	2.53	6	1.91	-	0.00	-	0.00	-	0.00	1	5.71	1	8.68
Syphilis	215	23.66	20	6.36	2	2.10	2	2.10	11	21.39	-	0.00	-	0.00
Toxoplasmosis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Tuberculosis	89	9.80	6	1.91	2	2.10	-	2.10	5	9.72	1	5.71	3	26.04
Varicella	41	4.51	80	25.42	9	9.45	-	9.45	-	0.00	-	0.00	1	8.68
Vibrio Infections[5]	6	0.66	6	1.91	2	2.10	1	2.10	2	3.89	-	0.00	-	0.00
West Nile Virus	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	0	0.00

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V.alginolyticus*, *V.cholerae* non-O1, *V.fluvialis*, *V.hollisae*, *V.mimicus*, *V.parahaemolyticus*, *V.vulnificus*, and *V.other*.

Table 1.3. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Gulf County		Hamilton County		Hardee County		Hendry County		Hernando County		Highlands County		Hillsborough County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	1	5.92	3	20.31	4	14.10	5	11.91	11	6.59	9	8.93	269	22.37
Campylobacteriosis	3	17.77	3	20.31	-	0.00	11	26.19	2	1.20	2	1.98	69	5.74
Chlamydia	44	260.59	85	575.53	96	338.52	206	490.51	304	182.20	329	326.28	6,611	549.86
Cryptosporidiosis	1	5.92	-	0.00	-	0.00	-	0.00	1	0.60	-	0.00	38	3.16
Cyclosporiasis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	2	0.17
Escherichia coli, Shiga toxin-producing[1]	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	6	0.50
Giardiasis	1	5.92	1	6.77	-	0.00	7	16.67	9	5.39	5	4.96	101	8.40
Gonorrhea	15	88.84	29	196.36	17	59.95	20	47.62	54	32.36	37	36.69	2,015	167.59
Hemophilus influenzae, Invasive[2]	-	0.00	-	0.00	-	0.00	1	2.38	3	1.80	-	0.00	13	1.08
Hepatitis A	-	0.00	-	0.00	-	0.00	2	4.76	1	0.60	-	0.00	13	1.08
Hepatitis B (+HBsAg in Pregnant Women)	-	0.00	-	0.00	1	3.53	1	2.38	3	1.80	2	1.98	64	5.32
Hepatitis B, Acute	-	0.00	-	0.00	-	0.00	-	0.00	10	5.99	2	1.98	29	2.41
Hepatitis C, Acute	-	0.00	-	0.00	-	0.00	1	2.38	1	0.60	-	0.00	14	1.16
Human Immunodeficiency Virus	1	5.92	2	13.54	3	10.58	15	35.72	24	14.38	9	8.93	404	33.60
Legionellosis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	7	0.58
Listeriosis[3]	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	2	0.17
Lyme disease	-	0.00	-	0.00	-	0.00	-	0.00	1	0.60	-	0.00	11	0.91
Malaria	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	2	0.17
Meningitis, Other (bacterial, cryptococcal, mycotic)	-	0.00	-	0.00	1	3.53	1	2.38	1	0.60	-	0.00	28	2.33
Meningococcal Disease[4]	-	0.00	-	0.00	-	0.00	-	0.00	1	0.60	1	0.99	1	0.08
Pertussis	-	0.00	-	0.00	-	0.00	5	11.91	-	0.00	1	0.99	25	2.08
Rabies, Possible Exposure	3	17.77	3	20.31	2	7.05	6	14.29	36	21.58	13	12.89	72	5.99
Salmonellosis	8	47.38	8	54.17	20	70.52	30	71.43	42	25.17	32	31.74	336	27.95
Shigellosis	-	0.00	-	0.00	1	3.53	-	0.00	2	1.20	-	0.00	21	1.75
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	-	0.00	-	0.00	1	3.53	3	7.14	17	10.19	9	8.93	54	4.49
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	-	0.00	1	6.77	2	7.05	3	7.14	13	7.79	3	2.98	35	2.91
Streptococcal Disease, Invasive Group A	2	11.84	-	0.00	1	3.53	1	2.38	10	5.99	1	0.99	14	1.16
Syphilis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	3	2.98	420	34.93
Toxoplasmosis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Tuberculosis	1	5.92	-	0.00	2	7.05	2	4.76	-	0.00	4	3.97	83	6.90
Varicella	9	53.30	2	13.54	28	98.73	4	9.52	21	12.59	16	15.87	28	2.33
Vibrio Infections[5]	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	7	0.58
West Nile Virus	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V.alginolyticus*, *V.cholerae* non-O1, *V.fluvialis*, *V.hollisae*, *V.mimicus*, *V.parahaemolyticus*, *V.vulnificus*, and *V.*other.

Table 1.3. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Holmes County		Indian River County		Jackson County		Jefferson County		Lafayette County		Lake County		Lee County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	2	10.03	18	12.68	7	13.04	-	0.00	2	22.27	28	9.57	81	13.04
Campylobacteriosis	7	35.10	11	7.75	7	13.04	-	0.00	2	22.27	10	3.42	66	10.63
Chlamydia	61	305.87	450	317.07	253	471.46	87	590.55	26	289.50	824	281.61	1,958	315.32
Cryptosporidiosis	1	5.01	14	9.86	1	1.86	-	0.00	-	0.00	9	3.08	59	9.50
Cyclosporiasis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	3	1.03	2	0.32
Escherichia coli, Shiga toxin-producing[1]	-	0.00	-	0.00	1	1.86	-	0.00	2	22.27	-	0.00	4	0.64
Giardiasis	1	5.01	18	12.68	1	1.86	-	0.00	-	0.00	14	4.78	55	8.86
Gonorrhea	10	50.14	149	104.98	101	188.21	30	203.64	7	77.94	220	75.19	436	70.21
Hemophilus influenzae, Invasive[2]	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	8	2.73	5	0.81
Hepatitis A	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	2	0.68	3	0.48
Hepatitis B (+HBsAg in Pregnant Women)	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	6	2.05	17	2.74
Hepatitis B, Acute	-	0.00	2	1.41	-	0.00	-	0.00	-	0.00	-	0.00	8	1.29
Hepatitis C, Acute	-	0.00	2	1.41	-	0.00	-	0.00	-	0.00	1	0.34	-	0.00
Human Immunodeficiency Virus	-	0.00	15	10.57	5	9.32	1	6.79	-	0.00	31	10.59	87	14.01
Legionellosis	-	0.00	1	0.70	0	0.00	-	0.00	-	0.00	4	1.37	13	2.09
Listeriosis[3]	-	0.00	-	0.00	0	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Lyme disease	-	0.00	3	2.11	-	0.00	-	0.00	-	0.00	-	0.00	11	1.77
Malaria	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	1	0.16
Meningitis, Other (bacterial, cryptococcal, mycotic)	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	2	0.68	3	0.48
Meningococcal Disease[4]	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	1	0.34	3	0.48
Pertussis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	6	2.05	7	1.13
Rabies, Possible Exposure	3	15.04	22	15.50	5	9.32	1	6.79	1	11.13	44	15.04	147	23.67
Salmonellosis	8	40.11	60	42.28	29	54.04	3	20.36	3	33.40	193	65.96	250	40.26
Shigellosis	-	0.00	2	1.41	4	7.45	-	0.00	-	0.00	7	2.39	12	1.93
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	-	0.00	5	3.52	2	3.73	1	6.79	-	0.00	20	6.84	18	2.90
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	3	15.04	4	2.82	2	3.73	1	6.79	-	0.00	11	3.76	35	5.64
Streptococcal Disease, Invasive Group A	-	0.00	3	2.11	-	0.00	-	0.00	-	0.00	8	2.73	5	0.81
Syphilis	1	5.01	8	5.64	3	5.59	-	0.00	12	133.62	55	18.80	65	10.47
Toxoplasmosis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Tuberculosis	-	0.00	3	2.11	2	3.73	-	0.00	-	0.00	1	0.34	29	4.67
Varicella	4	20.06	19	13.39	9	16.77	-	0.00	2	22.27	26	8.89	11	1.77
Vibrio Infections[5]	-	0.00	1	0.70	3	5.59	-	0.00	-	0.00	1	0.34	4	0.64
West Nile Virus	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	1	0.16

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V.alginolyticus*, *V.cholerae* non-O1, *V.fluvialis*, *V.hollisae*, *V.mimicus*, *V.parahaemolyticus*, *V.vulnificus*, and *V.other*.

Table 1.3. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Leon County		Levy County		Liberty County		Madison County		Manatee County		Marion County		Martin County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	57	20.70	-	0.00	1	11.66	2	9.87	31	9.73	35	10.58	7	4.88
Campylobacteriosis	10	3.63	10	24.35	-	0.00	-	0.00	12	3.76	8	2.42	1	0.70
Chlamydia	2,818	1,023.35	164	399.38	44	512.82	129	636.53	1,032	323.75	1,265	382.47	244	169.93
Cryptosporidiosis	3	1.09	6	14.61	-	0.00	-	0.00	5	1.57	2	0.60	4	2.79
Cyclosporiasis	-	0.00	-	0.00	-	0.00	-	0.00	1	0.31	-	0.00	-	0.00
Escherichia coli, Shiga toxin-producing[1]	1	0.36	-	0.00	-	0.00	-	0.00	2	0.63	1	0.30	1	0.70
Giardiasis	32	11.62	11	26.79	-	0.00	-	0.00	8	2.51	13	3.93	8	5.57
Gonorrhea	978	355.16	56	136.37	20	233.10	31	152.97	319	100.07	389	117.61	34	23.68
Hemophilus influenzae, Invasive[2]	1	0.36	1	2.44	2	23.31	1	4.93	5	1.57	5	1.51	2	1.39
Hepatitis A	4	1.45	-	0.00	-	0.00	-	0.00	4	1.25	3	0.91	3	2.09
Hepatitis B (+HBsAg in Pregnant Women)	10	3.63	-	0.00	-	0.00	1	4.93	6	1.88	16	4.84	3	2.09
Hepatitis B, Acute	4	1.45	-	0.00	-	0.00	-	0.00	6	1.88	10	3.02	-	0.00
Hepatitis C, Acute	-	0.00	-	0.00	-	0.00	-	0.00	7	2.20	1	0.30	-	0.00
Human Immunodeficiency Virus	84	30.50	8	19.48	2	23.31	1	4.93	53	16.63	49	14.81	16	11.14
Legionellosis	-	0.00	1	2.44	-	0.00	-	0.00	2	0.63	4	1.21	1	0.70
Listeriosis[3]	-	0.00	-	0.00	-	0.00	-	0.00	1	0.31	1	0.30	1	0.70
Lyme disease	-	0.00	-	0.00	-	0.00	-	0.00	4	1.25	2	0.60	4	2.79
Malaria	2	0.73	-	0.00	-	0.00	-	0.00	1	0.31	1	0.30	-	0.00
Meningitis, Other (bacterial, cryptococcal, mycotic)	1	0.36	-	0.00	-	0.00	-	0.00	3	0.94	2	0.60	-	0.00
Meningococcal Disease[4]	2	0.73	-	0.00	-	0.00	-	0.00	1	0.31	1	0.30	1	0.70
Pertussis	4	1.45	-	0.00	-	0.00	-	0.00	9	2.82	10	3.02	5	3.48
Rabies, Possible Exposure	33	11.98	7	17.05	-	0.00	-	0.00	55	17.25	54	16.33	16	11.14
Salmonellosis	133	48.30	25	60.88	-	0.00	1	4.93	83	26.04	110	33.26	51	35.52
Shigellosis	-	0.00	-	0.00	-	0.00	-	0.00	2	0.63	4	1.21	2	1.39
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	11	3.99	4	9.74	-	0.00	-	0.00	14	4.39	14	4.23	3	2.09
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	16	5.81	2	4.87	-	0.00	-	0.00	11	3.45	17	5.14	3	2.09
Streptococcal Disease, Invasive Group A	3	1.09	-	0.00	-	0.00	-	0.00	5	1.57	7	2.12	1	0.70
Syphilis	5	1.82	1	2.44	-	0.00	1	4.93	21	6.59	36	10.88	13	9.05
Toxoplasmosis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Tuberculosis	9	3.27	1	2.44	-	0.00	2	9.87	18	5.65	6	1.81	5	3.48
Varicella	12	4.36	-	0.00	-	0.00	-	0.00	19	5.96	18	5.44	12	8.36
Vibrio Infections[5]	1	0.36	-	0.00	1	11.66	-	0.00	1	0.31	1	0.30	2	1.39
West Nile Virus	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V.alginolyticus*, *V.cholerae* non-O1, *V.fluvialis*, *V.hollisae*, *V.mimicus*, *V.parahaemolyticus*, *V.vulnificus*, and *V.*other.

Table 1.3. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Miami-Dade County		Monroe County		Nassau County		Okaloosa County		Okeechobee County		Orange County		Osceola County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	888	35.85	38	50.52	5	6.78	10	5.09	2	4.98	377	33.81	48	17.28
Campylobacteriosis	170	6.86	3	3.99	8	10.85	3	1.53	3	7.48	47	4.21	8	2.88
Chlamydia	8,318	335.81	119	158.22	177	240.06	621	315.83	200	498.34	6,015	539.38	1,006	362.22
Cryptosporidiosis	25	1.01	-	0.00	1	1.36	2	1.02	-	0.00	43	3.86	7	2.52
Cyclosporiasis	3	0.12	-	0.00	2	2.71	2	1.02	-	0.00	1	0.09	-	0.00
Escherichia coli, Shiga toxin-producing[1]	22	0.89	-	0.00	-	0.00	-	0.00	-	0.00	4	0.36	1	0.36
Giardiasis	780	31.49	3	3.99	-	0.00	8	4.07	7	17.44	109	9.77	10	3.60
Gonorrhea	2,338	94.39	21	27.92	20	27.13	123	62.56	18	44.85	1,895	169.93	142	51.13
Hemophilus influenzae, Invasive[2]	18	0.73	-	0.00	2	2.71	1	0.51	2	4.98	8	0.72	1	0.36
Hepatitis A	47	1.90	1	1.33	-	0.00	-	0.00	-	0.00	7	0.63	5	1.80
Hepatitis B (+HBsAg in Pregnant Women)	31	1.25	2	2.66	2	2.71	10	5.09	1	2.49	96	8.61	5	1.80
Hepatitis B, Acute	13	0.52	2	2.66	2	2.71	1	0.51	-	0.00	26	2.33	5	1.80
Hepatitis C, Acute	0	0.00	-	0.00	2	2.71	1	0.51	-	0.00	4	0.36	3	1.08
Human Immunodeficiency Virus	1,229	49.62	19	25.26	8	10.85	14	7.12	-	0.00	521	46.72	66	23.76
Legionellosis	18	0.73	-	0.00	2	2.71	1	0.51	-	0.00	20	1.79	3	1.08
Listeriosis[3]	3	0.12	-	0.00	-	0.00	1	0.51	-	0.00	2	0.18	-	0.00
Lyme disease	8	0.32	-	0.00	1	1.36	1	0.51	-	0.00	6	0.54	-	0.00
Malaria	20	0.81	-	0.00	-	0.00	-	0.00	-	0.00	8	0.72	-	0.00
Meningitis, Other (bacterial, cryptococcal, mycotic)	26	1.05	-	0.00	1	1.36	-	0.00	-	0.00	14	1.26	3	1.08
Meningococcal Disease[4]	15	0.61	-	0.00	-	0.00	-	0.00	-	0.00	1	0.09	1	0.36
Pertussis	40	1.61	-	0.00	-	0.00	2	1.02	-	0.00	12	1.08	4	1.44
Rabies, Possible Exposure	119	4.80	4	5.32	8	10.85	51	25.94	3	7.48	95	8.52	12	4.32
Salmonellosis	602	24.30	25	33.24	53	71.88	66	33.57	11	27.41	407	36.50	88	31.69
Shigellosis	173	6.98	3	3.99	3	4.07	1	0.51	2	4.98	17	1.52	2	0.72
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	117	4.72	1	1.33	5	6.78	3	1.53	-	0.00	45	4.04	6	2.16
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	77	3.11	4	5.32	4	5.43	2	1.02	2	4.98	35	3.14	6	2.16
Streptococcal Disease, Invasive Group A	20	0.81	-	0.00	1	1.36	3	1.53	1	2.49	14	1.26	2	0.72
Syphilis	1,165	47.03	13	17.28	1	1.36	9	4.58	1	2.49	287	25.74	35	12.60
Toxoplasmosis	2	0.08	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Tuberculosis	158	6.38	7	9.31	-	0.00	5	2.54	3	7.48	49	4.39	8	2.88
Varicella	57	2.30	4	5.32	18	24.41	26	13.22	9	22.43	58	5.20	2	0.72
Vibrio Infections[5]	5	0.20	5	6.65	-	0.00	-	0.00	-	0.00	1	0.09	1	0.36
West Nile Virus	1	0.04	0	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V.alginolyticus*, *V.cholerae* non-O1, *V.fluvialis*, *V.hollisae*, *V.mimicus*, *V.parahaemolyticus*, *V.vulnificus*, and *V.other*.

Table 1.3. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Palm Beach County		Pasco County		Pinellas County		Polk County		Putnam County		Santa Rosa County		Sarasota County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	313	24.28	34	7.76	166	17.79	100	17.09	14	18.72	6	4.12	36	9.18
Campylobacteriosis	73	5.66	27	6.17	30	3.22	49	8.38	6	8.02	13	8.93	25	6.38
Chlamydia	3,834	297.40	945	215.81	3,975	426.09	2,356	402.75	281	375.78	274	188.21	920	234.70
Cryptosporidiosis	43	3.34	9	2.06	23	2.47	13	2.22	-	0.00	13	8.93	3	0.77
Cyclosporiasis	2	0.16	2	0.46	2	0.21	-	0.00	-	0.00	-	0.00	2	0.51
Escherichia coli, Shiga toxin-producing[1]	5	0.39	1	0.23	4	0.43	1	0.17	-	0.00	-	0.00	1	0.26
Giardiasis	123	9.54	23	5.25	34	3.64	50	8.55	7	9.36	8	5.50	17	4.34
Gonorrhea	933	72.37	240	54.81	1,509	161.75	599	102.40	108	144.43	51	35.03	289	73.73
Hemophilus influenzae, Invasive[2]	20	1.55	2	0.46	8	0.86	15	2.56	1	1.34	4	2.75	4	1.02
Hepatitis A	11	0.85	3	0.69	6	0.64	2	0.34	-	0.00	-	0.00	4	1.02
Hepatitis B (+HBsAg in Pregnant Women)	64	4.96	5	1.14	24	2.57	25	4.27	1	1.34	3	2.06	8	2.04
Hepatitis B, Acute	15	1.16	17	3.88	28	3.00	8	1.37	1	1.34	2	1.37	11	2.81
Hepatitis C, Acute	2	0.16	3	0.69	3	0.32	5	0.85	-	0.00	1	0.69	6	1.53
Human Immunodeficiency Virus	340	26.37	52	11.88	204	21.87	100	17.09	11	14.71	10	6.87	50	12.76
Legionellosis	19	1.47	2	0.46	10	1.07	10	1.71	-	0.00	2	1.37	5	1.28
Listeriosis[3]	5	0.39	1	0.23	-	0.00	-	0.00	-	0.00	1	0.69	0	0.00
Lyme disease	8	0.62	5	1.14	6	0.64	4	0.68	-	0.00	2	1.37	8	2.04
Malaria	11	0.85	2	0.46	3	0.32	3	0.51	-	0.00	-	0.00	0	0.00
Meningitis, Other (bacterial, cryptococcal, mycotic)	13	1.01	1	0.23	7	0.75	13	2.22	-	0.00	4	2.75	3	0.77
Meningococcal Disease[4]	3	0.23	1	0.23	3	0.32	2	0.34	-	0.00	-	0.00	0	0.00
Pertussis	14	1.09	7	1.60	4	0.43	18	3.08	-	0.00	80	54.95	58	14.80
Rabies, Possible Exposure	102	7.91	77	17.58	75	8.04	29	4.96	6	8.02	22	15.11	31	7.91
Salmonellosis	416	32.27	156	35.63	289	30.98	237	40.51	49	65.53	55	37.78	98	25.00
Shigellosis	39	3.03	-	0.00	5	0.54	12	2.05	2	2.67	4	2.75	2	0.51
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	45	3.49	13	2.97	35	3.75	33	5.64	1	1.34	2	1.37	14	3.57
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	29	2.25	13	2.97	28	3.00	35	5.98	2	2.67	9	6.18	19	4.85
Streptococcal Disease, Invasive Group A	17	1.32	6	1.37	14	1.50	23	3.93	2	2.67	6	4.12	3	0.77
Syphilis	205	15.90	21	4.80	182	19.51	62	10.60	6	8.02	6	4.12	22	5.61
Toxoplasmosis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	0	0.00
Tuberculosis	58	4.50	10	2.28	18	1.93	9	1.54	4	5.35	3	2.06	17	4.34
Varicella	102	7.91	12	2.74	58	6.22	58	9.91	1	1.34	14	9.62	20	5.10
Vibrio Infections[5]	9	0.70	3	0.69	8	0.86	4	0.68	-	0.00	1	0.69	4	1.02
West Nile Virus	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	0	0.00

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V.alginolyticus*, *V.cholerae* non-O1, *V.fluvialis*, *V.hollisae*, *V.mimicus*, *V.parahaemolyticus*, *V.vulnificus*, and *V.*other.

Table 1.3. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Seminole County		St. Johns County		St. Lucie County		Sumter County		Suwannee County		Taylor County		Union County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	58	13.68	15	8.06	84	30.61	6	6.25	5	11.85	5	21.10	7	43.32
Campylobacteriosis	14	3.30	15	8.06	8	2.91	-	0.00	2	4.74	-	0.00	-	0.00
Chlamydia	1,353	319.14	331	177.82	1,025	373.46	204	212.43	139	329.53	95	400.83	52	321.84
Cryptosporidiosis	7	1.65	8	4.30	1	0.36	1	1.04	2	4.74	1	4.22	-	0.00
Cyclosporiasis	3	0.71	-	0.00	1	0.36	-	0.00	-	0.00	-	0.00	-	0.00
Escherichia coli, Shiga toxin-producing[1]	1	0.24	2	1.07	1	0.36	1	1.04	1	2.37	-	0.00	-	0.00
Giardiasis	23	5.43	5	2.69	16	5.83	4	4.17	4	9.48	9	37.97	2	12.38
Gonorrhea	406	95.77	56	30.08	273	99.47	54	56.23	45	106.68	51	215.18	10	61.89
Hemophilus influenzae, Invasive[2]	3	0.71	-	0.00	2	0.73	-	0.00	-	0.00	-	0.00	-	0.00
Hepatitis A	7	1.65	1	0.54	3	1.09	-	0.00	-	0.00	-	0.00	-	0.00
Hepatitis B (+HBsAg in Pregnant Women)	4	0.94	7	3.76	13	4.74	-	0.00	1	2.37	-	0.00	-	0.00
Hepatitis B, Acute	6	1.42	1	0.54	3	1.09	2	2.08	1	2.37	1	4.22	-	0.00
Hepatitis C, Acute	-	0.00	1	0.54	3	1.09	2	2.08	-	0.00	-	0.00	-	0.00
Human Immunodeficiency Virus	74	17.46	26	13.97	85	30.97	7	7.29	4	9.48	1	4.22	1	6.19
Legionellosis	12	2.83	2	1.07	1	0.36	1	1.04	-	0.00	-	0.00	-	0.00
Listeriosis[3]	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Lyme disease	3	0.71	2	1.07	2	0.73	-	0.00	-	0.00	-	0.00	-	0.00
Malaria	3	0.71	-	0.00	2	0.73	-	0.00	-	0.00	-	0.00	-	0.00
Meningitis, Other (bacterial, cryptococcal, mycotic)	4	0.94	2	1.07	3	1.09	-	0.00	1	2.37	-	0.00	-	0.00
Meningococcal Disease[4]	1	0.24	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Pertussis	5	1.18	1	0.54	4	1.46	-	0.00	1	2.37	-	0.00	-	0.00
Rabies, Possible Exposure	24	5.66	15	8.06	22	8.02	7	7.29	12	28.45	5	21.10	3	18.57
Salmonellosis	129	30.43	105	56.41	63	22.95	28	29.16	12	28.45	7	29.53	8	49.51
Shigellosis	2	0.47	2	1.07	1	0.36	3	3.12	-	0.00	-	0.00	1	6.19
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	6	1.42	2	1.07	11	4.01	2	2.08	-	0.00	1	4.22	-	0.00
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	6	1.42	1	0.54	5	1.82	5	5.21	-	0.00	-	0.00	-	0.00
Streptococcal Disease, Invasive Group A	1	0.24	6	3.22	3	1.09	1	1.04	1	2.37	-	0.00	-	0.00
Syphilis	75	17.69	4	2.15	39	14.21	4	4.17	1	2.37	-	0.00	5	30.95
Toxoplasmosis	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00
Tuberculosis	8	1.89	4	2.15	5	1.82	1	1.04	1	2.37	-	0.00	3	18.57
Varicella	19	4.48	49	26.32	6	2.19	-	0.00	5	11.85	-	0.00	2	12.38
Vibrio Infections[5]	-	0.00	1	0.54	-	0.00	1	1.04	-	0.00	-	0.00	-	0.00
West Nile Virus	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V.alginolyticus*, *V.cholerae* non-O1, *V.fluvialis*, *V.hollisae*, *V.mimicus*, *V.parahaemolyticus*, *V.vulnificus*, and *V.*other.

Table 1.3. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by County of Residence, Florida, 2009

Selected Notifiable Diseases	Volusia County		Wakulla County		Walton County		Washington County	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	98	19.26	4	12.53	3	5.17	5	19.53
Campylobacteriosis	19	3.73	2	6.26	6	10.34	1	3.91
Chlamydia	1,603	315.03	107	335.10	130	223.96	74	289.06
Cryptosporidiosis	7	1.38	-	0.00	1	1.72	-	0.00
Cyclosporiasis	1	0.20	-	0.00	-	0.00	-	0.00
Escherichia coli, Shiga toxin-producing[1]	0	0.00	-	0.00	-	0.00	1	3.91
Giardiasis	20	3.93	4	12.53	2	3.45	1	3.91
Gonorrhea	380	74.68	28	87.69	12	20.67	19	74.22
Hemophilus influenzae, Invasive[2]	8	1.57	-	0.00	2	3.45	-	0.00
Hepatitis A	3	0.59	-	0.00	-	0.00	-	0.00
Hepatitis B (+HBsAg in Pregnant Women)	11	2.16	1	3.13	-	0.00	-	0.00
Hepatitis B, Acute	10	1.97	-	0.00	-	0.00	-	0.00
Hepatitis C, Acute	2	0.39	-	0.00	-	0.00	-	0.00
Human Immunodeficiency Virus	94	18.47	5	15.66	6	10.34	1	3.91
Legionellosis	8	1.57	-	0.00	-	0.00	-	0.00
Listeriosis[3]	1	0.20	-	0.00	-	0.00	-	0.00
Lyme disease	2	0.39	1	3.13	-	0.00	1	3.91
Malaria	1	0.20	-	0.00	-	0.00	-	0.00
Meningitis, Other (bacterial, cryptococcal, mycotic)	8	1.57	-	0.00	-	0.00	-	0.00
Meningococcal Disease[4]	2	0.39	-	0.00	-	0.00	-	0.00
Pertussis	15	2.95	-	0.00	3	5.17	2	7.81
Rabies, Possible Exposure	103	20.24	5	15.66	16	27.56	-	0.00
Salmonellosis	307	60.33	18	56.37	22	37.90	12	46.88
Shigellosis	2	0.39	-	0.00	-	0.00	1	3.91
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	21	4.13	1	3.13	1	1.72	-	0.00
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	24	4.72	1	3.13	1	1.72	-	0.00
Streptococcal Disease, Invasive Group A	6	1.18	-	0.00	1	1.72	-	0.00
Syphilis	56	11.01	1	3.13	4	6.89	7	27.34
Toxoplasmosis	-	0.00	-	0.00	-	0.00	-	0.00
Tuberculosis	6	1.18	-	0.00	2	3.45	-	0.00
Varicella	45	8.84	-	0.00	9	15.50	2	7.81
Vibrio Infections[5]	3	0.59	-	0.00	2	3.45	-	0.00
West Nile Virus	-	0.00	-	0.00	-	0.00	-	0.00

1 Includes reported cases of *E. coli*, O157:H7, *E. coli*, serogrouped non-O157, and *E. coli*, Shiga toxin-producing.
2 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V. alginolyticus*, *V. cholerae* non-O1, *V. fluvialis*, *V. hollisae*, *V. mimicus*, *V. parahaemolyticus*, *V. vulnificus*, and *V.* other.

Table 1.4. Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by Age Group, Florida, 2009

	Age Group											
Selected Notifiable Diseases	<1		1-4		5-9		10-14		15-19		20-24	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	-	-	1	0.11	2	0.18	5	0.44	69	5.73	227	18.75
Campylobacteriosis	63	27.71	203	22.32	76	6.68	47	4.09	57	4.74	53	4.38
Chlamydia	21	9.24	2	0.22	4	0.35	752	65.49	24,403	2028.27	27,341	2258.84
Cryptosporidiosis	5	2.20	70	7.70	43	3.78	30	2.61	23	1.91	17	1.40
Cyclosporiasis	-	-	1	0.11	-	0.00	2	0.17	-	-	3	0.25
Escherichia coli, Shiga toxin-producing	4	1.76	32	3.52	11	0.97	9	0.78	3	0.25	6	0.50
Giardiasis	20	8.80	317	34.86	309	27.17	217	18.90	114	9.48	102	8.43
Gonorrhea	2	0.88	5	0.55	11	0.97	235	20.46	5,963	495.62	6,960	575.02
Hemophilus influenzae, Invasive Disease[1]	20	8.80	9	0.99	4	0.35	-	-	3	0.25	2	0.17
Hepatitis A	-	-	1	0.11	7	0.62	17	1.48	11	0.91	18	1.49
Hepatitis B (+HBsAg in Pregnant Women)	-	-	-	-	-	-	-	-	30	5.10	106	17.92
Hepatitis B, Acute	-	-	-	-	-	-	-	-	1	0.08	7	0.58
Hepatitis C, Acute	-	-	-	-	-	-	-	-	-	-	9	0.74
Human Immunodeficiency Virus	15	6.60	6	0.66	12	1.06	20	1.74	231	19.20	654	54.03
Legionellosis	1	0.44	-	-	-	-	1	0.09	-	-	1	0.08
Listeriosis[2]	2	0.88	-	-	-	-	-	-	-	-	-	-
Lyme Disease	-	-	2	0.22	8	0.70	10	0.87	2	0.17	3	0.25
Malaria	-	-	2	0.22	-	0.00	3	0.26	10	0.83	11	0.91
Meningitis, Other	45	19.79	5	0.55	3	0.26	5	0.44	4	0.33	4	0.33
Meningococcal Disease[3]	6	2.64	2	0.22	2	0.18	2	0.17	5	0.42	5	0.41
Pertussis	137	60.26	50	5.50	72	6.33	73	6.36	41	3.41	14	1.16
Rabies, Possible Exposure	13	5.72	84	9.24	91	8.00	116	10.10	138	11.47	148	12.23
Salmonellosis	1,349	593.33	1,713	188.36	571	50.21	246	21.42	205	17.04	173	14.29
Shigellosis	11	4.84	134	14.73	96	8.44	32	2.79	18	1.50	25	2.07
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	36	15.83	107	11.77	17	1.49	10	0.87	9	0.75	18	1.49
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	20	8.80	46	5.06	27	2.37	9	0.78	6	0.50	11	0.91
Streptococcal Disease, Invasive Group A	3	1.32	5	0.55	14	1.23	3	0.26	2	0.17	10	0.83
Syphilis	19	8.36	-	-	-	-	5	0.44	284	23.60	554	45.77
Toxoplasmosis	-	-	-	-	-	-	-	-	-	-	-	-
Tuberculosis	-	-	16	1.76	6	0.53	6	0.52	13	1.08	42	3.47
Varicella	49	21.55	156	17.15	340	29.89	279	24.30	76	6.32	28	2.31
Vibrio Infections[4]	-	-	2	0.22	4	0.35	6	0.52	4	0.33	3	0.25
West Nile Virus	-	-	-	-	-	-	-	-	-	-	-	-

1 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
2 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
3 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
4 Includes reported cases of *V. alginolyticus*, *V. cholerae* non-O1, *V. fluvialis*, *V. hollisae*, *V. mimicus*, *V. parahaemolyticus*, *V. vulnificus*, and *V.* other.
NR-Not reported

Table 1.4. (Continued) Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by Age Group, Florida, 2009

Selected Notifiable Diseases	Age Group: 25-34		35-44		45-54		55-64		65-74		75-84		85+	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	836	36.64	1,422	58.31	1,243	46.49	476	20.82	123	7.63	21	1.80	4	0.76
Campylobacteriosis	98	4.29	110	4.51	120	4.49	113	4.94	97	6.02	65	5.57	18	3.43
Chlamydia	16,065	704.07	3,196	131.04	871	32.58	177	7.74	40	2.48	14	1.20	8	1.53
Cryptosporidiosis	71	3.11	57	2.34	43	1.61	46	2.01	39	2.42	36	3.09	17	3.24
Cyclosporiasis	4	0.18	4	0.16	7	0.26	8	0.35	9	0.56	2	0.17	-	-
Escherichia coli, Shiga toxin-producing	4	0.18	6	0.25	2	0.07	5	0.22	7	0.43	3	0.26	2	0.38
Giardiasis	208	9.12	215	8.82	211	7.89	104	4.55	94	5.83	50	4.29	20	3.81
Gonorrhea	5,032	220.53	1,969	80.73	714	26.70	193	8.44	51	3.16	9	0.77	1	0.19
Hemophilus influenzae, Invasive Disease[1]	12	0.53	8	0.33	21	0.79	37	1.62	31	1.92	46	3.94	29	5.53
Hepatitis A	36	1.58	29	1.19	19	0.71	17	0.74	17	1.05	13	1.11	6	1.14
Hepatitis B (+HBsAg in Pregnant Women)	312	27.98	147	12.15	3	0.22	-	-	-	-	-	-	-	-
Hepatitis B, Acute	78	3.42	88	3.61	84	3.14	40	1.75	15	0.93	5	0.43	-	-
Hepatitis C, Acute	23	1.01	14	0.57	22	0.82	6	0.26	1	0.06	1	0.09	1	0.19
Human Immunodeficiency Virus	1,327	58.16	1,556	63.80	1,218	45.55	435	19.03	110	6.82	22	1.89	2	0.38
Legionellosis	5	0.22	10	0.41	33	1.23	52	2.27	42	2.61	31	2.66	17	3.24
Listeriosis[2]	-	-	2	0.08	1	0.04	1	0.04	10	0.62	6	0.51	3	0.57
Lyme Disease	9	0.39	7	0.29	19	0.71	19	0.83	18	1.12	13	1.11	-	-
Malaria	8	0.35	16	0.66	16	0.60	15	0.66	10	0.62	2	0.17	-	-
Meningitis, Other	21	0.92	29	1.19	38	1.42	26	1.14	15	0.93	9	0.77	6	1.14
Meningococcal Disease[3]	7	0.31	2	0.08	5	0.19	3	0.13	7	0.43	3	0.26	3	0.57
Pertussis	27	1.18	30	1.23	15	0.56	19	0.83	10	0.62	8	0.69	1	0.19
Rabies, Possible Exposure	258	11.31	270	11.07	318	11.89	215	9.41	139	8.62	49	4.20	14	2.67
Salmonellosis	368	16.13	392	16.07	504	18.85	437	19.12	418	25.93	259	22.21	106	20.22
Shigellosis	40	1.75	32	1.31	33	1.23	13	0.57	12	0.74	6	0.51	9	1.72
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	40	1.75	76	3.12	129	4.82	110	4.81	96	5.95	78	6.69	53	10.11
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	38	1.67	62	2.54	117	4.38	131	5.73	96	5.95	74	6.35	64	12.21
Streptococcal Disease, Invasive Group A	20	0.88	24	0.98	40	1.50	48	2.10	47	2.92	39	3.34	24	4.58
Syphilis	878	38.48	984	40.35	752	28.13	262	11.46	83	5.15	32	2.74	11	2.10
Toxoplasmosis	2	0.09	2	0.08	-	-	-	-	-	-	-	-	-	-
Tuberculosis	112	4.91	154	6.31	174	6.51	137	5.99	79	4.90	23	1.97		0.00
Varicella	81	3.55	54	2.21	26	0.97	14	0.61	10	0.62	8	0.69	4	0.76
Vibrio Infections[4]	11	0.48	12	0.49	22	0.82	12	0.52	22	1.36	10	0.86	4	0.76
West Nile Virus	-	-	1	0.04	-	-	1	0.04	1	0.06	-	-	-	-

1 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
2 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
3 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
4 Includes reported cases of *V. alginolyticus*, *V. cholerae* non-O1, *V. fluvialis*, *V. hollisae*, *V. mimicus*, *V. parahaemolyticus*, *V. vulnificus*, and *V.* other.
NR-Not reported

Table 1.5. Top 10 Reported Confirmed and Probable Cases of Disease by Age Group, Florida, 2009

	Age Group												
Rank	<1	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
1	Salmonellosis (1,348)	Salmonellosis (1,713)	Salmonellosis (571)	Chlamydia (752)	Chlamydia (24,403)	Chlamydia (27,341)	Chlamydia (16,065)	Chlamydia (3,196)	AIDS (1,243)	AIDS (476)	Salmonellosis (418)	Salmonellosis (259)	Salmonellosis (106)
2	Pertussis (137)	Giardiasis (317)	Varicella (340)	Varicella (279)	Gonorrhea (5,963)	Gonorrhea (6,960)	Gonorrhea (5,032)	Gonorrhea (1,969)	HIV (1,218)	Salmonellosis (437)	Rabies, Possible Exposure (139)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Resistant (78)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Susceptible (64)
3	Campylobacteriosis (63)	Lead Poisoning (205)	Giardiasis (309)	Salmonellosis (246)	Syphilis (284)	HIV (654)	HIV (1,327)	HIV (1,556)	Chlamydia (871)	HIV (435)	AIDS (123)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Susceptible (74)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Resistant(53)
4	Varicella (49)	Campylobacteriosis (203)	Shigellosis (96)	Gonorrhea (235)	HIV (231)	Syphilis (554)	Syphilis (878)	AIDS (1,422)	Syphilis (752)	Syphilis (262)	HIV (110)	Campylobacteriosis (65)	*Haemophilus influenzae*, Invasive Disease(29)
5	Meningitis, Other (45)	Varicella (156)	Rabies, Possible Exposure (91)	Giardiasis (217)	Salmonellosis (205)	AIDS (227)	AIDS (836)	Syphilis (984)	Gonorrhea (714)	Rabies, Possible Exposure (215)	Campylobacteriosis (97)	Tuberculosis (59)	Streptococcal Disease, Invasive Group A(24)
6	*Streptococcus pneumoniae*, Invasive Disease, Drug-Resistant (36)	Shigellosis (134)	Campylobacteriosis (76)	Rabies, Possible Exposure (116)	Rabies, Possible Exposure (138)	Salmonellosis (173)	Salmonellosis (368)	Salmonellosis (392)	Salmonellosis (504)	Gonorrhea (193)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Resistant (96)	Giardiasis (50)	Tuberculosis (23)
7	Chlamydia (21)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Resistant (107)	Pertussis (72)	Pertussis (73)	Giardiasis (114)	Rabies, Possible Exposure (148)	Hepatitis B (+HBsAg in Pregnant Woman) (312)	Rabies, Possible Exposure (270)	Rabies, Possible Exposure (318)	Chlamydia (177)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Susceptible (96)	Rabies, Possible Exposure(49)	Giardiasis (20)
8	Giardiasis (20)	Rabies, Possible Exposure (84)	Lead Poisoning (62)	Lead Poisoning (53)	Varicella (76)	Hepatitis B (+HBsAg in Pregnant Woman) (106)	Rabies, Possible Exposure (258)	Giardiasis (215)	Giardiasis (211)	Tuberculosis (137)	Giardiasis (94)	*Haemophilus influenzae*, Invasive Disease(46)	Campylobacteriosis (18)
9	*Haemophilus influenzae*, Invasive Disease (20)	Cryptosporidiosis (70)	Cryptosporidiosis (43)	Campylobacteriosis (47)	AIDS (69)	Giardiasis (102)	Giardiasis (208)	Tuberculosis (154)	Tuberculosis (174)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Susceptible (131)	Syphilis (83)	Streptococcal Disease, Invasive Group A (39)	Cryptosporidiosis (17)
10	*Streptococcus pneumoniae*, Invasive Disease, Drug-Susceptible (20)	Pertussis (50)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Succeptible (27)	Shigellosis (32)	Campylobacteriosis (57)	Campylobacteriosis (53)	Tuberculosis (112)	Hepatitis B (+HBsAg in Pregnant Woman) (147)	*Streptococcus pneumoniae*, Invasive Disease, Drug-Resistant (129)	Campylobacteriosis (113)	Tuberculosis (79)	Cryptosporidiosis (36)	Legionellosis(17)

Table 1.6. Reported Confirmed and Probable Cases and Incidence Rate per 100,000 Population for Selected Notifiable Diseases by Gender, Florida, 2009

Selected Notifiable Diseases	Male		Female	
	Number	Rate	Number	Rate
Acquired Immune Deficiency Syndrome	2,979	32.29	1,450	15.11
Campylobacteriosis	601	6.51	518	5.40
Chlamydia	20,062	217.47	52,739	549.72
Cryptosporidiosis	241	2.61	256	2.67
Cyclosporiasis	17	0.18	21	0.22
Escherichia coli, Shiga toxin-producing	58	0.63	36	0.38
Giardiasis	1,141	12.37	836	8.71
Gonorrhea	10,102	109.50	10,745	112.00
Hemophilus influenzae, Invasive Disease[1]	99	1.07	122	1.27
Hepatitis A	98	1.06	93	0.97
Hepatitis B (+HBsAg in Pregnant Women)	-	-	598	17.06
Hepatitis B, Acute	193	2.09	125	1.30
Hepatitis C, Acute	35	0.38	42	0.44
Human Immunodeficiency Virus	4,134	44.81	1,474	15.36
Legionellosis	120	1.30	73	0.76
Listeriosis[2]	7	0.08	18	0.19
Lyme Disease	55	0.60	55	0.57
Malaria	60	0.65	33	0.34
Meningitis, Other (bacterial, cryptococcal, mycotic)	131	1.42	79	0.82
Meningococcal Disease[3]	21	0.23	31	0.32
Pertussis	207	2.24	290	3.02
Rabies, Possible Exposure	896	9.71	957	9.98
Salmonellosis	3,375	36.58	3,352	34.94
Shigellosis	221	2.40	240	2.50
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	379	4.11	400	4.17
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	360	3.90	341	3.55
Streptococcal disease, Invasive Group A	140	1.52	139	1.45
Syphilis	2,862	31.02	1,000	10.42
Toxoplasmosis	1	0.01	3	0.03
Tuberculosis	522	5.66	299	3.12
Varicella	601	6.51	522	5.44
Vibrio Infections[4]	80	0.87	32	0.33
West Nile Virus	3	0.03	-	-

1 Includes reported cases of *Hemophilus influenzae* presenting as cellulitis, epiglottitis, meningitis, bacterimia, and septic arthritis.
2 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
3 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
4 Includes reported cases of *V. alginolyticus*, *V. cholerae* non-O1, *V. fluvialis*, *V. hollisae*, *V. mimicus*, *V. parahaemolyticus*, *V. vulnificus*, and *V.* other.
NA - Not applicable

Table 1.7. Reported Confirmed and Probable Cases of Selected Notifiable Diseases by Month of Onset[1], Florida, 2009

Disease	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Campylobacteriosis	87	57	59	64	99	106	135	110	69	70	73	71
Cryptosporidiosis	24	16	20	17	30	31	50	85	83	38	22	9
Cyclosporiasis	3	-	1	3	3	8	5	5	-	3	-	6
Escherichia coli, Shiga toxin-producing	8	3	5	9	12	15	5	7	8	6	4	10
Giardiasis	77	66	69	111	109	129	125	115	107	84	80	57
Haemophilus influenzae, Invasive Disease[2]	20	15	18	21	12	11	12	10	8	9	11	9
Hepatitis A	23	16	26	18	10	13	12	20	15	15	6	16
Hepatitis B (+HBsAg in a Pregnant Woman)	4	2	4	4	6	3	3	4	1	4	3	2
Hepatitis B, Acute	28	22	28	21	29	27	21	22	19	29	24	25
Hepatitis C, Acute	-	2	5	7	12	8	9	2	3	13	9	2
Legionellosis	13	15	11	7	14	13	20	20	26	21	19	14
Listeriosis[3]	1	-	1	-	4	3	2	3	3	2	2	1
Lyme Disease	5	1	1	5	8	14	31	24	9	6	1	1
Malaria	12	5	10	3	9	7	14	14	6	3	5	5
Meningitis, Other (bacterial, cryptococcal, mycotic)	13	13	27	19	16	11	19	21	13	16	11	20
Meningococcal Disease[4]	7	8	8	3	2	4	3	3	3	3	4	2
Pertussis	40	25	34	46	67	41	53	73	42	19	11	30
Rabies, Possible Exposure	136	120	144	130	172	175	153	176	128	140	129	115
Salmonellosis	256	176	196	251	411	523	662	725	765	784	544	377
Shigellosis	48	22	25	38	43	30	45	33	42	39	33	23
Streptococcus pneumoniae, Invasive Disease, Drug-Resistant	59	74	61	45	33	23	15	17	33	33	50	47
Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible	55	68	57	39	26	27	10	14	22	26	44	64
Streptococcal Disease, Invasive Group A	21	25	27	22	16	14	14	15	7	10	11	17
Toxoplasmosis	-	-	-	1	-	-	-	1	-	-	-	1
Varicella	101	128	185	122	139	44	28	22	56	44	34	48
Vibrio Infections[5]	6	1	3	7	9	7	10	19	11	8	7	5
West Nile Virus	-	-	-	-	-	-	-	1	1	1	-	-

1 Only cases of diseases with known dates of onset are included in this table.
2 Includes reported cases of *H. influenzae* presenting as cellulitis, epiglottitis, meningitis, bacteremia, and septic arthritis.
3 Includes reported cases of listeriosis and cases of meningitis caused by *Listeria monocytogenes*.
4 Includes reported cases of meningococcal meningitis, pneumonia caused by *Neisseria meningitidis*, meningococcal disease, and meningococcemia disseminated.
5 Includes reported cases of *V. alginolyticus*, *V. cholerae* non-O1, *V. fluvialis*, *V. hollisae*, *V. mimicus*, *V. parahaemolyticus*, *V. vulnificus*, and *V.* other.

Section 2

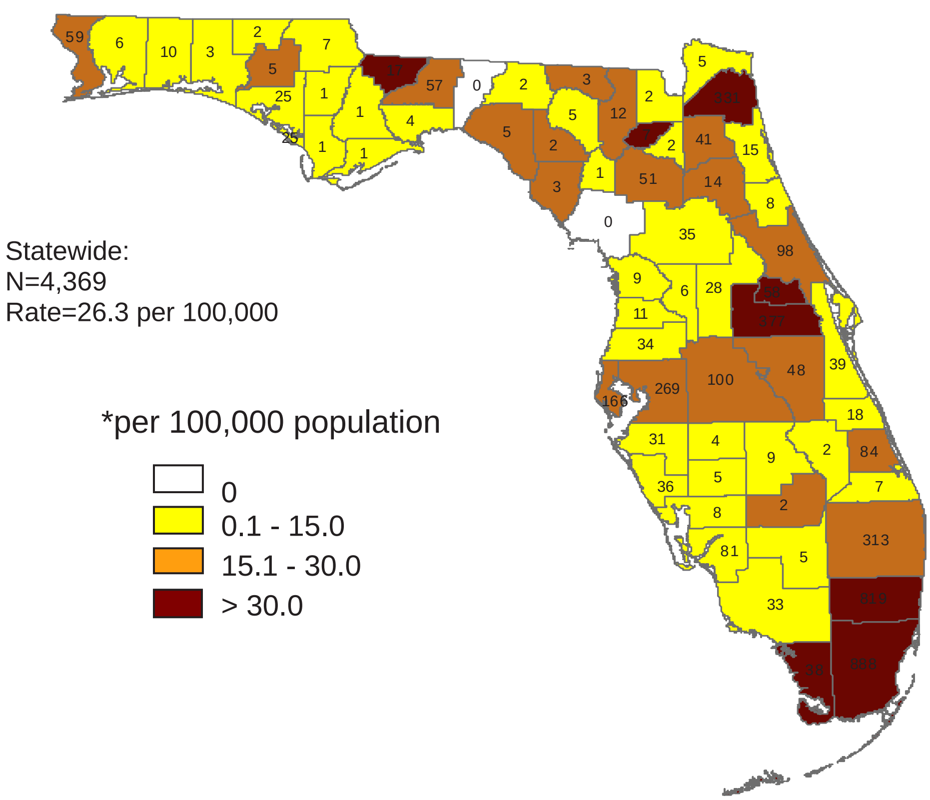
Selected Notifiable Diseases and Conditions

Acquired Immune Deficiency Syndrome/ Human Immunodeficiency Virus

In 2007, Florida ranked third among states in the number of reported acquired immune deficiency syndrome (AIDS) cases (U.S. data not yet available for 2008 or 2009). California reported 4,952 (13% of the U.S. total), followed by New York with 4,810 cases (13%), then Florida with 3,960 cases (10%) and Texas with 2,964 cases (8%). Florida also ranked third among the 38 states that reported human immunodeficiency virus (HIV) cases in 2007. California reported 17,588 cases (28% of the total), followed by New York with 5,197 cases (8%), then Florida with 5,165 cases (8%), and Pennsylvania with 3,694 cases (6%).

In 2009, at least one AIDS case was reported in all but two counties (Figure 1). Although the AIDS epidemic is widespread throughout Florida, nine counties (Broward, Duval, Hillsborough, Lee, Miami-Dade, Orange, Palm Beach, Pinellas, and Polk) reported a combined total of 3,344 cases, or 76% of Florida's total reported cases in 2009 (N=4,426). Two counties located in the southeastern part of the state, Broward and Miami-Dade, reported a combined total of 1,707 cases in 2009, or 39% of the statewide total.

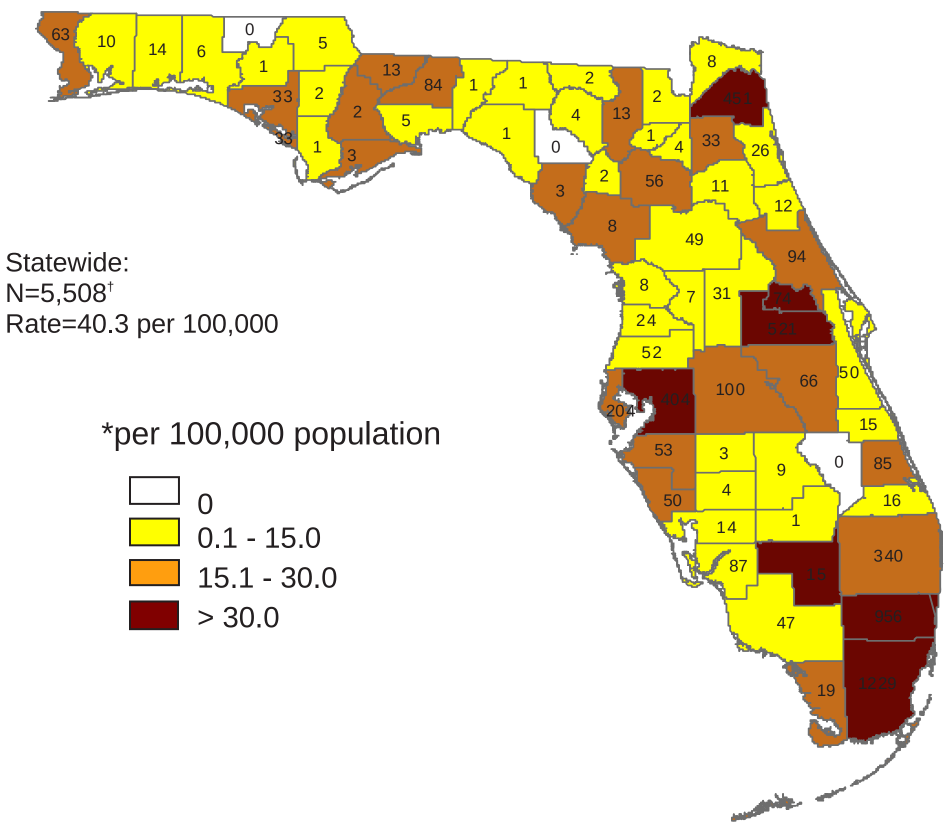
Figure 1. AIDS Case Rates* by County†, Florida, 2009



† County totals exclude Department of Corrections cases (N=60).

In 2009, at least one HIV case was reported in all but three counties, and six counties (Miami-Dade, Broward, Orange, Duval, Hillsborough, and Palm Beach) reported 100 or more cases (Figure 2). These counties reported a combined total of 4,071 cases, or 73% of Florida's total reported cases in 2009 (N=5,608). The greatest numbers of HIV cases were reported from Miami-Dade, Broward, and Orange counties, which reported a combined total of 2,681 cases in 2009, or 49% of the statewide total.

Figure 2. HIV Case Rate* by County†, Florida, 2009



† County totals exclude Department of Corrections cases (N=100).

Generally, the number of HIV cases remained fairly stable with an increase in 2002 due to increased HIV testing statewide as part of the "Get to Know Your Status" campaign. Since that time, newly reported HIV cases decreased each year until 2007. Enhanced reporting laws were implemented in November 2006, leading to an increase in detection and reporting of HIV cases in 2007 and 2008, followed by an artificial decrease in 2009 (Figure 3 and Table 1).

Figure 3. HIV Cases by Year of Report, 2000-2009

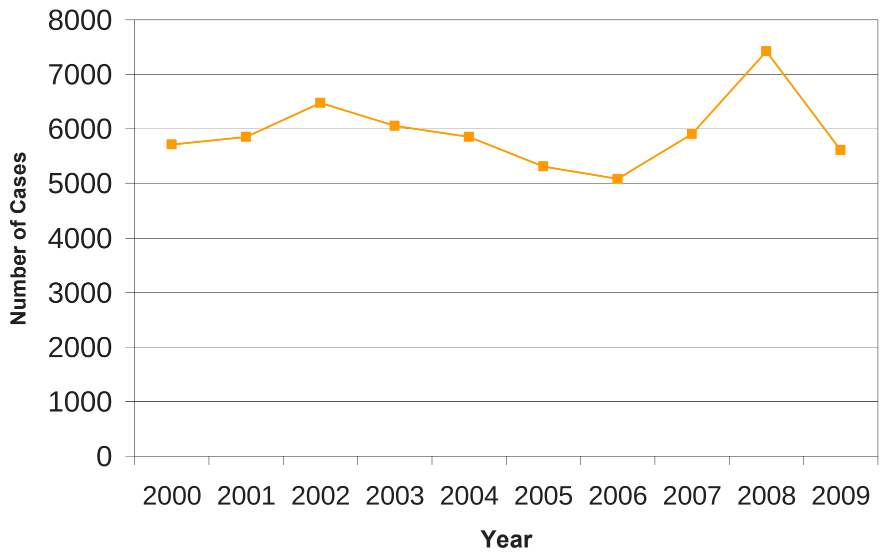


Table 1. HIV Case Rate* by Year of Report†, Florida, 2000-2009

Year	Rate*
2000	33.2
2001	35.7
2002	38.8
2003	35.4
2004	33.4
2005	29.8
2006	27.5
2007	31.5
2008	39.3
2009	29.8

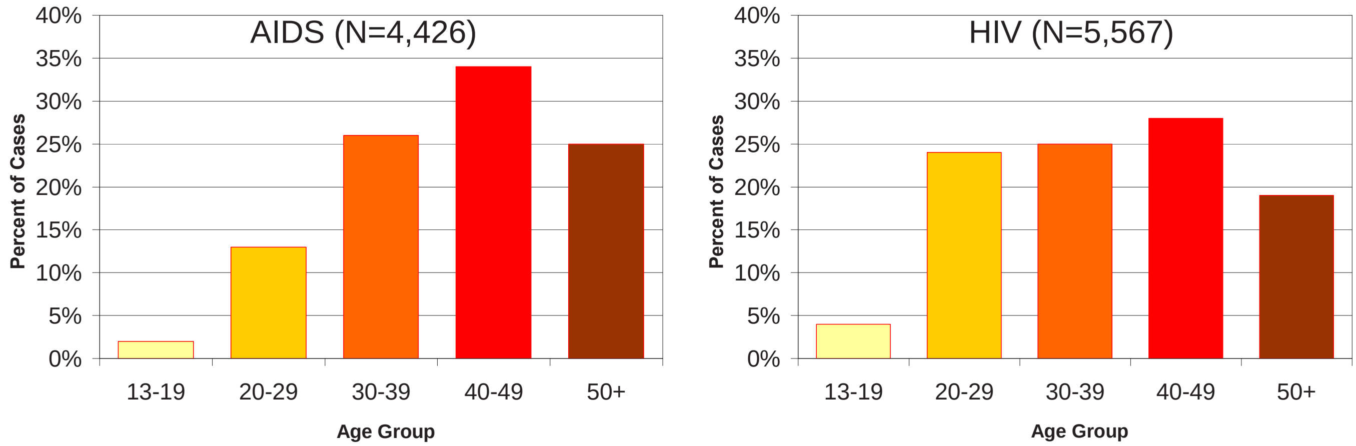
†Data for Acquired Immune Deficiency Syndrome and Human Immunodeficiency Virus are presented here by report date which corresponds to other diseases in this table. However, cases can be added or removed from a previous year based on additional laboratory results or updated demographic data. As such, historical year numbers may differ in this table to the data presented in their program specific summary in Section 2.

*per 100,000 population

HIV/AIDS Cases by Age, Sex, and Race

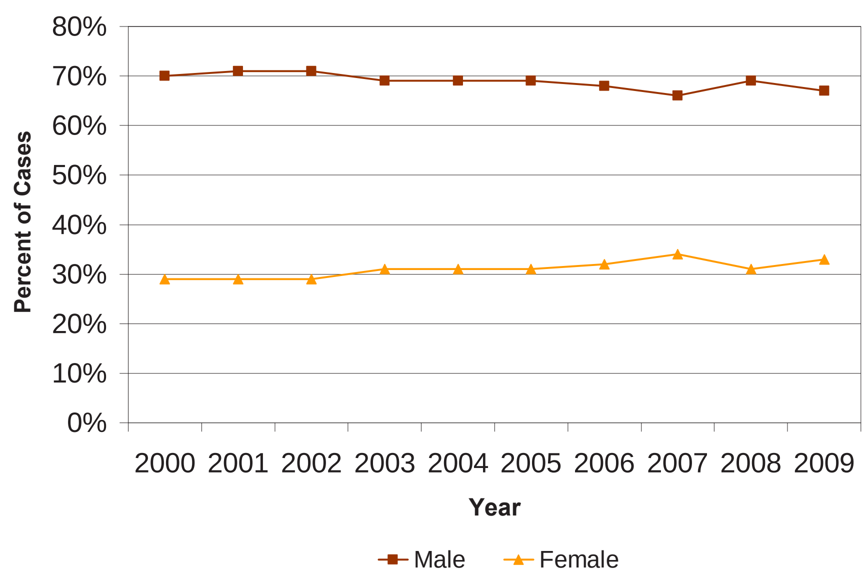
As in previous years, the greatest proportion of AIDS cases reported in 2009 was among people 40 to 49 years old (34%) (Figure 4). The 30 to 39 age group was second, with 26% of the reported AIDS cases, followed by the 50 and older age group with 25%. Compared with AIDS cases, a greater proportion of HIV cases in 2009 were also reported among those aged 40 to 49 (28%) followed by those aged 30 to 39 (25%) and aged 20 to 29 (24%).

Figure 4. Age Distribution of Florida's Adult AIDS Cases Compared with the Age Distribution of Florida's Adult HIV Cases, 2009.



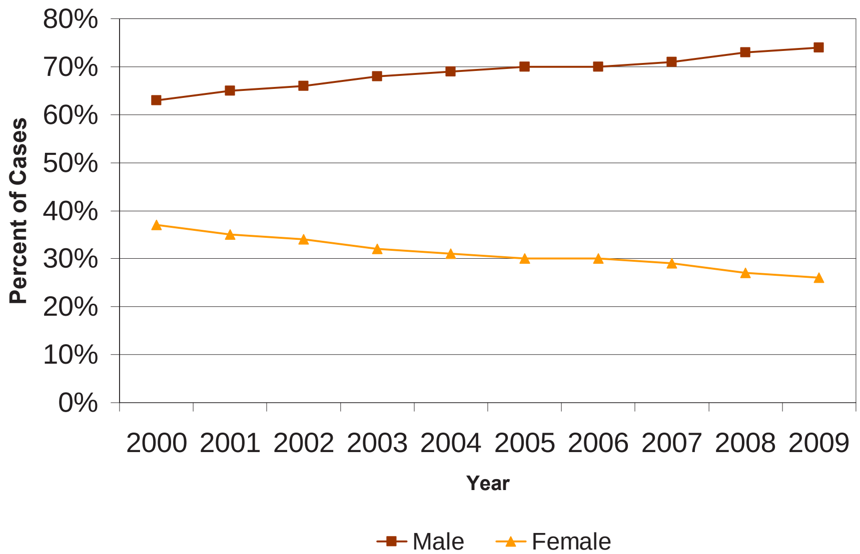
In 2000, 30% of the AIDS cases reported in Florida were female (Figure 5). Over the past ten years, the proportion of AIDS cases among men and women has remained fairly level. The male-to-female ratio declined slightly from 2.4:1 in 2000 to 2.1:1 in 2009. In 2009, the case rate per 100,000 population was 38.6 among adult males and 17.8 among adult females, indicating that AIDS cases in this period were still more likely to be reported among men than women in Florida.

Figure 5. Percentage Of Adult AIDS Cases By Sex And Year Of Report, Florida, 2000-2009



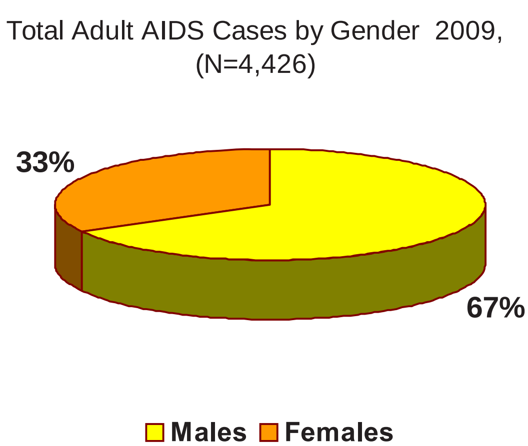
In 2000, 37% of the HIV cases reported in Florida were female (Figure 6). Over the past ten years, the proportion of HIV cases among men has increased while the proportion among women has decreased. The result is an increase in the male-to-female ratio, from 1.7:1 in 2000 to 2.8:1 in 2009. This pattern differs from that seen for AIDS cases during the same time period.

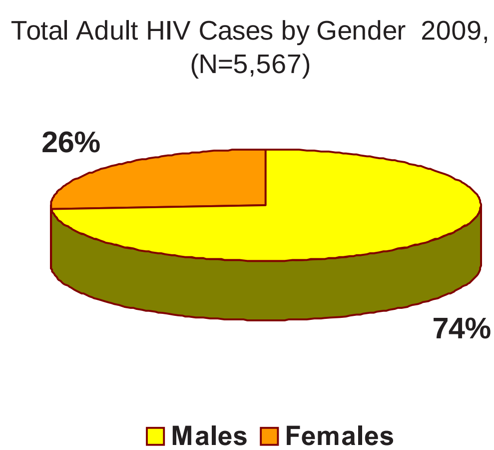
Figure 6. Percent of Adult HIV Cases by Gender and Year of Report, Florida 2000-2009



In 2009, a total of 2,978 adult males and 1,448 adult females were reported with AIDS, representing 67% and 33% of cases, respectively (Figure 7). Also in 2009, a total of 4,116 adult males and 1,451 adult females were reported with HIV infection, representing 74% and 26% of cases, respectively.

Figure 7. Percentage of Adult AIDS and HIV Cases by Gender, Florida 2009

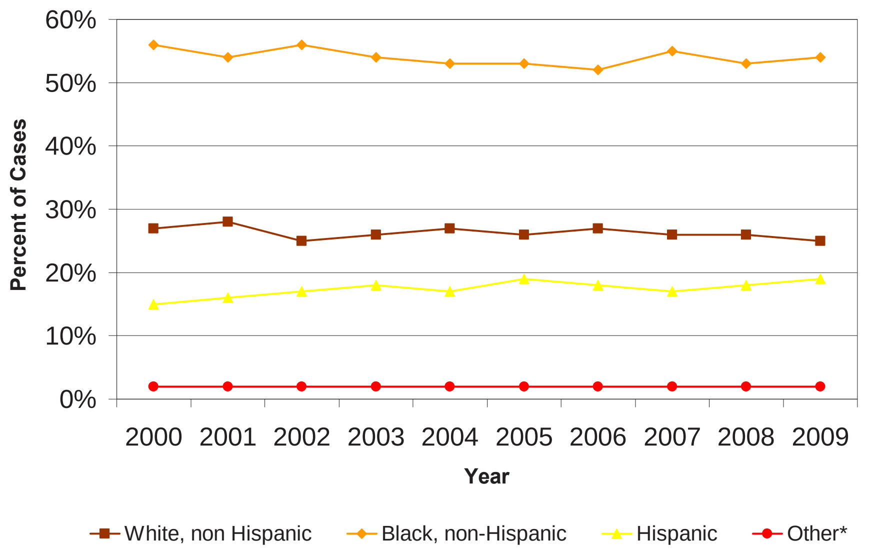




HIV case reporting, implemented in July 1997, tends to identify newer infections than are reflected by AIDS case data, although we do not know the proportion of diagnosed HIV cases that were recently acquired. HIV case reports augment AIDS case data and provide good information by age, sex, and race/ethnicity on persons who have been tested confidentially.

Of the adult AIDS cases reported in Florida in 2000, 27% were white, compared with 56% black and 15% Hispanic (Figure 8). Over the past ten years, the proportion of AIDS cases among whites, blacks, and Hispanics has remained fairly stable.

Figure 8. Percent of Adult AIDS Cases by Race/Ethnicity and Year of Report, Florida 2000-2009



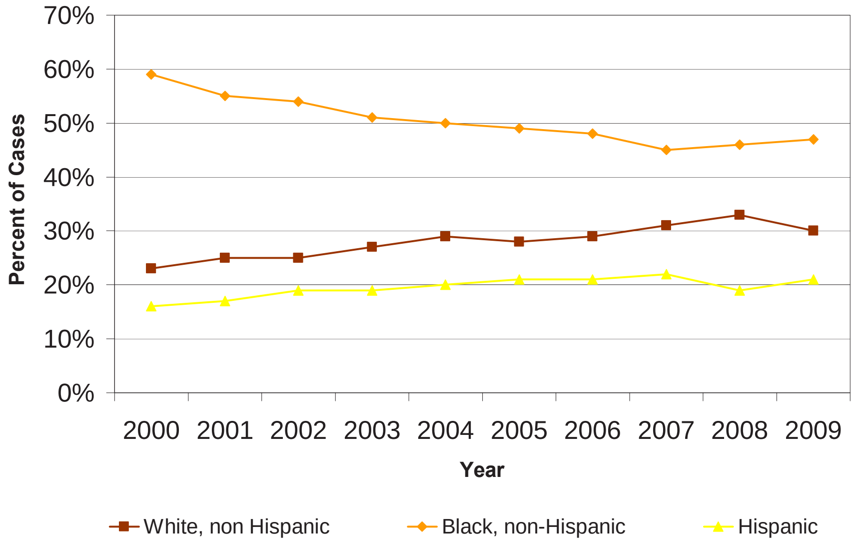
Factors Affecting Disparities

- Late diagnosis of HIV
- Access to/acceptance of care
- Delayed prevention messages
- Stigma
- Non-HIV STDs in the community
- Prevalence of injection drug use
- Complex matrix of factors related to socioeconomic status

* Other includes American Indian/Alaska Native, Asian/Pacific Islander, and Multi-racial

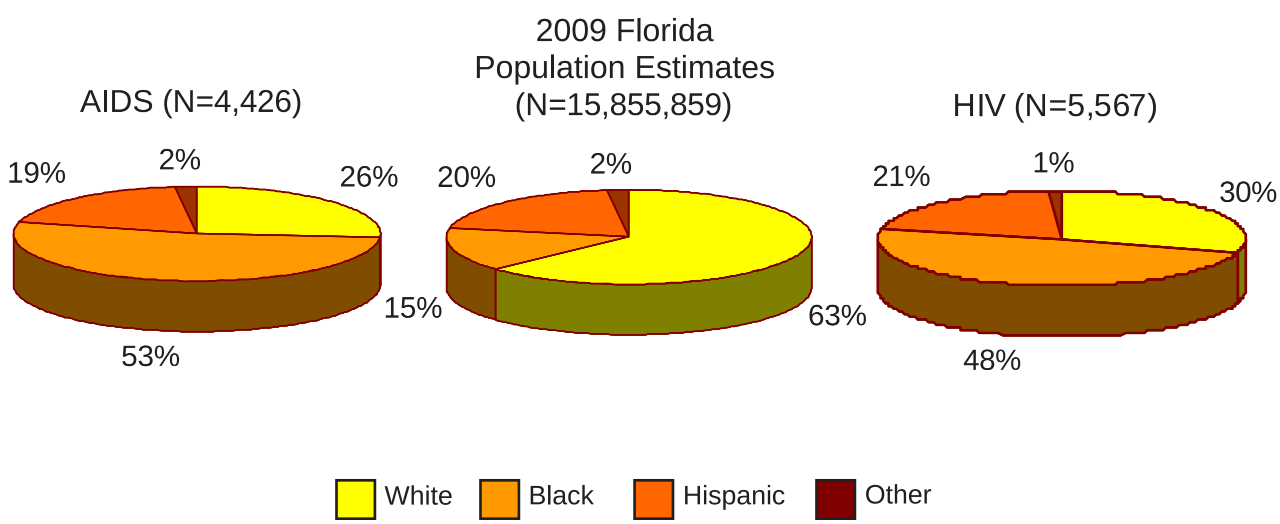
Of the adult HIV cases reported in Florida in 2000, 23% were white, while 59% were black and 16% Hispanic (Figure 9). The percent of black HIV cases has decreased by 20% from 2000 to 2009. In contrast, increases were observed among both white (30%) and Hispanic (31%) HIV cases over this same time period.

Figure 9. Percent of Adult HIV Cases by Race/Ethnicity and Year of Report, Florida 2000-2009



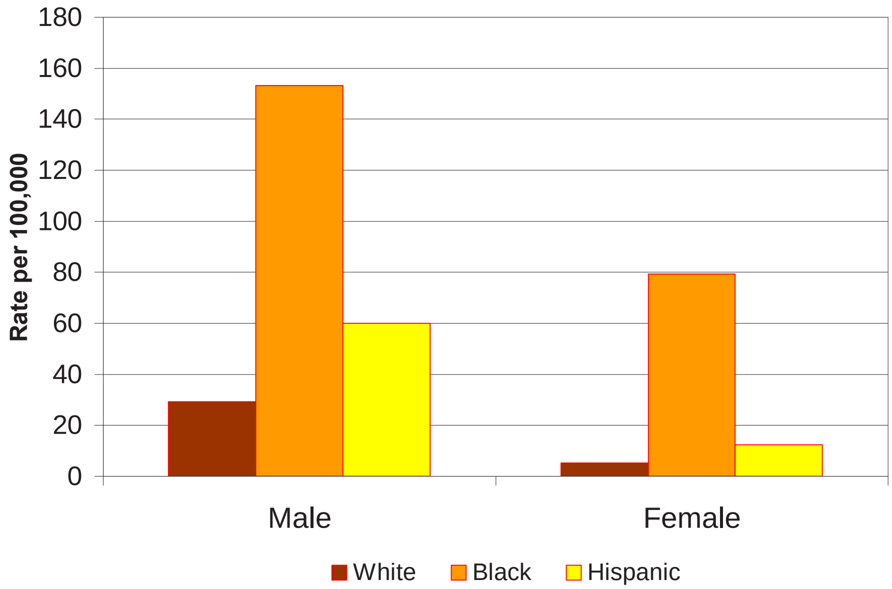
Blacks comprise only 15% of the adult population, but represent 53% of the AIDS cases and 48% of the HIV cases reported in 2009 (Figure 10). Hispanics comprise 20% of Florida's adult population, and account for 19% of the AIDS cases and 21% of the HIV cases.

Figure 10. Percentage of Adult AIDS Cases and HIV Cases by Race/Ethnicity, Florida, 2009



Black men and, to an even greater extent, black women are over-represented in the HIV epidemic (Figure 11). The HIV case rate for 2009 is five times higher among black men than among white men, and 15 times higher among black women than among white women. Hispanic male and female rates are twice the rates among their white counterparts.

Figure 11. Adult HIV Cases and Case Rates per 100,000 Population by Sex and Race/Ethnicity, Florida 2009



MALES
Rate ratios
Blacks:Whites, 5.2:1
Hispanics:Whites, 2.1:1

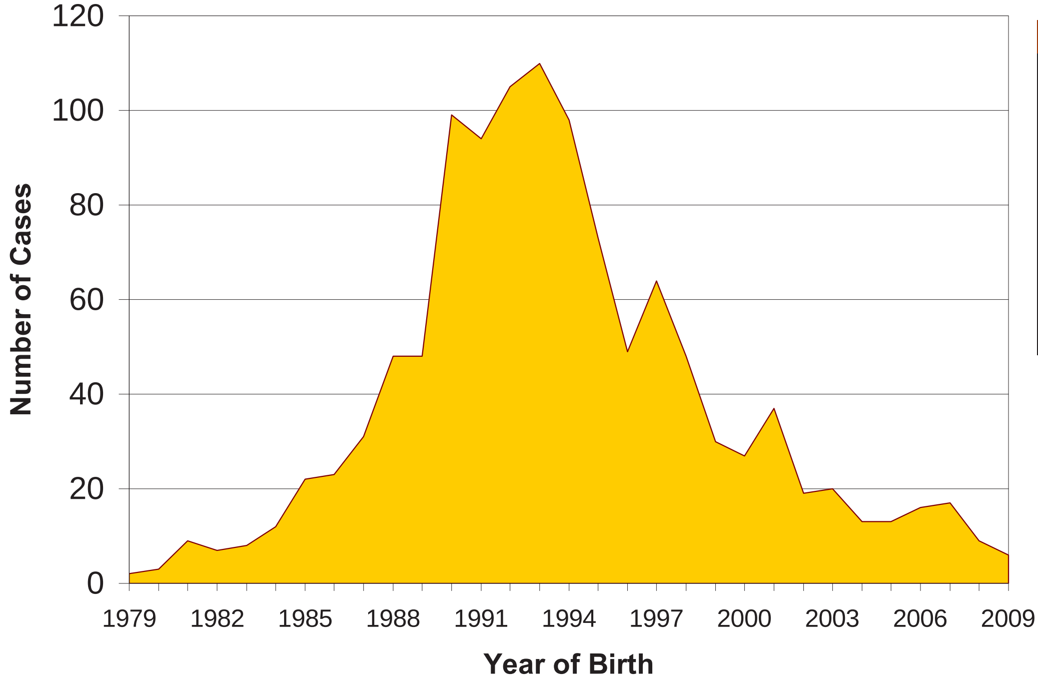
FEMALES
Rate ratios
Black:Whites, 15.0:1
Hispanics:Whites, 2.3:1

Perinatal HIV/AIDS Cases

Of the 1,161 perinatally infected babies born in Florida through 2009, two were born as early as 1979 (Figure 12). The number of HIV-infected babies born continued to rise through 1993. In April 1994, the Public Health Service released guidelines for zidovudine (ZDV) use to reduce perinatal HIV transmission, and in 1995 recommendations for HIV counseling and voluntary testing for pregnant women were published. Florida law, beginning in October 1996, required offering HIV testing to pregnant women. Because of this increase in testing for HIV infection, more HIV positive women could be offered ZDV during their pregnancy. Through enhanced perinatal surveillance systems, it has been documented that ZDV use among exposed infants and mothers of HIV-infected children has increased at the prenatal, intrapartum, delivery, and neonatal stages. In the past few years, the use of other medical therapies, including protease inhibitors, has supplemented the use of ZDV for both infected mothers and their babies. Numerous additional initiatives, including provider education and social marketing, have helped to further educate local providers of the importance of testing pregnant women for HIV, and then offering effective treatment during pregnancy and at delivery to further decrease the chances of vertical transmission.

The use of these medical therapies has been followed by a decrease in the number of perinatally HIV-infected children and a dramatic decline in perinatally-acquired HIV/AIDS since 1994. There was a sharp decrease since 1993 with a leveling trend from 2002 through 2007, followed by another sharp decrease. In summary, these successful initiatives have resulted in a 94% decline in perinatally infected HIV infants in Florida from 1993 (N=110) to 2009 (N=7).

Figure 12. Perinatal HIV/AIDS Cases by Year of Birth, Born in Florida, 1979-2009 (N=1,161)

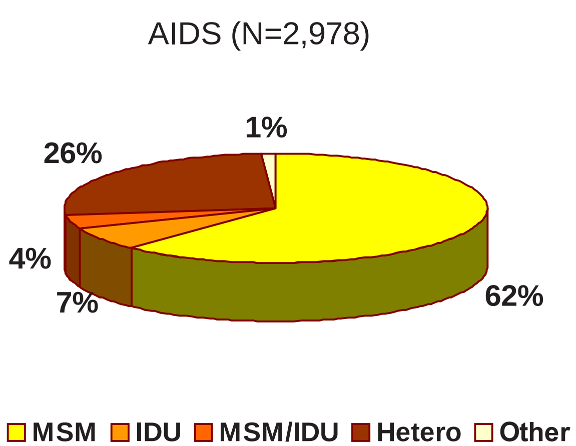


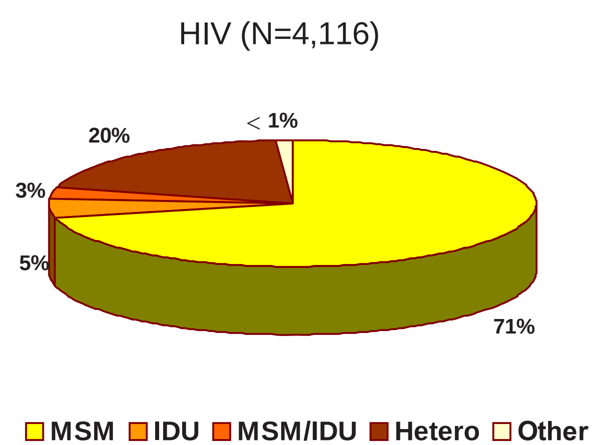
Birth	#	% change
2001	37	
2002	19	-49%
2003	20	5%
2004	13	-35%
2005	13	0%
2006	16	23%
2007	17	6%
2008	9	-47%
2009	7	-22%

HIV/AIDS Cases by Mode of Exposure in Those Over 13 Years of Age

<u>Males</u>
Among the male AIDS and HIV cases reported for 2009, men who have sex with men (MSM) was the most common risk factor (62% and 72%, respectively) followed by cases with a heterosexual risk (26% for AIDS and 20% for HIV) (Figure 13). Injection drug use (IDU) and heterosexual contact were the other defined categories.

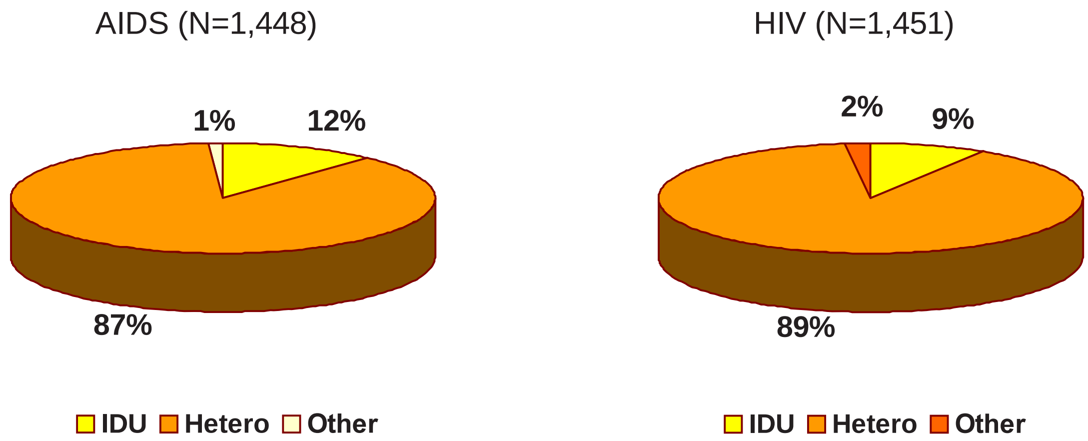
Figure 13. Adult Male AIDS and HIV Cases by Mode of Exposure, Florida, 2009





Females
Among the female AIDS and HIV cases reported for 2009, heterosexual contact was the most common risk factor (87% and 89%, respectively) (Figure 14).

Figure 14. Adult Female AIDS and HIV Cases by Mode of Exposure, Florida 2009



Prevalence Estimate of HIV/AIDS Cases
Assessment of the extent of the HIV epidemic is an important step in community planning for HIV prevention and HIV/AIDS patient care. The HIV prevalence estimate, which is the estimated number of persons living with HIV infection, includes those living with a diagnosis of HIV or AIDS and those who may be infected but are unaware of their serologic status. Approximately 1,039,000 to 1,185,000 people are currently living with HIV infection in the U.S. Florida has consistently reported 10% to 12% of the national AIDS morbidity and currently accounts for 11% of all people living with AIDS in the U.S. The Department of Health now estimates that approximately 125,000 people, or roughly 11.7% of the national total, are currently living with HIV infection in Florida as of the end of 2009.

There are some small differences and a few substantive differences between the proportional distributions of populations living with AIDS in Florida as compared to the U.S. as a whole as noted in the table below (Figure 15). Florida has a slightly higher proportion of women with AIDS (29%) compared to the U.S. (23%). By race and ethnicity, Florida has a slightly higher proportion of AIDS cases among blacks (48%) compared to the U.S. (44%) and a lower proportion among MSM (43% vs. 47%). However, Florida has a far higher proportion of AIDS cases among heterosexuals (38% vs. 24%) and a much lower proportion among IDUs (12% vs. 22%) compared to the U.S.

Figure 15. People Living with AIDS in the U.S. (2007) and Florida (2008)

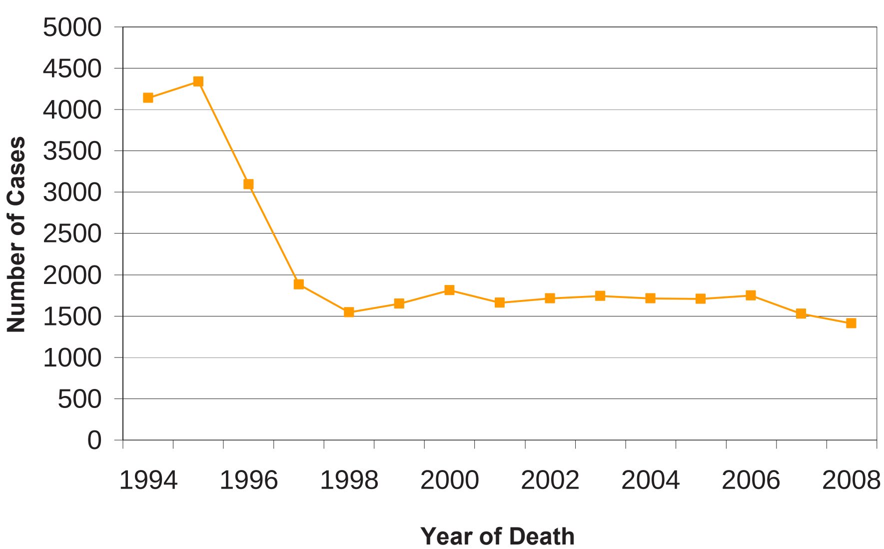
Subgroup	U.S. N=455,636	Florida N=48,179
Male	77%	71%
Female	23%	29%
White	35%	31%
Black	44%	48%
Hispanic	19%	19%
Other	1%	1%
MSM	47%	43%
IDU	22%	12%
MSM/IDU	6%	4%
Heterosexual	24%	38%
Other	1%	3%

Source: U.S. Data: CDC, HIV/AIDS Surv. Suppl. Report, 2007, Vol. 19;
Florida Data: HARS, alive and reported through 2008, as of 04/27/09.

Impact of HIV-Related Deaths

As of December 31, 2008, a total of 114,057 AIDS cases have been reported in Florida. Of these cumulative cases, 62,565 (55%) were known to have died. HIV-related deaths decreased markedly from 1996 to 1998, after the advent of highly active anti-retroviral therapy (HAART) in 1996. A leveling of the trend since 1998 may reflect factors such as viral resistance, late diagnosis of HIV, adherence problems, and lack of access to or acceptance of care (Figure 16). In 2007, for the first time in 10 years, the number of HIV-related deaths decreased, by 13% from the previous year, and 65% since the peak year in 1995. Deaths decreased an additional 7%, down to 1,412 in 2008. Decreases among males and females were observed in all racial/ethnic groups, except white females (where there was no change). Racial/ethnic disparities are evident in the death rate data.

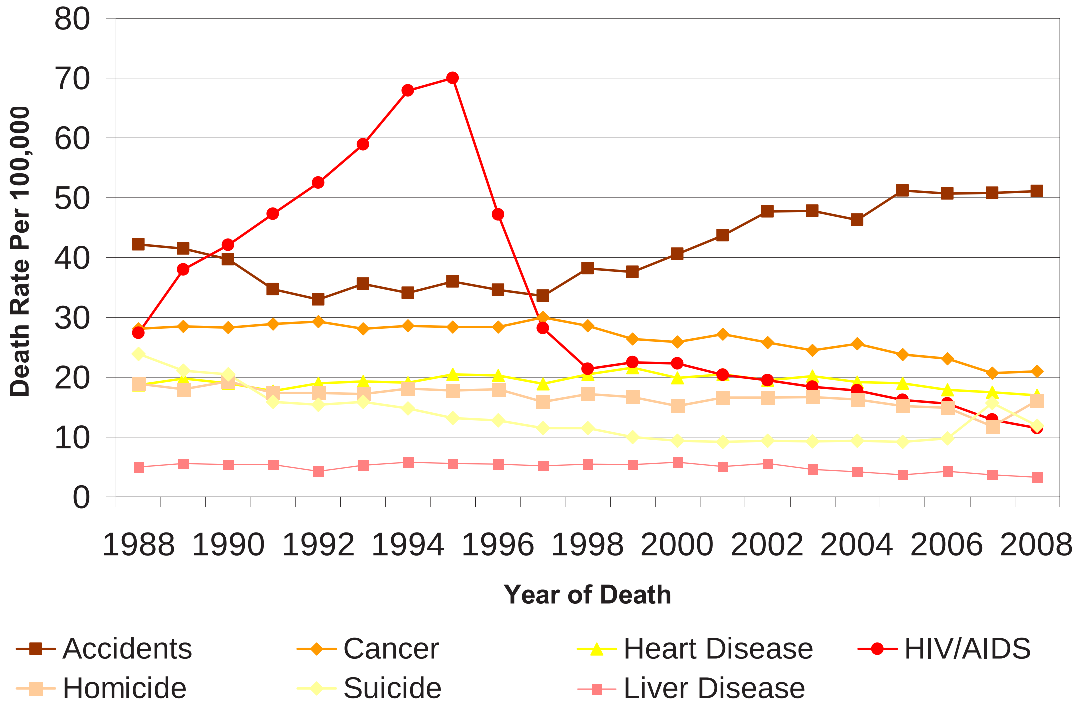
Figure 16. Resident HIV Deaths, by Year of Death, Florida 1995–2008



Race/Ethnicity	2008	
	No.	Rate
White Male	299	5.4
White Female	65	1.1
Black Male	533	37.8
Black Female	317	20.9
Hispanic Male	133	6.6
Hispanic Female	44	2.2
Other**	21	4.4
TOTAL	1,412	7.5

The peak year for HIV deaths in Florida residents was 1995 (Figure 17). In 2008, HIV was the sixth leading cause of death among people aged 25 to 44 as recorded by Florida's Office of Vital Statistics.

Figure 17. Death Rates from Leading Causes of Death Among People 25-44 Years of age, by Year of Death, Florida 1988-2008



Arsenic Poisoning

Description

The human health effects from arsenic poisoning have been the focus of recent attention at the federal and state level. On January 23, 2006, the U.S. Environmental Protection Agency (EPA) set the arsenic standard for drinking water at ten parts per billion. This level is designed to protect consumers served by public water systems from the adverse health effects of chronic exposure to arsenic. Common sources of potential arsenic exposure in Florida are chromated copper arsenate (CCA) treated wood, tobacco smoke, certain agricultural pesticides, some homeopathic and naturopathic preparations, and folk remedies. In addition, arsenic is a naturally occurring contaminant in water in certain areas of Florida effecting (unregulated) private drinking wells.

Arsenic intoxication may affect multiple organ systems. Acute exposure to toxic amounts of arsenic may include signs and symptoms such as vomiting, abdominal pain, diarrhea, light-headedness, headache, weakness, and lethargy. These signs and symptoms may rapidly lead to dehydration, low blood pressure, fluid build-up in the lungs, congestive heart failure, and shock. Different clinical manifestations might follow, including abnormal heartbeats (slow or fast), altered mental status, and multi-system organ failure, which may ultimately lead to death. Prolonged arsenic exposure has been associated with a greatly elevated risk of skin, lung, liver (angiosarcoma), bladder, kidney, and colon cancers. Skin lesions, nerve problems, and anemia are also key findings of chronic arsenic exposure.

Arsenic poisoning can be measured by testing hair, fingernail clippings, blood or urine of the patient. Testing of urine is considered the most reliable method for acute exposures. For surveillance and reporting, only 24-hour urine and urine creatinine tests are considered valid tests. Elevated inorganic or total urinary arsenic levels >50 µg/L total for a 24-hour urine as determined by a laboratory test meets the laboratory criteria for diagnosis.

Most cases of arsenic-induced toxicity in humans are due to exposure to inorganic arsenic. Organic arsenic, found in fish, is not believed to be toxic. Total arsenic tests do not distinguish between organic and inorganic arsenic (the more toxic form). For this reason, positive total arsenic laboratory test results from specimens taken within 72 hours of consumption of seafood do not meet the laboratory criteria for diagnosis.

Disease Abstract

Arsenic poisoning became a reportable condition in Florida on November 24, 2008. Cases designated with a confirmed or probable arsenic poisoning diagnostic status were extracted from the Merlin disease reporting system for exposures that occurred in 2009.

There were nine cases of arsenic poisoning reported during 2009. Counties that reported these cases are Bay (1), Broward (1), Charlotte (1), Hillsborough (1), Palm Beach (1), St. Johns (2), St. Lucie (1), and Pinellas (1). Two-thirds of cases were in men. Cases ranged from 43 to 85 years of age; the mean and median case ages were 60 and 56, respectively.

Among the nine reported cases of arsenic poisoning, six were among whites and two among non-whites and all eight of these cases were also non-Hispanic. One case was reported with both unknown race and ethnicity. Source of arsenic exposure was unknown for most of the cases (6). The potential sources identified for the remaining three cases were drinking well water, smoking (cigar), and use of vitamin supplements.

Prevention

Arsenic poisoning can be prevented through surveillance for potential sources of exposure and education of consumers. Water from public supplies must be tested for arsenic by Florida law. The drinking water standard is set at 10 micrograms of arsenic per liter (µg/L). Drinking water from private wells, however, is not subject to the same testing requirements. In areas with known high arsenic levels in ground or well water, individual wells may need to be tested specifically for arsenic.

Prevent arsenic exposure by following these general tips.

- Have well water tested for arsenic.
- Stop smoking, since many tobacco products may contain arsenic.
- Ensure a well balanced diet rich in selenium, other antioxidants, and folate.
- When using CCA-treated lumber in non-residential applications, follow the warnings regarding the wearing of personal protective equipment such as gloves, eye, and respiratory protection.
- Have children wash their hands after playing on CCA-treated lumber play equipment.
- Consider annual sealant of any existing CCA-treated lumber surfaces.

Additional Resources:

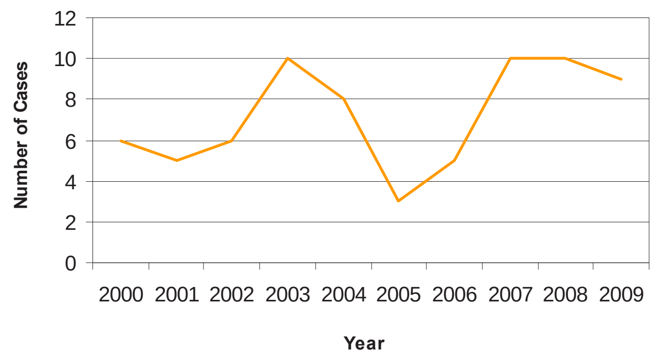
Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.bt.cdc.gov/agent/arsenic/.

The Chemical Disease Surveillance Program collects arsenic poisoning data as a part of our disease reporting system. For more information about the program, please visit http://www.myfloridaeh.com/medicine/Chemical_Surveillance/index.html.

Brucellosis

Brucellosis: Crude Data	
Number of Cases	9
2009 incidence rate per 100,000	0.05
% change from average 5 year (2004-2008) reported cases	21.71
Age (yrs)	
Mean	33.3
Median	34
Min-Max	7 - 51

Figure 1. Brucellosis Cases by Year Reported, Florida, 2000-2009



Disease Abstract

From 2000 to 2009, 78 cases of human brucellosis were reported in Florida, with 73 (94%) confirmed. There were nine cases reported in 2009; eight confirmed and one probable; one case was fatal. Not included in this tally was one case epidemiologically linked to a *Brucella suis* blood culture positive family member which occurred in 2009 but was reported in 2010, and a *B. abortus* infected patient from El Salvador identified while visiting Florida.

Speciation was available in six cases; five *B. suis* and one *B. melitensis* infections were identified. Location of exposure was determined for eight of the cases from 2009, with five reported as being acquired in Florida and three acquired outside the U.S. (1 Egypt, 2 Mexico). The *B. melitensis* case was acquired in Egypt and the second imported case reported exposure from a blood transfusion administered in Mexico in 2008. The third case reported as imported from Mexico was culture positive for *B. suis*, but did not report any likely exposure while traveling in Mexico or residing in Florida. One *B. suis* culture-positive case of unknown origin was a Mexican immigrant who last traveled to Mexico 10 years previously and who currently worked on a Florida farm that had wild pigs present, although he denied hunting. Cases occurred throughout the year, as might be expected with a disease with extended incubation periods and a capacity to cause chronic illness (Figure 2). Men accounted for six cases (67%) and cases were primarily white (89%), and non-Hispanic (89%). Affected people ranged from 7 to 51 years old. Incidence was highest in those aged 45 to 54, representing three of the nine cases (Figure 3). One death occurred in a 47-year-old man with a genetic disorder that may have contributed to the severity of the infection. The deceased, a life-long hunter, was blood culture-positive for *B. suis* and had myocarditis associated with the infection. Risk factors identified in seven of the nine cases included: hunting feral pigs and/or handling feral hog carcasses (five cases including a seven year old child); consuming unpasteurized milk products (one imported); and transfusion (one imported).

There were at least 115 private laboratory workers in Florida who were exposed to *Brucella* cultures while working with diagnostic specimens in 2009, including 43 high-risk and 72 low-risk exposures. In addition, a blood culture from one of the 2009 confirmed cases resulted in exposures of five personnel at a North Carolina (N.C.) laboratory. One of the N.C. laboratorians developed *Brucella* infection and her blood culture isolate resulted in 13 additional laboratory exposures at a N.C. hospital lab.

Figure 2. Brucellosis Cases by Month of Onset, Florida, 2009

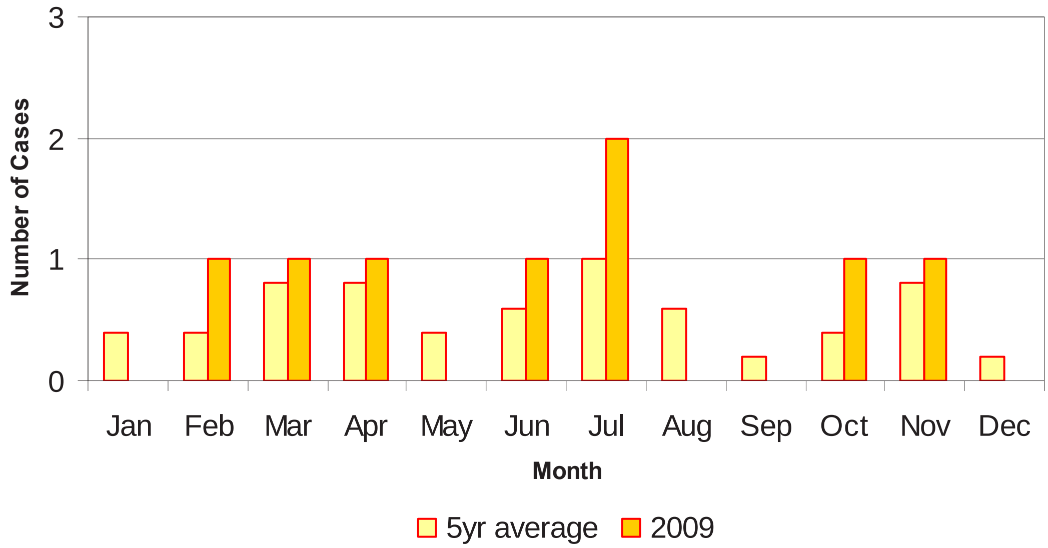
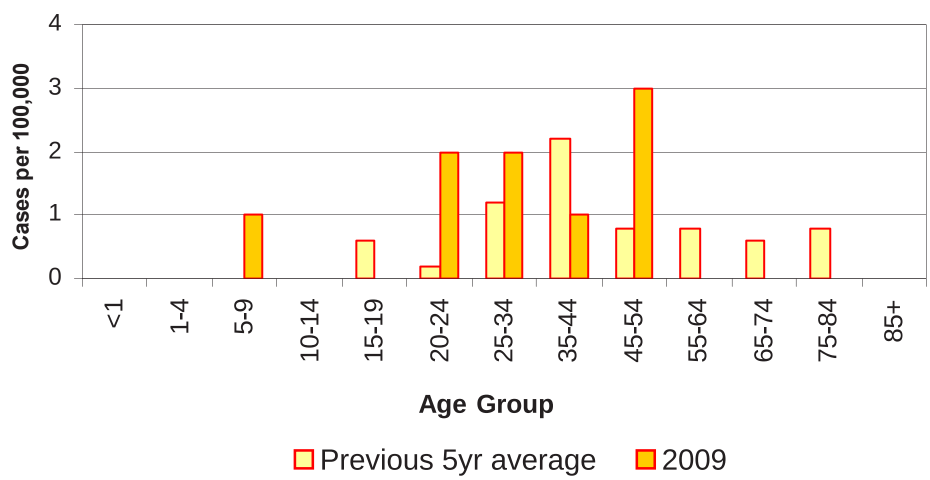


Figure 3. Brucellosis Cases by Age Group, Florida, 2009



Prevention
Prevention can best be accomplished through education of hunters, animal workers and those handling raw meat from feral swine on proper use of personal protective equipment. Prevention measures include the following strategies.

- Wear gloves and other protective clothing.
- Work in properly ventilated areas.

- Dispose of animal carcasses and tissues properly.
- Disinfect contaminated areas.
- Handle modified live vaccines properly.

Educate travelers and the general public about the risks of drinking or eating unpasteurized dairy products, especially products originating in countries where brucellosis is endemic in livestock. Outreach should be done for laboratory personnel to ensure knowledge of appropriate specimen handling (aerosol protection), and clinicians should be reminded to forewarn laboratories working with patient culture samples if *Brucella* is included in the differential diagnosis. Laboratories should be periodically reminded of state and federal confirmation and reporting requirements for this select agent. Continued surveillance and management programs for *Brucella* sp. in domestic livestock will keep exposure risk from domestic animals low in Florida. Surveillance is also important because *Brucella* has the potential for use as a bioterrorism agent.

References

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Lt. Col. Jon B. Woods (ed.), USAMRIID, *Medical Management of Biological Casualties Handbook*, 6th ed., U.S. Army Medical Research Institute of Infectious Diseases, 2005.

M.J. Corbel. 2006. Brucellosis in humans and animals. World Health Organization Press. Geneva, Switzerland.

Additional Resources

CDC. *Brucella suis* infection associated with feral swine hunting---three states, 2007 - 2008. *MMWR* 2009;58(22):618-21.

Information on human brucellosis in Florida can be found at the Florida Department of Health website at http://myfloridaeh.com/medicine/arboviral/Zoonoses/Zoonotic-brucellosis.html

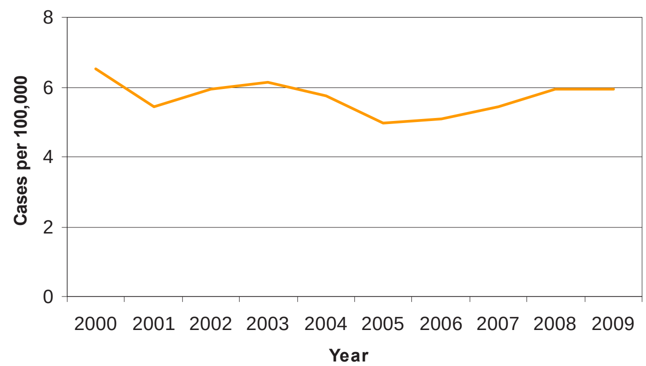
Additional information can also be found at the United States Department of Agriculture, Animal and Plant Health Inspection Services website at http://www.aphis.usda.gov/animal_health/animal_diseases/brucellosis/

As well as the CDC website at http://www.cdc.gov/nczved/divisions/dfbmd/diseases/brucellosis/

Campylobacteriosis

Campylobacteriosis: Crude Data	
Number of Cases	1,120
2009 incidence rate per 100,000	5.95
% change from average 5-year (2004-2008) incidence rate	12.47
Age (yrs)	
Mean	33.02
Median	30
Min-Max	<1 – 96

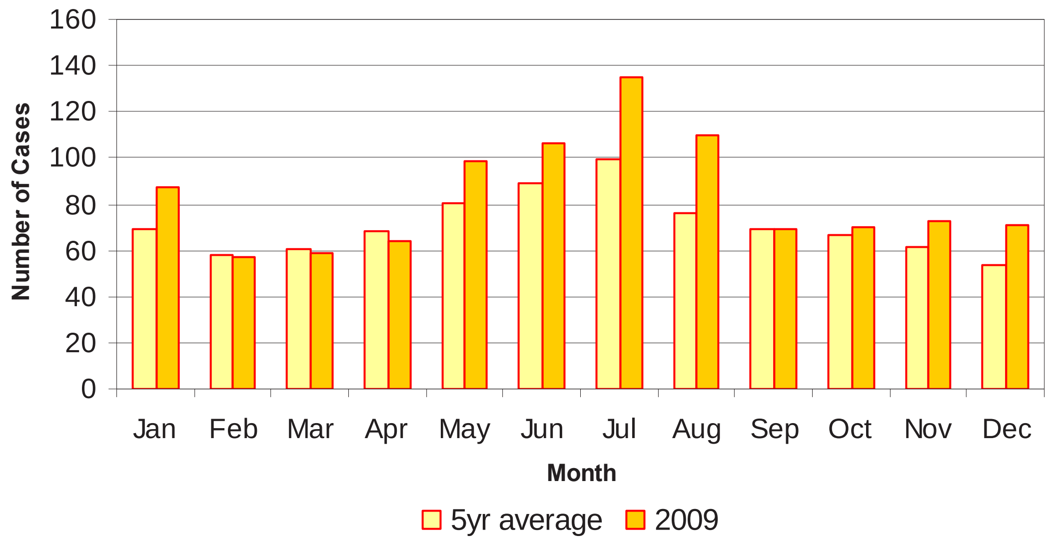
Figure 1. Campylobacteriosis Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

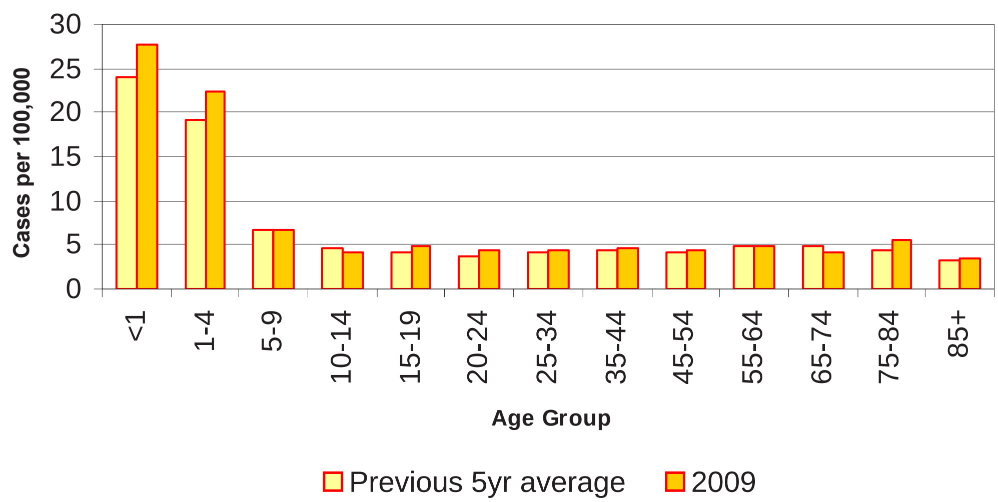
The incidence rate for campylobacteriosis has remained generally stable since 2000 (Figure 1). In 2009, there was a 12.5% increase in comparison to the average incidence from 2004 to 2008. A total of 1,120 cases were reported in 2009, of which 96.16% were classified as confirmed. The number of cases reported tends to increase in the summer months. In 2009, the number of cases reported in the summer of 2009 exceeded the previous five-year averages for the same time period. In 2009, the number of cases exceeded the previous five-year average in all months of the year except February through April (Figure 2). The highest incidence occurs among infants under one year old and children aged one to four years (Figure 3). Overall, 7.1% of the campylobacteriosis cases reported in 2009 were classified as outbreak-related as compared to 5.7% in 2008. The majority of cases classified as outbreak associated were groups of two to four family members who all became ill. Several clusters reported eating undercooked chicken or other common food sources. At least two clusters were attributed to travel to farms outside of the U.S. and one cluster was related to occupational exposure to slaughtered animals. However, the majority of family clusters resulted from person-to-person transmission within the home where one individual was ill from an unknown exposure source and then exposed siblings or parents who then became infected.

Figure 2. Campylobacteriosis Cases by Month of Onset, Florida, 2009



Campylobacteriosis was reported in 58 of the 67 counties in Florida. Counties in north-central and southwestern Florida reported the highest incidence rates.

Figure 3. Campylobacteriosis Incidence Rate by Age Group, Florida, 2009

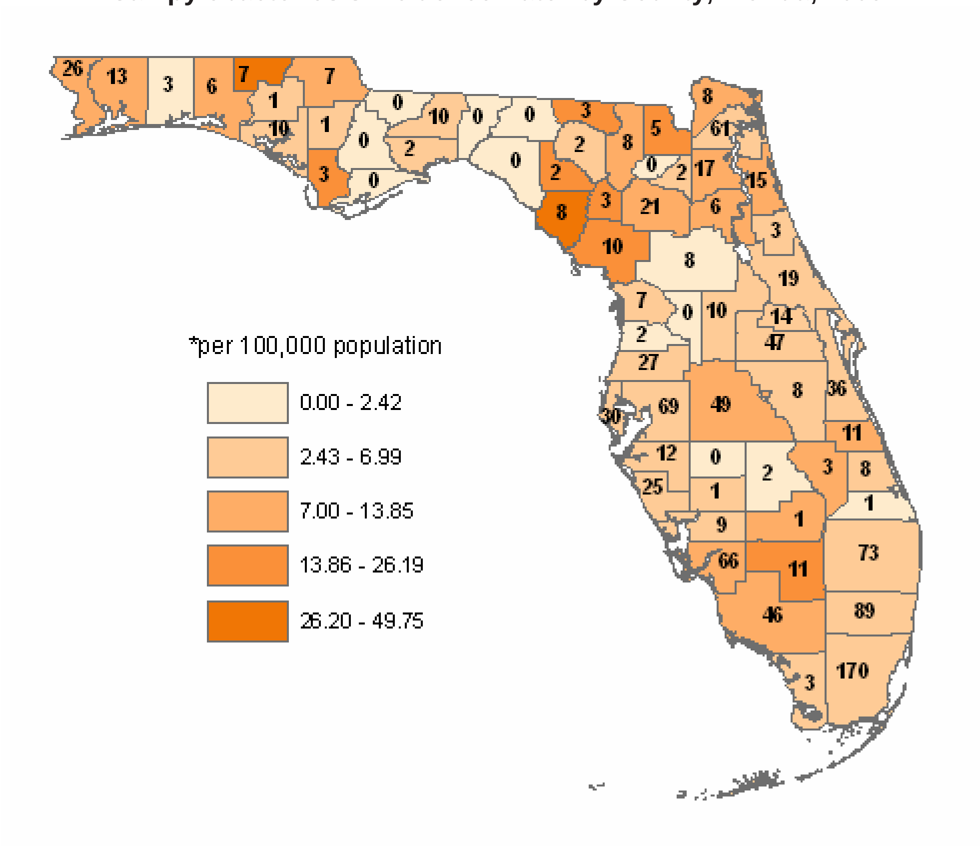


Prevention

The likelihood of contracting campylobacteriosis can be reduced by following these guidelines.

- Cook all meat products thoroughly, particularly poultry.
- Avoid cross-contamination by making sure utensils, counter tops, cutting boards, and sponges are cleaned or do not come in contact with raw poultry or other meat.
- Wash your hands thoroughly before, during, and after food preparation.
- Do not allow fluids from raw poultry or meat to drip on or touch other foods.
- Consume only pasteurized milk, milk products, or juices. Additionally, it is important to wash your hands after coming into contact with any animals or their environment.

Campylobacteriosis Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/ncidod/dbmd/diseaseinfo/campylobacter_g.htm

Carbon Monoxide Poisoning

Description

Carbon monoxide (CO) is an odorless, colorless gas produced as a by-product of combustion. Common sources of CO exposures include gasoline or diesel power generators, motor vehicles, lawn mowers, motorboats, and small engine-powered appliances and tools. Portable propane heaters, non-electric space heaters, natural gas appliances, furnaces, heaters, water heaters, stoves, wood-burning stoves, fireplaces, charcoal grills, and barbecues are also sources. In addition, fires (forest and residential fires) produce CO naturally. CO can build up to dangerous concentrations indoors if fuel-burning devices are not properly installed, vented, operated, or maintained. Emergencies, such as natural disasters and power outages, have led to CO poisoning due to inadequate ventilation or the improper use of equipment such as generators, grills, and camp stoves. Unintentional CO poisoning can occur outdoors, during activities like boating or camping, from sources such as boat exhaust, gasoline-powered generators, and non-electric heaters. Residential fires often result in CO poisoning.

Exposure to high levels of CO can cause loss of consciousness and death. The most common health effects of CO poisoning include: general symptoms (e.g. weakness, drowsiness, and fatigue); neurological symptoms (e.g., headache, dizziness, and confusion); gastrointestinal (e.g., nausea and vomiting); cardiovascular (e.g., chest pain); and respiratory (e.g., shortness of breath). Low-level exposure to CO can result in relatively mild symptoms that are easily confused with other illnesses such as chronic fatigue syndrome, depression, influenza, and migraine headaches. Low-level exposures can also produce more serious illness in people with pre-existing cardiovascular or pulmonary disease (e.g. asthma, chronic obstructive pulmonary disease). Medical professionals or patients may not easily recognize the impacts of these lower level exposures.

Neonates and unborn fetuses are more vulnerable to CO toxicity because of the higher affinity of their hemoglobin for CO compared to adult hemoglobin. There is high risk of neurological sequelae in a fetus with severe maternal CO poisoning; no increased risk is observed in mild unintentional exposures.

Disease Abstract

Carbon monoxide poisoning became a reportable condition in Florida on November 24, 2008. Healthcare providers and emergency responders are required to contact their county health department to report incidents of CO exposures. All laboratory results of patients with volume fractions greater or equal to 0.09 (9%) of carboxyhemoglobin (COHb) in the blood are reportable.

Exposure to CO and CO poisonings are routinely monitored in Florida using two main sources of data, the Florida Poison Information Center (FPIC) data base and chief complaints data from hospitals participating in the Electronic Surveillance System for Early Notification of Community-based Epidemics (ESSENCE). When a potential case of CO poisoning is identified, the county health departments conduct case follow-up and investigation.

For analysis, cases with exposures occurring in 2009, the first year CO poisoning became a reportable disease, were included. Incomplete cases and cases marked for deletion were excluded from this report. In 2009, there were 44 CO poisoning cases reported, but one with exposure occurring in 2008 was excluded from this analysis. The 43 reported cases with exposures in 2009 were classified as confirmed (36), probable (6) and suspected (1). The total number of cases reported during each month is given below (Figure 1). December (10 cases) and October (7 cases) had the highest numbers.

About half of the CO poisonings were reported in those 35 to 64 years of age (N=21) followed by those 0 to 17 years of age (N=11) (Figure 2). Cases ranged from ages less than one year to 77 years, with 35 and 38 as the mean and median respectively. Cases were primarily white (N=26), with14 cases among non-whites. Three cases were of unknown race. Eight of the 43 cases were reported as having Hispanic ethnicity.

Figure 1: Reported Cases of Carbon Monoxide Poisoning by Month, Florida 2009 (N = 43)

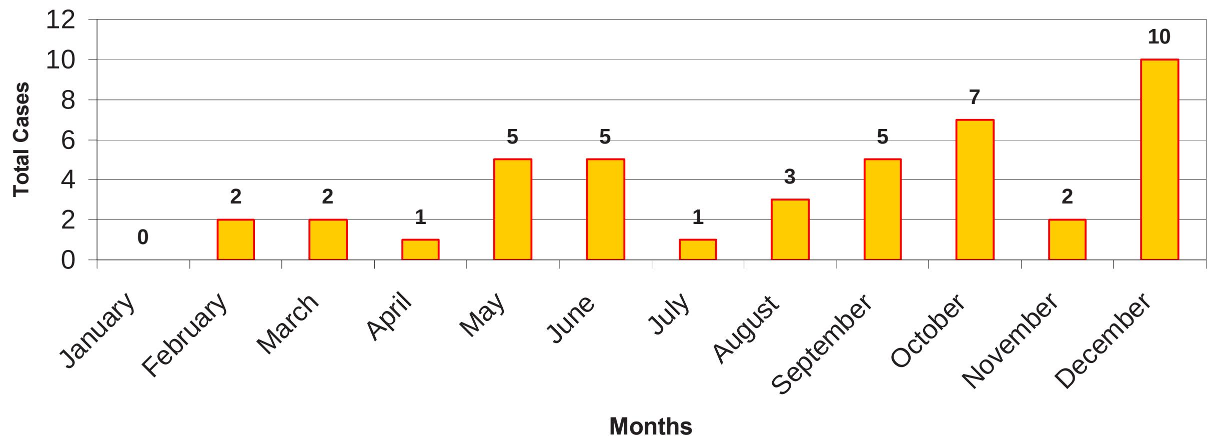
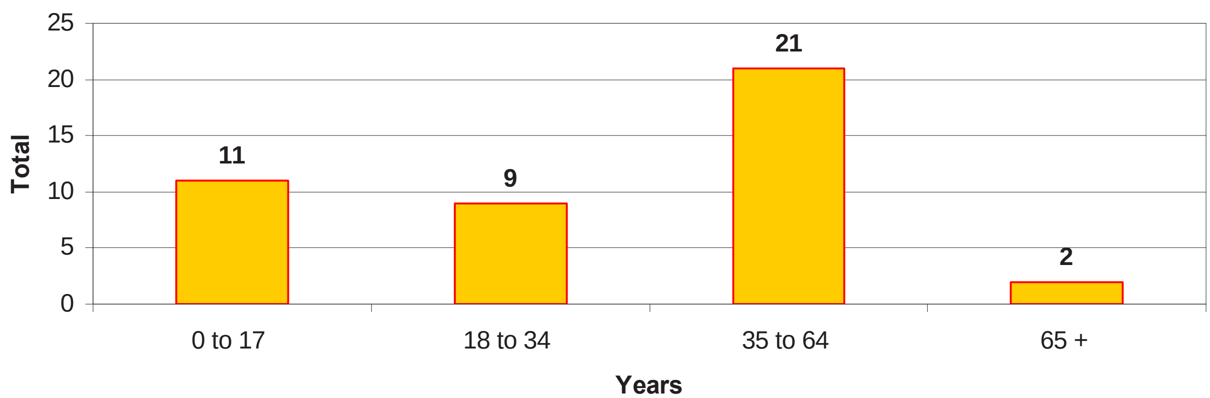


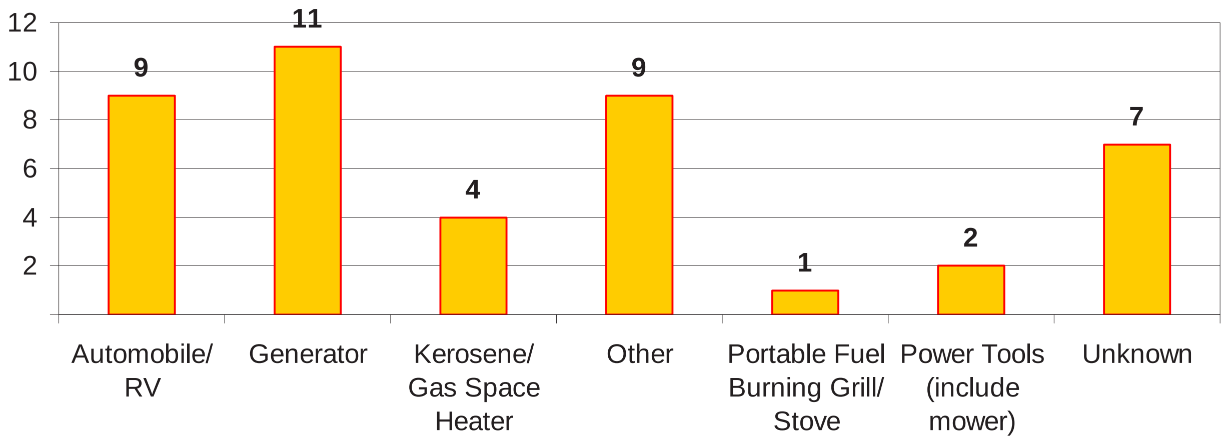
Figure 2: Carbon Monoxide Cases Reported by Age Group, Florida 2009 (N = 43)



The majority of CO poisoning cases were unintentional (81%). Only 16% were recorded as intentional. Seventy-five percent (N=32) of the exposures occurred in residential areas, with fewer in the workplace (N=5), at an unknown site (N=3), in a lake/river/ocean (N=2), or at school (N=1).

The majority of cases were the result of exposures to generators (N=11) and automobiles (N=9). The category 'Other' contained four cases related to fire (smoke inhalation) and two related to propane-powered machines.

Figure 3: Carbon Monoxide Case Distribution by Exposure Type, Florida 2009 (N = 43)



Most confirmed cases were reported from Escambia (6), Broward (5), Orange (5), Miami-Dade (4), Duval (4), and Palm Beach (4) counties.

Prevention

The Florida Department of Health (FDOH) addresses CO exposure and poisoning through surveillance and education. Following are measure to prevent carbon monoxide exposure.

- Make sure all appliances are properly installed and used according to the manufacturer's instructions.
- Install a carbon monoxide alarm in the home if there are combustion appliances in the home or in an attached garage.
- Have fireplace and combustion heating and ventilation systems, including chimneys, flues, and vents, professionally inspected every year.
- Don't burn charcoal inside a house, garage, vehicle, tent or fireplace.
- Don't use un-vented combustion heaters in enclosed spaces, especially sleeping areas.
- Never leave an automobile running in a closed garage or in a garage attached to the house, even with the garage door open.
- Keep the rear window or tailgate of a moving vehicle closed, as CO from the exhaust can be pulled inside.
- If you suspect that you or others are experiencing any symptoms of CO poisoning, open doors and windows, turn off gas appliances and go outside.

Florida Statues 553.885 and 509.211 require that every building for which a building permit is issued for new construction on or after July 1, 2008, as well as any enclosed space or room that contains a boiler, shall have an approved operational carbon monoxide alarm installed.

View a DOH-posted educational video on CO poisoning prevention courtesy of the California Air Resources Board at http://www.youtube.com/watch?v=t5rlyN6LuoU.

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Carbon monoxide exposures after hurricane Ike—Texas, September 2008. *MMWR.* Aug 14 2009; 58(31):845-849.

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Houseboat-associated carbon monoxide poisonings on Lake Powell—Arizona and Utah, 2000. *MMWR.* Dec 15 2000; 49(49):1105-1108.

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Additional Resources:

The Chemical Disease Surveillance Program collects CO poisoning data as a part of our disease reporting system. For more information about the program please visit http://www.myfloridaeh.com/medicine/Chemical_Surveillance/index.html

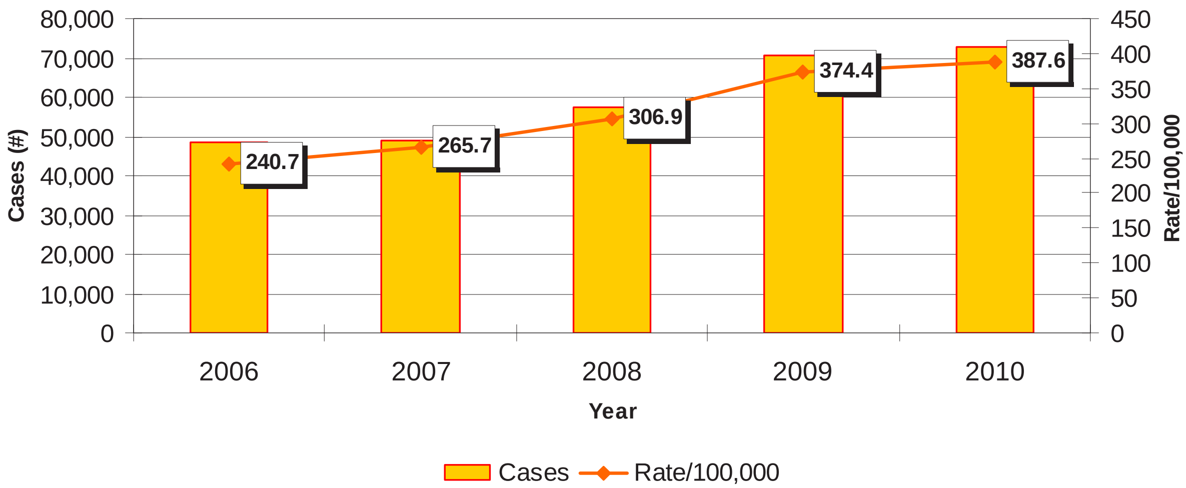
Useful links:

- CO Hospitalization and Death Data available at Florida Charts. http://www.floridatracking.com/HealthTrackFL/DealIndicator.aspx?PageId=11200
- Carbon monoxide brochures available in English, Spanish and Creole. See http://www.myfloridaeh.com/community/indoor-air/carbon.htm

Chlamydia

Disease Abstract
Chlamydia trachomatis infection became reportable by Florida law in 1993. Early chlamydia detection and prevalence monitoring remain priorities nationwide, emphasized by the Infertility Prevention Project (IPP), Healthy People 2010 Objectives, and Healthcare Effectiveness Data and Information Set (HEDIS) measures. Chlamydia accounts for 75% of all reportable sexually transmitted diseases (STD) in Florida and remains one of the most commonly reported of all infectious diseases in the nation and state. Chlamydia is the leading preventable cause of infertility in women. In 2009, 72,937 chlamydia cases were reported in Florida, which is 387.6 cases per 100,000 population. Of these cases, 21 were congenital (Figure 1).

Figure 1. Reported Cases and Rates of Chlamydia by Year, Florida 2005-2009



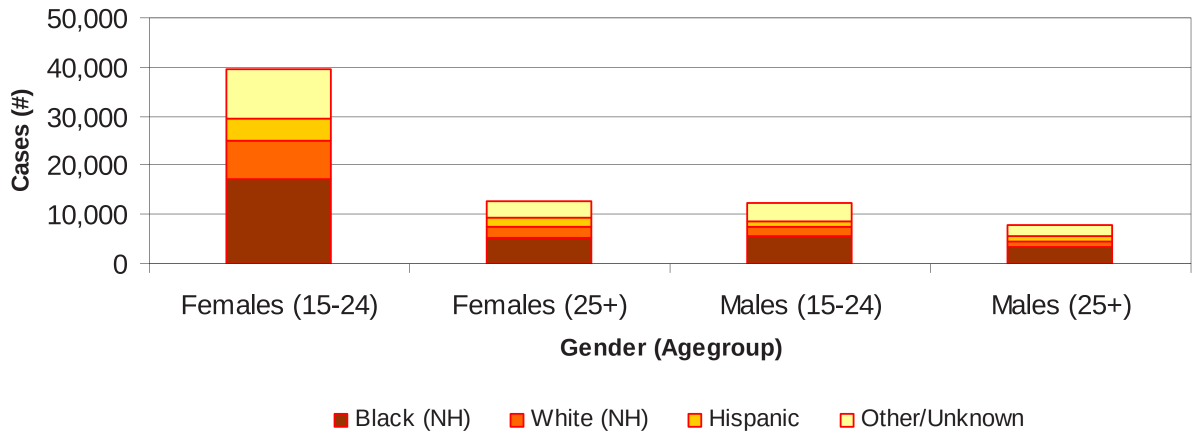
Age
The most important risk factor for chlamydial infection is age. People between the ages of 15 and 24 represented 13% of Florida's population in 2009, yet accounted for 71% of all reported chlamydia cases in Florida during the same time period. In this age cohort, over 50,000 cases were reported in 2009 (Table 1), a modest increase from 2008 (3%).

Table 1. Chlamydia Cases and Rates by Age Group, Florida, 2009

Age Groups	Cases Reported	Rate per 100,000 population
15-19 years	24,403	2,028.3
20-24 years	27,341	2,258.9
25-29 years	11,518	988.04
30-34 years	4,547	407.43
35-39 years	2,113	179.11
40-44 years	1,083	86.0

When data were examined by age in single years, rather than as age groups, reported numbers of cases peak at the age of 19. Adolescents and young adults are disproportionately affected with chlamydia compared to older populations. Although the prevalence of chlamydia is the highest among those under 25 years of age, women and minorities are disproportionately affected (Figure 2).

Figure 2. Reported Cases of Chlamydia by Gender, Age, Race/Ethnicity, 2009



Gender

Three out of every four reported cases of chlamydia are in women. Florida-specific trends parallel national data, which also indicate that infection is most prevalent in women under the age of 25. Among cases reported in women, those under the age of 30 account for 90% of reported infections. The highest chlamydia rates are among women aged 15 to 19 (3,375.22 per 100,000 population). The rate for women in the 20 to 24 age group was slightly lower at 3,312.7 per 100,000 population.

The difference between the reported rates by gender is due in part to much more frequent screening in women than in men. This could lead to greater detection of infections in women while not accurately reflecting the prevalence in men. Regardless of gender, adolescents and young adults (under age 25) account for the majority of reported cases by age (males 60%, females 75%). In 2009, 20- to 24-year-old men had the highest rate among male age groups (1,243.9 per 100,000 population). This rate was trailed by a rate of 733.1 per 100,000 population for males between the ages of 15 and 19.

Race and Ethnicity

Disparities among racial and ethnic groups exist in the number of cases reported annually. Non-Hispanic black female adolescents and young adults have higher rates compared to similar non-Hispanic whites or Hispanics. Among women, the case rate for non-Hispanic blacks 15 to 24 years old (6,918.43 per 100,000 population) is five times higher than the second highest rate, in non-Hispanic whites aged 15 to 24 (1,313,01 per 100,000 population). Among reported cases, non-Hispanic blacks accounted for 43.4% of the chlamydia cases in 2009; non-Hispanic whites accounted for 18.5%; Hispanics accounted for 11.9%; and people in other or unidentified racial-ethnic groups accounted for 26.6% of cases.

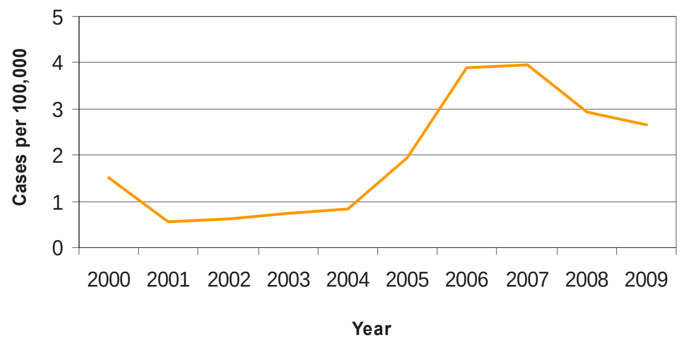
Prevention

The Centers for Disease Control and Prevention (CDC) recommends annual chlamydia screening (and treatment) for all sexually active women under age 26, as well as older women with risk factors such as new or multiple sex partners. Chlamydia prevention strategies also include assuring that male sexual partners of infected women get treatment, promotion of condom use and reduction of number of sexual partners. The sustained elevated rates of chlamydia can, in part, be attributed to policy changes, implementation of reporting systems, national surveillance projects, and changes in testing technologies throughout the past ten years.

Cryptosporidiosis

Cryptosporidiosis: Crude Data	
Number of Cases	497
2009 incidence rate per 100,000	2.64
% change from average 5-year (2004-2008) incidence rate	-3.33
Age (yrs)	
Mean	35.83
Median	33
Min-Max	<1 - 92

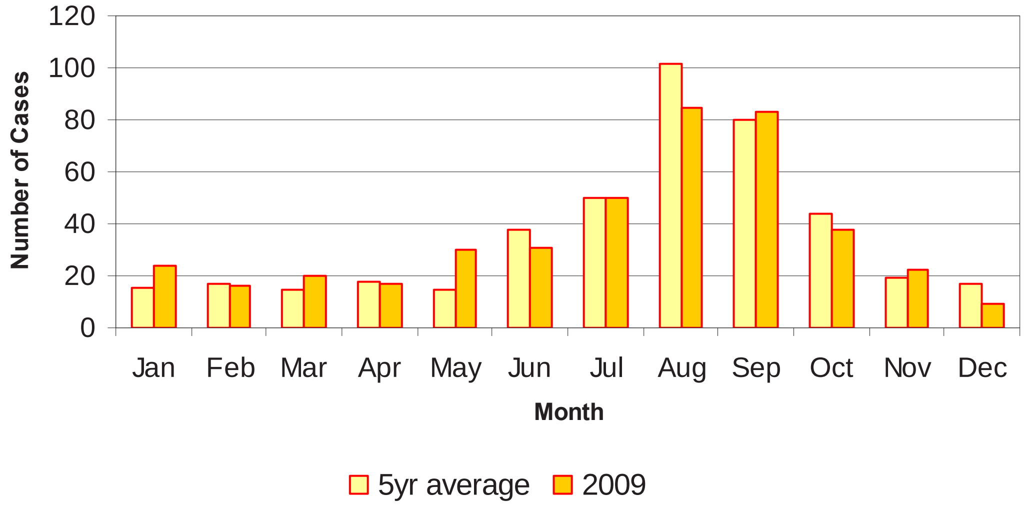
Figure 1. Cryptosporidiosis Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

Cryptosporidiosis is a diarrheal disease caused by the organism *Cryptosporidium parvum*. A total of 497 cases of cryptosporidiosis were reported in 2009, of which 91.75% were classified as confirmed. Just over 10% of all reported cases were classified as outbreak-related, which is a decrease from 13% the previous year; 4.2% of cases were acquired outside the U.S. The incidence rate for cryptosporidiosis increased sharply from 2004 to 2006 (Figure 1), was stable through 2007, and since has fallen somewhat to a level well above that before 2004. Increases in cryptosporidiosis are commonly observed during the summer months when exposure to recreational water is more common. In 2009, the number of cases occurring each month was similar to the previous five-year average in each month (Figure 2). The overall increase in cryptosporidiosis over the past decade is consistent with national trends and is likely due to a combination of actual increased disease incidence, increased clinical recognition, increased diagnostic testing, increased sensitivity of diagnostic tests, and increased use of recreational water settings by young children. The recent introduction of nitazoxanide, the first licensed treatment for the disease, may have influenced clinical practice because diagnostic testing for *Cryptosporidium* now can lead to specific treatment.

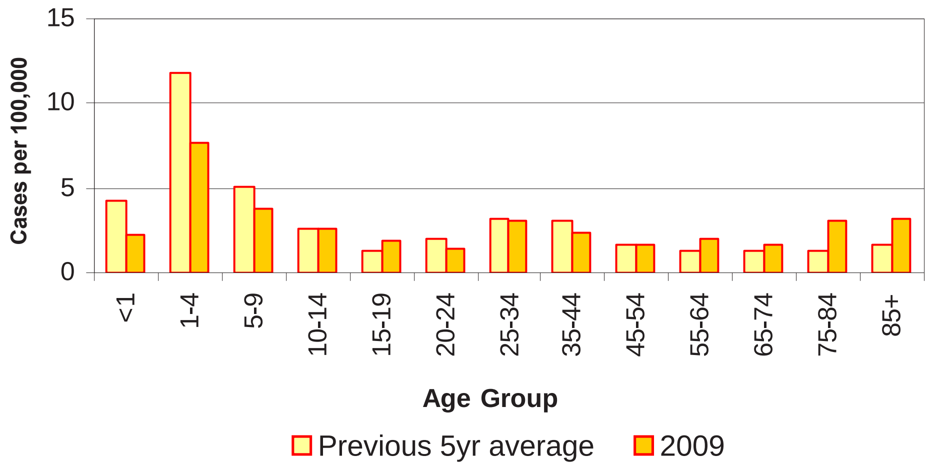
Figure 2. Cryptosporidiosis Cases by Month of Onset, Florida, 2009



Rates are higher among children under 10 years old, with the highest rates occurring in the one to four age group (7.7 per 100,000) (Figure 3). However, there has been an increase in incidence among those over age 55 above the previous five-year average. In 2009, approximately 34% of reported cases who were less than five years old attended daycare centers. The smaller second peak in incidence among adults 20 to 44 years old may be attributed to family contact with infected children (Figure 3).

Cases of cryptosporidiosis were reported in 49 of the 67 counties in Florida. Bay County, with the highest incidence, reported none of their cases as being outbreak-associated. Santa Rosa County had a lower incidence rate, but reported 69.2% of their cases as being associated with an outbreak at a public swimming pool. Additional counties with a high proportion of outbreak-associated cases include Pinellas (26.1%) and St. Johns (25.0%).

Figure 3. Cryptosporidiosis Incidence Rate by Age Group, Florida, 2009



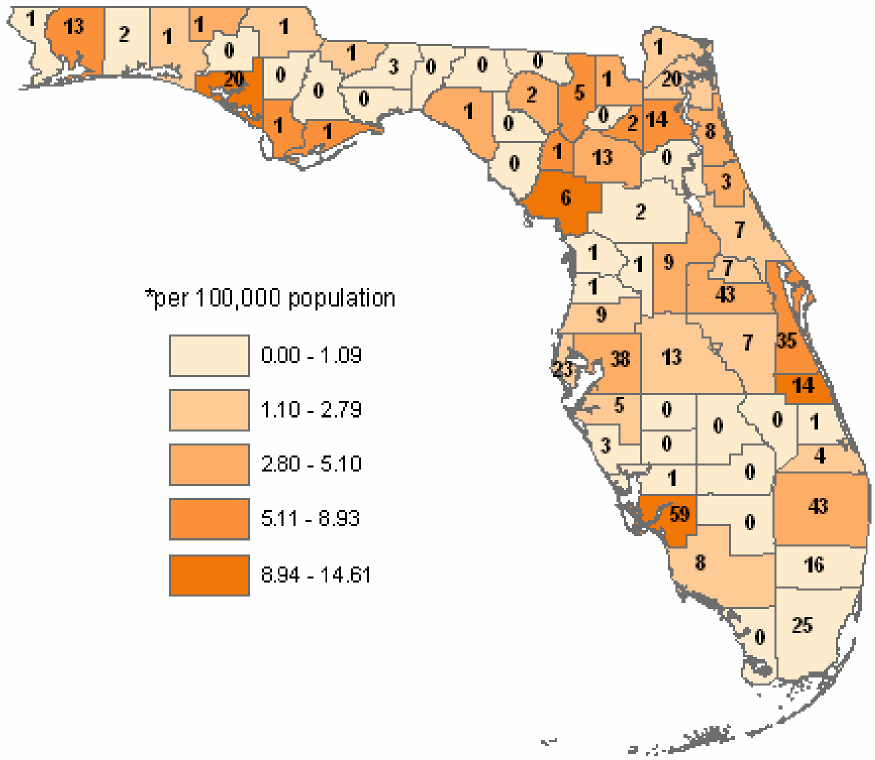
Prevention

The likelihood of contracting cryptosporidiosis can be reduced by practicing good hand hygiene, such as washing hands before handling or eating food and after diaper changing. Water in recreational settings, such as swimming pools or water parks, should not be ingested or swallowed. Outbreaks associated with recreational water, especially water parks and interactive fountains, can be prevented if managers of those sites follow established guidelines for management of these facilities.

A swimmer's likelihood of contracting or spreading cryptosporidiosis in a recreational water setting can be reduced by practicing the following healthy swimming behaviors.

- Avoid swallowing pool water or even getting it in your mouth.
- Shower before swimming and wash your hands after using the toilet or changing diapers.
- When swimming, take children on bathroom breaks or check diapers often.
- Change diapers in a bathroom and not at poolside and thoroughly clean the diaper-changing area.
- Protect others by not swimming if you are experiencing diarrhea (this is essential for children in diapers) and for at least two weeks after diarrhea stops.

Cryptosporidiosis Incidence Rate* by County, Florida, 2009



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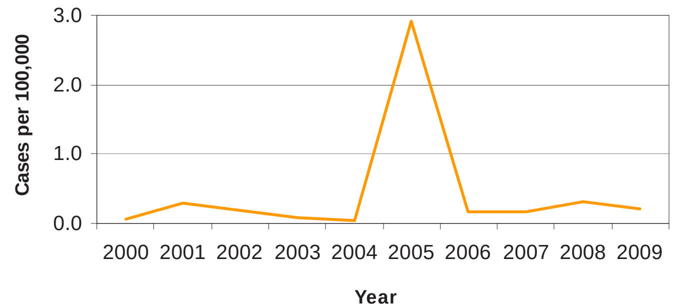
Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/factsht_cryptosporidiosis.htm.

Cyclosporiasis

Cyclosporiasis: Crude Data	
Number of Cases	40
2009 incidence rate per 100,000	0.21
% change from median 5-year (2004-2008) reported cases	25.00
Age (yrs)	
Mean	49.3
Median	53.5
Min-Max	3 - 78

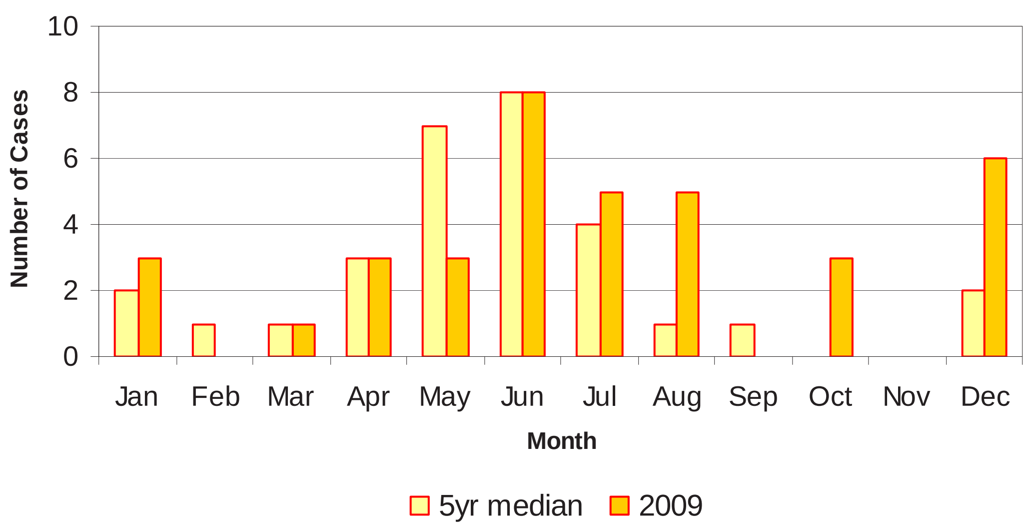
Figure 1. Cyclosporiasis Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

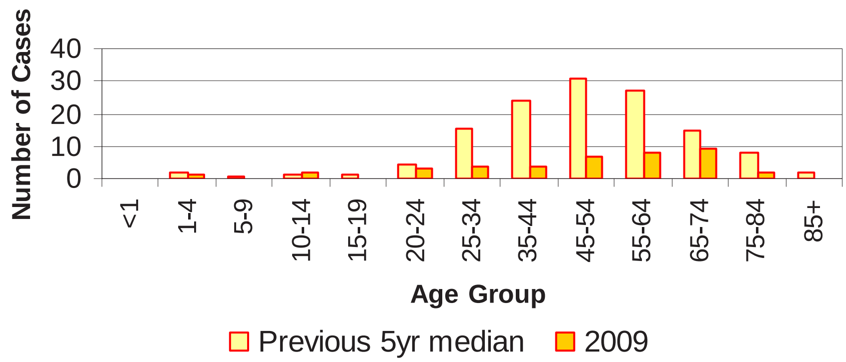
Cyclosporiasis is a parasitic diarrheal disease caused by the organism *Cyclospora cayetanensis*. With the exception of a large outbreak of cyclosporiasis in 2005 (493 cases from Florida; see the notable outbreaks section of the *Florida Morbidity Statistics Report 1997-2006* for more details), the incidence rate for cyclosporiasis has remained stable in recent years (Figure 1). In comparison to the median incidence for the last five years, the incidence in 2009 has increased by 25%, with a total of 40 cases reported. Only 5% of the cases reported in 2009 were considered outbreak-associated. In 2009, the number of cases by month of disease onset met or exceeded the previous five-year median during all months of the year when cases were reported, except for May (Figure 2). The peak in late spring and early summer may reflect the seasonal variation of endemic cyclosporiasis in countries that export fruits and vegetables to the U.S.

Figure 2. Cyclosporiasis Cases by Month of Onset, Florida, 2009



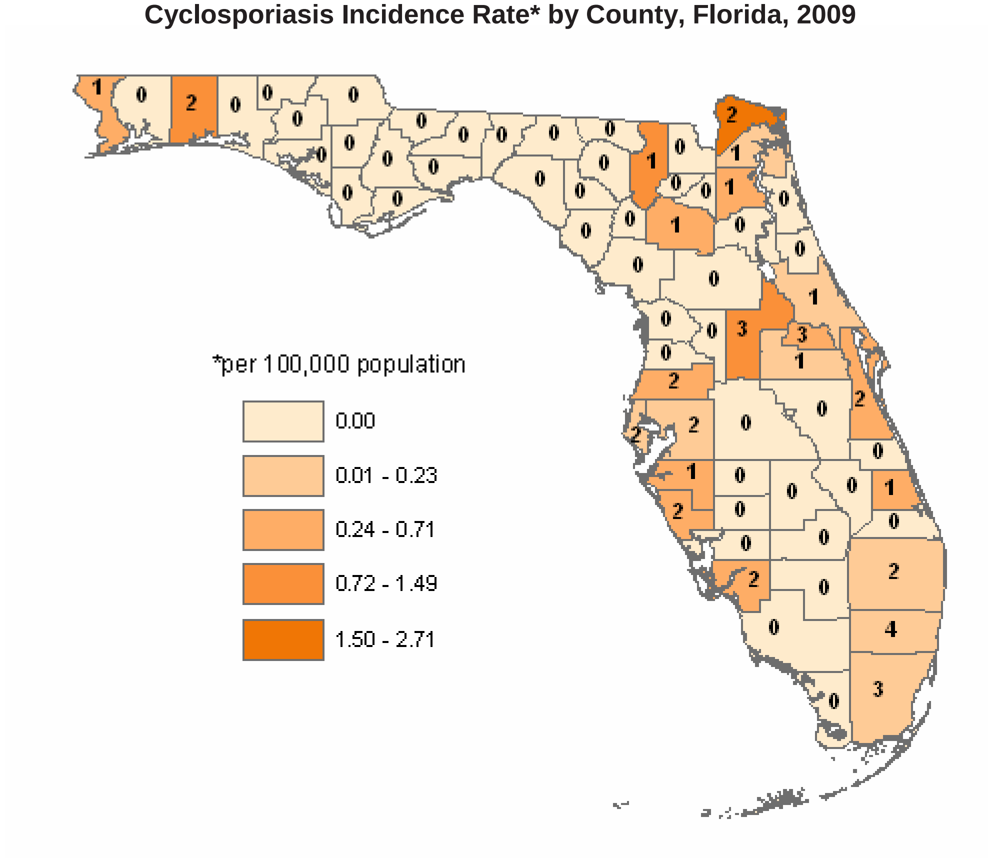
In 2009, 87% of the cases were reported in those who were between the ages of 25 and 84, with the largest increase occurring in the 65-74 age group (Figure 3).

Figure 3. Cyclosporiasis Cases by Age Group, Florida, 2009



Cyclosporiasis was reported in 22 of the 67 counties in Florida, with the largest number of cases occurring in Broward County.

Cyclosporiasis Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

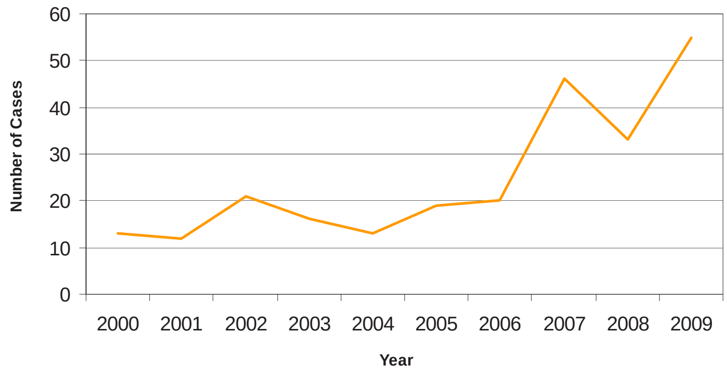
Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/ncidod/dpd/parasites/cyclospora/default.htm.

Dengue

Dengue Fever: Crude Data	
Number of Cases	55
2009 incidence rate per 100,000	0.29
% change from average 5-year (2004-2008) incidence rate	104.39
Age (yrs)	
Mean	46.27
Median	49
Min-Max	5 - 73

Figure 1. Dengue Fever Cases by Year Reported, Florida, 2000-2009



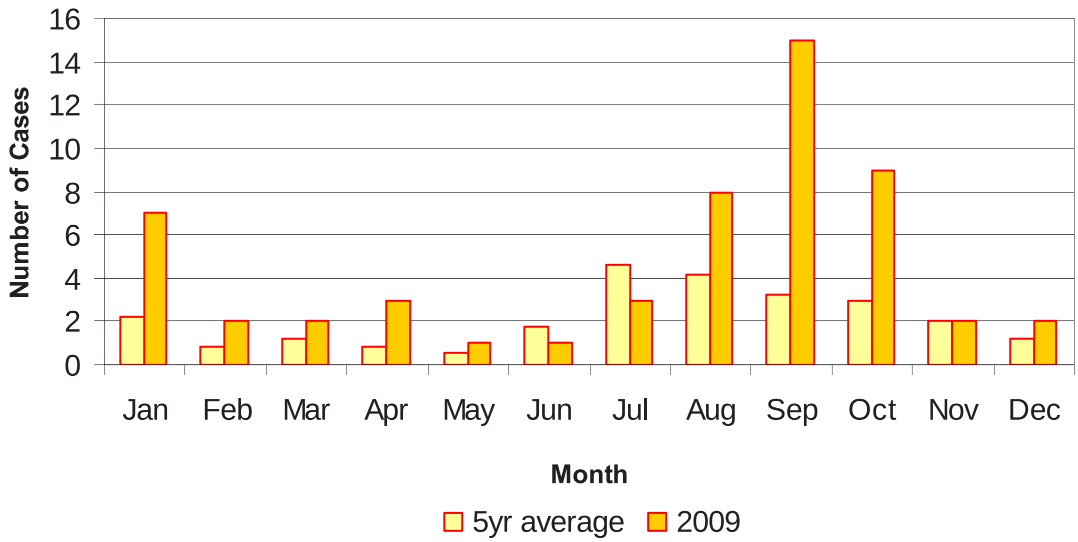
Disease Abstract

Dengue virus (DENV) is now the most frequent cause of acute febrile illness among returning U.S. travelers from the Caribbean, South America, and Asia. It is also the most common mosquito-borne viral infection in the world. Since 1998, imported dengue cases have been reported in Florida each year. The number of cases reported typically ranged from 10 to 20 per year until 2007, when 46 cases were reported (Figure 1). The case counts have remained elevated, with 33 cases reported in 2008 and 55 in 2009. This increase is likely due to greater prevalence of dengue worldwide and epidemics in areas with high volume of travelers to the United States, such as Puerto Rico. Increased activity is especially of concern because of the potential for introduction to Florida mosquitoes via infected symptomatic or asymptomatic travelers, which could lead to the virus' re-establishment in the state. Competent mosquito vectors are present in all parts of the state, though the *Aedes aegypti* species that predominates in the southernmost parts of the state is more efficient than the *Aedes albopictus* species more common elsewhere. Florida is protected from establishment of endemic foci partly by the high proportion of residents who have screens and air conditioning in their homes, schools, and workplaces.

Unfortunately, the potential for re-emergence was demonstrated in 2009 when an outbreak of dengue fever occurred in Key West, Monroe County. Illness was first identified in a New York resident who traveled to the area and became ill upon her return home. Once she was diagnosed with dengue fever and reported, a medical advisory was issued for Key West and active surveillance was implemented. Twenty-two cases meeting the confirmed or probable case definitions were identified; 21 were Florida residents and are included in Figure 1. Onset dates of these cases ranged from early July to mid-October 2009. More information about this outbreak can be found in the Summary of Notable Outbreaks and Case Investigations Section of this report. [Note: additional cases were detected in Key West in 2010.]

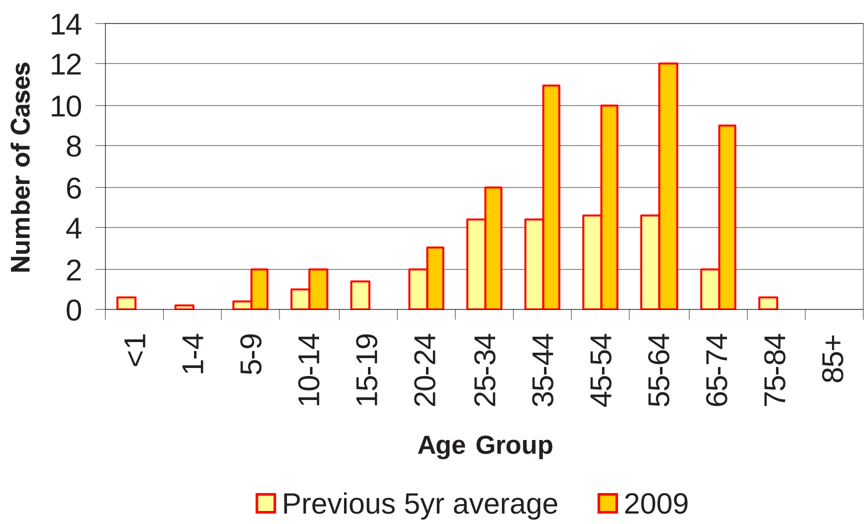
Typically, disease onset for travelers returning to Florida peaks during mid-summer and fall, though cases are reported year-round (Figure 2). The unusual increase in August through October 2009 is primarily due to the Key West outbreak. There were a large number of cases with onset in January this year as well as last, which may have been due to holiday travel.

Figure 2. Dengue Fever Cases by Month of Onset, Florida, 2009



In 2009, only the 21 cases associated with Key West were classified as outbreak associated. Most cases (60%) occurred in people 35 to 64 years of age. Among imported dengue cases, 44% reported travel history to the Caribbean immediately prior to symptom onset, and 25% had traveled to Central America, 17% to South America, and 14% to Asia

Figure 3. Dengue Fever Cases by Age Group,
Florida, 2009

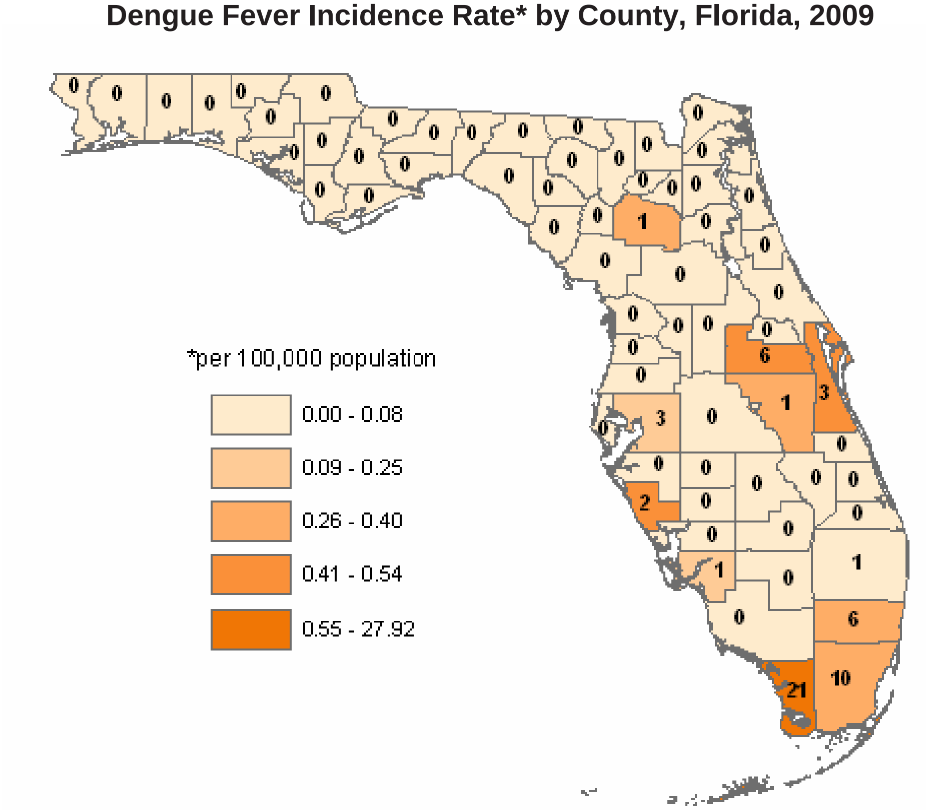


Prevention

There is currently no vaccine available against DENV infection. Travelers to dengue-endemic countries should be warned of the risk of disease and instructed to avoid mosquito bites. Travelers should take the following precautions.

- Use insect repellents that contain DEET or other EPA-approved ingredients, such as Picaridin, oil of lemon eucalyptus, or IR3535.
- Avoid spending time outdoors during daytime hours when disease-carrying mosquitoes are most likely to be seeking a blood meal.
- Drain any standing water in containers around the home.
- Dress in long sleeves and long pants to protect your skin from mosquitoes.
- Try to remain in well-screened or air-conditioned areas.

Dengue Fever Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 19th ed., American Public Health Association Press, Washington, District of Columbia, 2008.

Gill J, Stark LM, Clark GG. Dengue Surveillance in Florida, 1997-1998. *Emerg Infect Dis*. 2000;1:30-5.

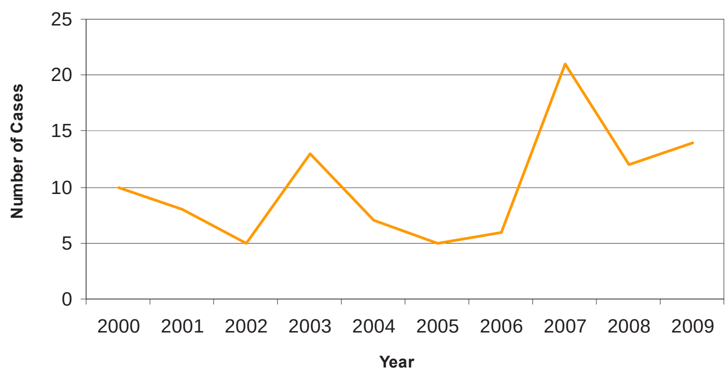
Additional Resources

Additional information on DENV and other mosquito-borne diseases can be found in the *Surveillance and Control of Arthropod-borne Diseases in Florida Guidebook*, online at http://www.doh.state.fl.us/environment/medicine/arboviral/pdf_files/2009MosquitoGuide.pdf
Disease information is also available from the Centers for Disease Control and Prevention (CDC) website at http://wwwn.cdc.gov/travel/yellowBookCh4-DengueFever.aspx.

Ehrlichiosis/Anaplasmosis

Ehrlichiosis/Anaplasmosis (Combined): Crude Data	
Number of Cases	14
2009 incidence rate per 100,000	0.07
% change from average 5 year (2004-2008) reported cases	37.25
Age (yrs)	
Mean	51.71
Median	55
Min-Max	15 - 78

Figure 1. Ehrlichiosis/Anaplasmosis (Combined) Cases by Year Reported, Florida, 2000-2009

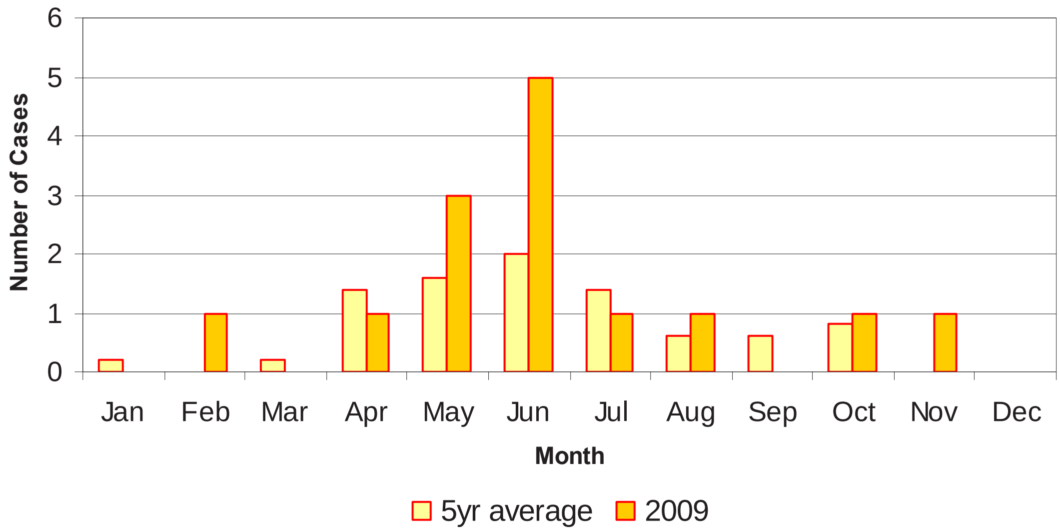


Disease Abstract

Ehrlichia chaffeensis, discovered in 1987, causes human monocytic ehrlichiosis (HME), which is nationally notifiable. *Ehrlichia ewingii* is indistinguishable from *E. chaffeensis* using serologic testing and is present in Florida, therefore some cases classified as HME may actually be due to *E. ewingii*. The principal vector for both agents is the Lone Star Tick, *Amblyomma americanum*. Due to testing limitations, *E. ewingii* is not as well characterized as *E. chaffeensis*; however it has most frequently been identified in immuno-compromised patients. *Ehrlichia* cases are reported most frequently in the midwestern and middle-Atlantic states. Human granulocytic ehrlichiosis (HGE) was originally thought to be caused by another species of *Ehrlichia*, but was later reclassified as *Anaplasma phagocytophilum*, with the associated illness renamed human granulocytic anaplasmosis (HGA). The principal vector for *A. phagocytophilum* is *Ixodes scapularis* and most cases are reported from the northeast and midwestern U.S. HGA became nationally notifiable in 1999.

Between 1998 and 2006, the total number of combined cases of HME and HGA reported ranged from two to thirteen cases per year, but in 2007 there were 21 cases reported (18 HME and three HGA). This number decreased to more typical levels in 2008 and then again in 2009 (Figure 1), with 11 cases of HME and three of HGA reported. Three suspect cases of ehrlichiosis (positive lab results with no clinical information), were also reported in 2009. Increased educational efforts and awareness may have contributed to the increase in reported cases in 2007. White-tailed deer are an important reservoir species for *E. chaffeensis*. Less is known regarding other potential wildlife reservoirs. In addition, there is no standardized tick surveillance program in Florida. These gaps in knowledge make it difficult to ascertain why case numbers might fluctuate from year to year. Since HGA was recognized as a separate reportable disease in 1999, there have been consistently more HME cases than HGA cases reported in Florida. In 2009, 82% of HME and 67% of HGA cases were male. Forty-five percent of HME cases are reported as being acquired in Florida, 27% are acquired in other states, and exposure in 27% of cases is reported as unknown. Most cases are reported in the north and central parts of the state. HGA is more likely to be acquired outside Florida; all three cases reported in 2009 were imported. Though cases of both HME and HGA are reported year-round, peak transmission occurs during the late spring and early summer months (Figure 2). Median age of HME cases was 48 years; all three HGE cases were 65 years or older. No deaths were reported in 2009.

Figure 2. Ehrlichiosis/Anaplasmosis (Combined) Cases by Month of Onset, Florida, 2009

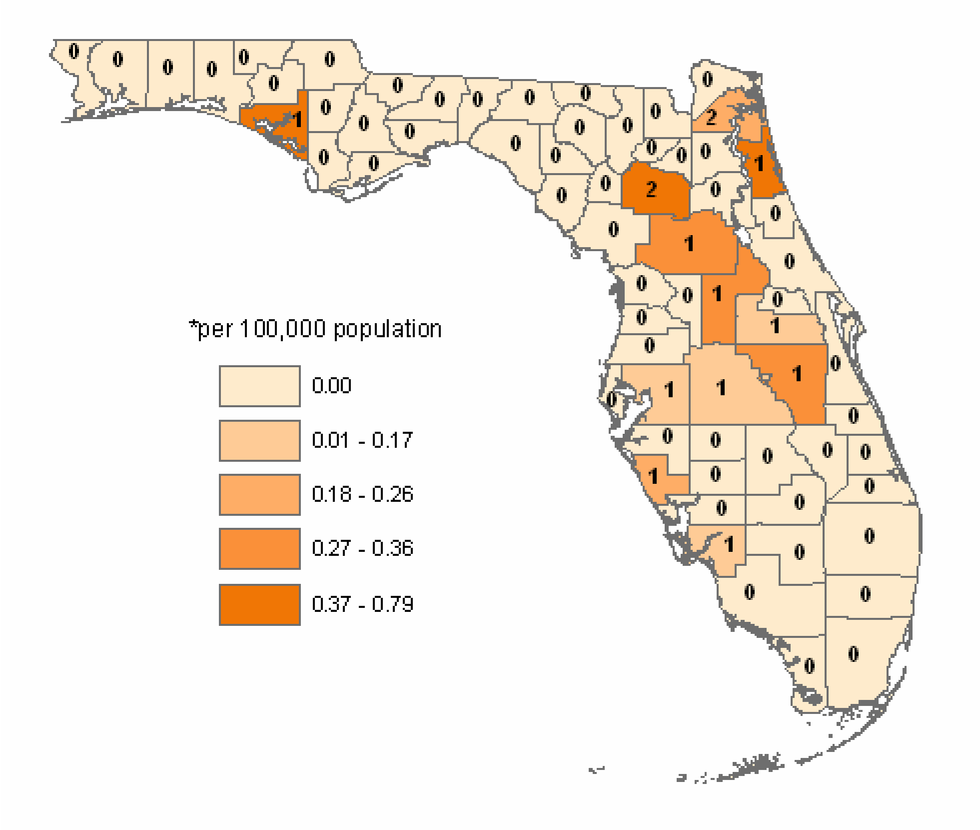


Prevention

Both HME and HGA can be treated with doxycycline, though prevention of tick bites is the best way to avoid disease. Prevention measures include the following strategies.

- Wear light-colored clothing so that ticks crawling on clothing are visible.
- Tuck pants legs into socks so that ticks cannot crawl inside clothing.
- Apply repellent to discourage tick attachment. Repellents containing permethrin can be sprayed on boots and clothing, and will last for several days. Repellents containing DEET can be applied to the skin, but will last only a few hours before reapplication is necessary.
- Search the body for ticks frequently when spending time in potentially tick-infested areas. If a tick is found, it should be removed as soon as possible.
- Control tick populations in the yard and on pets to reduce the risk of disease transmission.

Ehrlichiosis/Anaplasmosis (Combined) Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 19th ed., American Public Health Association Press, Washington, District of Columbia, 2008.

CDC. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever, ehrlichiosis, and anaplasmosis—United States. *MMWR*. 2006;55(RR04); 1-27.

Additional Resources

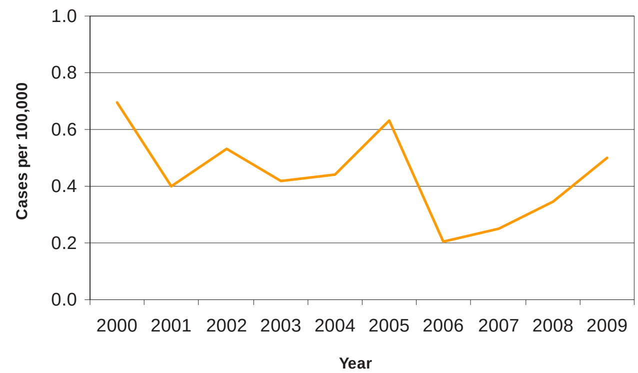
Disease information is also available from the Florida Department of Health at
http://www.doh.state.fl.us/Environment/medicine/arboviral/Tick_Borne_Diseases/Tick_Index.htm

Disease information is available from the CDC
http://www.cdc.gov/ncidod/dvrd/ehrlichia/Index.htm

Escherichia coli, Shiga Toxin-Producing

Escherichia coli, Shiga Toxin-Producing: Crude Data	
Number of Cases	94
2009 incidence rate per 100,000	0.50
% change from average 5-year (2004-2008) incidence rate	33.80
Age (yrs)	
Mean	22.27
Median	9.50
Min-Max	0-90

Figure 1. *Escherichia coli* Shiga Toxin-Producing Incidence Rate by Year Reported, Florida, 2000-2009



Description

The most commonly identified Shiga toxin-producing *Escherichia coli* (STEC) in the U.S. is *E. coli* serogroup O157:H7; however, there are many other serogroups that can cause disease due to Shiga toxin. Serogroups O26, O111, and O103 are the non-O157 serogroups that most often cause illness in people in the U.S. Overall, the non-O157 serogroups are less likely than *E. coli* O157:H7 to cause severe illness; however, some non-O157 STEC serogroups can cause the most severe manifestations of STEC illness.

Prior to 2008, STEC was reported under multiple disease codes, depending on the serogroup. One reporting code captured only serogroup O157:H7. Another reporting code captured known serogroups other than O157:H7. Previous Florida Morbidity Statistics Reports included only the disease code for *E. coli* O157:H7. However, in 2008, these reporting codes were combined into one and *E. coli* O157:H7 is no longer separated from the non-O157 strains.

The figures in this report reflect all STEC serogroups reported over the past 10 years, not just serogroup O157:H7; therefore, they cannot be compared to those in previous years' reports.

Disease Abstract

A total of 94 cases were reported in 2009, of which 87 were confirmed. Twenty-two were classified as outbreak-associated. Four cases were acquired in states other than Florida and six were acquired outside the U.S. Almost half (40) of the confirmed cases were caused by serogroup O157:H7 and one was caused by O157:non-motile. Non-O157 serogroups included O103:H2 (14), O26:H11 (7), O111:H8 (5), O111:NM (5), O145:NM (2), O103:H25 (1), O103:NM (1), O118:H16 (1), O121:H19 (1), O123:H2 (1), O3:H8 (1), O45:H2 (1), O45:H2, O26:H11 (1), O49:H21 (1), O70:H11 (1), O91:H14 (1), and O rough:H25 (1). One is still pending final CDC results.

The incidence rate for STEC has varied over the last ten years (Figure 1). One source of variation is large outbreaks involving food products distributed across multiple states or other common source exposures such as petting zoos. In 2009, there was a 33.80% increase in incidence of new cases in comparison to the average incidence from 2004 to 2008.

Figure 2. *Escherichia coli*, Shiga Toxin-Producing, Cases by Month of Onset, Florida, 2009

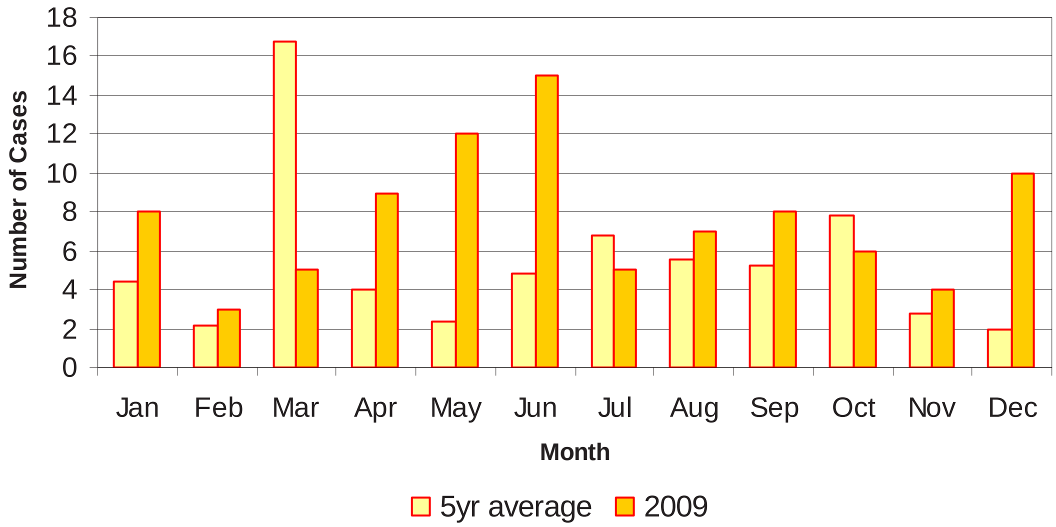
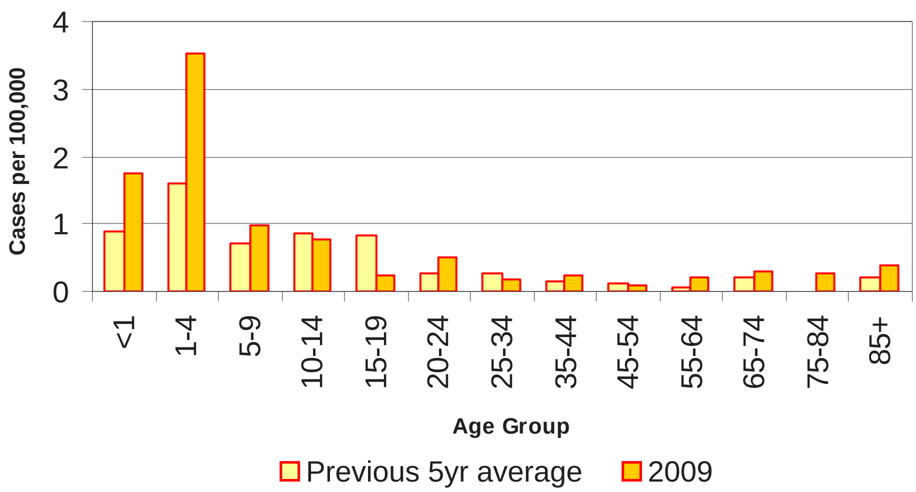


Figure 3. *Escherichia coli*, Shiga Toxin-Producing, Incidence Rate by Age Group, Florida, 2009



In 2009, no clear seasonal patterns were observed (Figure 2). Incidence was greatest among children and teenagers (Figure 3). Incidence was higher than the previous five-year average in those aged less than one and those aged one to four (Figure 3).

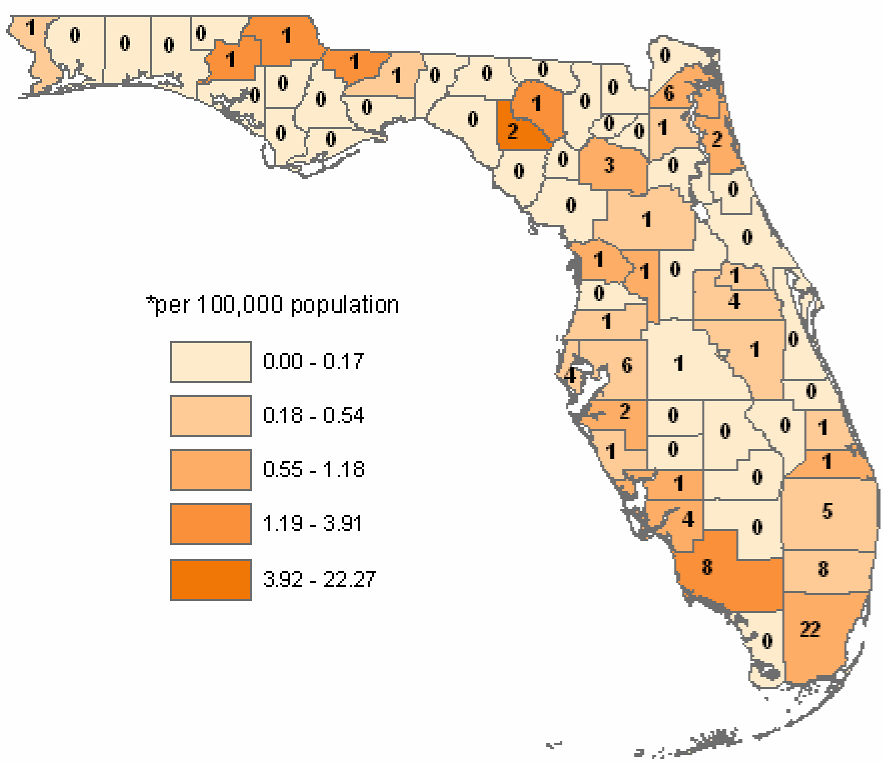
STEC cases were reported in 31 of 67 counties in Florida.

Prevention

To reduce the likelihood of becoming infected with STEC, observe the following guidelines.

- Cook all meat products thoroughly, particularly ground beef.
- Avoid cross-contamination by ensuring utensils, counter tops, cutting boards, and sponges are cleaned, or do not come in contact with raw meat.
- Wash your hands thoroughly before, during, and after food preparation and after toilet use.
- Do not allow the fluids from raw meat to come in contact with other foods.
- Wash your hands after coming into contact with any animals or their environment. Take special precautions with young children in petting zoos or with farm animals, as these settings may harbor the organism.

Escherichia coli, Shiga Toxin-Producing Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

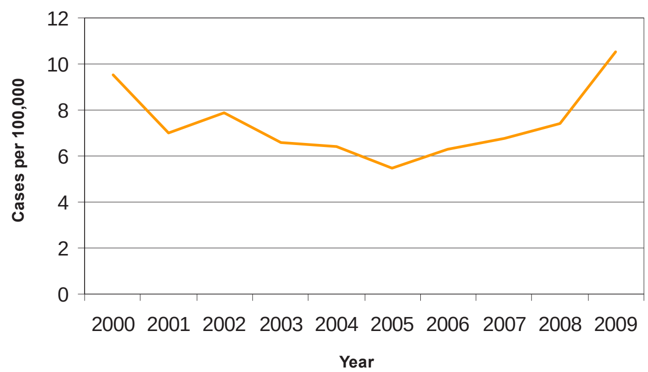
Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/nczved/dfbmd/disease_listing/stec_gi.html

Giardiasis

Giardiasis: Crude Data	
Number of Cases	1,981
2009 incidence rate per 100,000	10.53
% change from average 5-year (2004-2008) incidence rate	62.44
Age (yrs)	
Mean	26.65
Median	20
Min-Max	<1 - 97

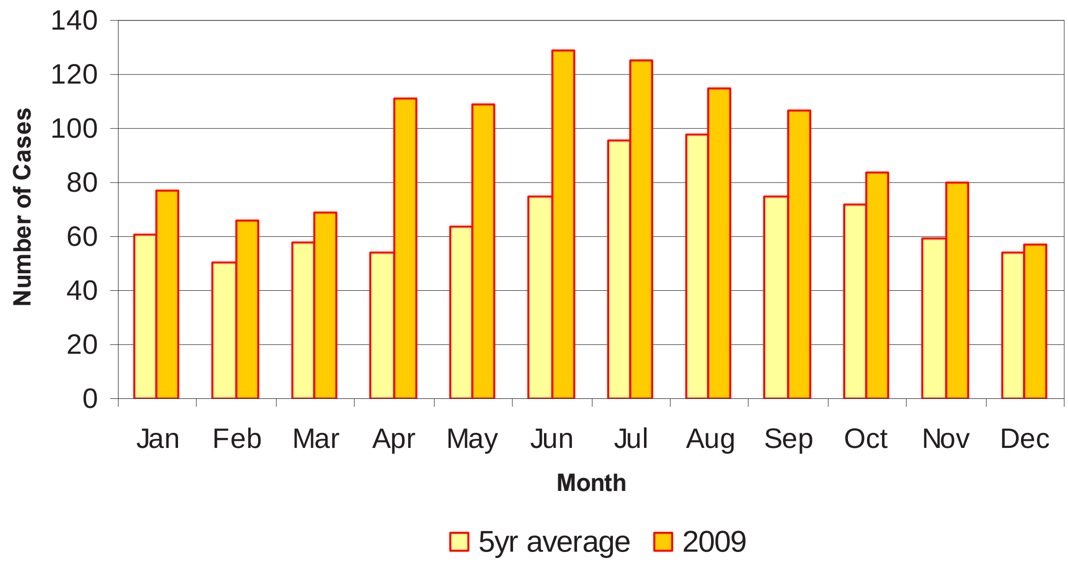
Figure 1. Giardiasis Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

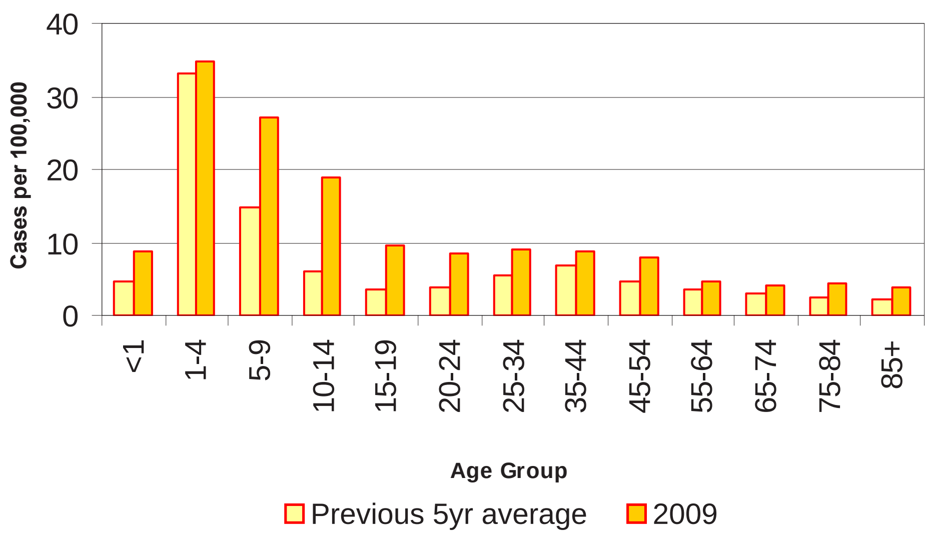
The incidence rate for giardiasis declined by about half over the years from 1999 to 2005 but increased slightly starting in 2006 (Figure 1). In 2009, there was a 62.4% increase in comparison to the five-year average incidence from 2004 to 2008 (see note below on case definition change). A total of 1,981 cases were reported in 2009, higher than the number reported in 2008 (1,391 cases). Of the 1,981 cases reported in 2009, 98.6% were classified as confirmed. Each year, the number of cases increases in the summer and early fall months (Figure 2). The month of July historically has the largest number of reported cases (2004-2008: five-year average 95 cases), but in 2009, the largest number of cases occurred in June (129 cases). In 2009, all months exceeded the previous five-year average number of cases. Among the 1,981 giardiasis cases reported in 2009, 87, or 4.4%, were reported as outbreak associated. Over 61.4% of all reported cases indicated infection had been acquired in Florida. There were 664 cases that were reported as acquired outside of the U.S., with 489 of these cases, or 73.6%, indicating infection was acquired in Cuba. The giardiasis case definition was changed in August 2008 to include asymptomatic laboratory-confirmed cases. Previously, only symptomatic laboratory-confirmed cases met the case definition. The 2009 reporting year was the first full reporting year in which the case definition change was effective. Approximately 35.8% of reported giardiasis cases in 2009 were asymptomatic. It is likely the large increase in reported cases of giardiasis in 2009 was due to the change in case definition. In particular, there are certain populations, such as refugee populations, that are regularly screened for giardiasis, in whom asymptomatic cases are identified.

Figure 2. Giardiasis Cases by Month of Onset, Florida, 2009



The highest reported incidence rates continue to occur in children aged one to four years (34.86 cases per 100,000) and five to nine years (27.17 cases per 100,000) (Figure 3). There were 317 cases reported among children aged one to four years. Approximately 22.4 percent of the 317 cases aged one to four years attended daycare.

Figure 3. Giardiasis Incidence Rate by Age Group, Florida, 2009



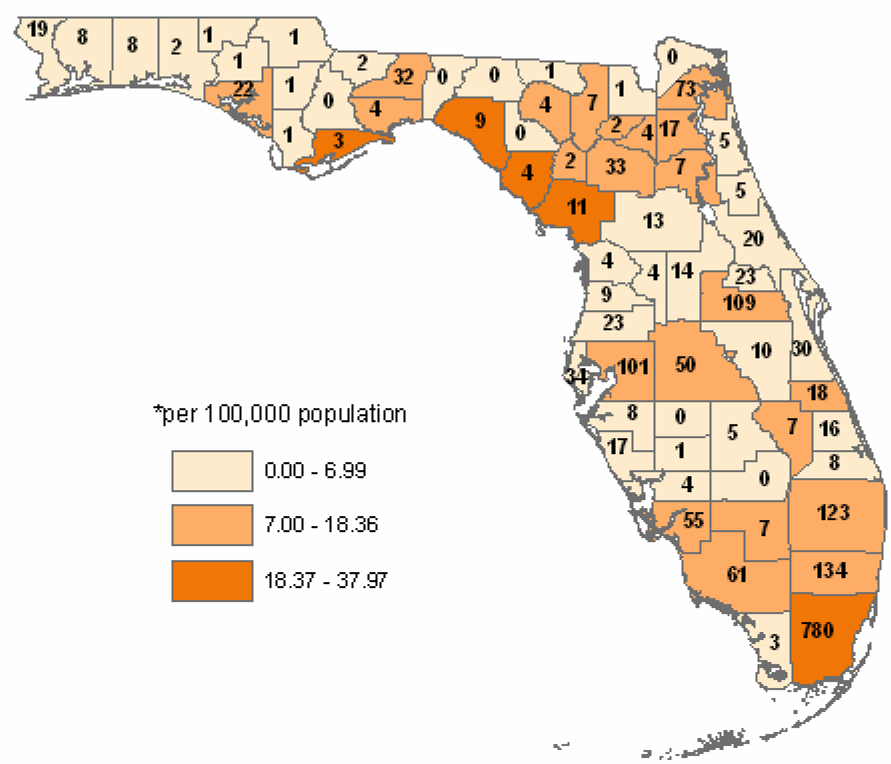
Overall, males continue to have a higher reported incidence than females (12.37 and 8.71 per 100,000, respectively). Following previous annual trends, incidence rates in whites are greater than those in non-whites.

In 2009, giardiasis was reported in 60 of 67 counties in Florida.

Prevention
Most *Giaridia* infections can be avoided or reduced by practicing good hand hygiene. This is particularly important in childcare centers and after toilet use, before handling food, and before eating. Other ways to prevent *Giaridia* include the following strategies.

- Avoid eating food and swallowing water from recreational water (such as ponds and lakes) that might be contaminated.
- Avoid drinking untreated water from shallow wells, lakes, rivers, springs, ponds, streams, or untreated ice.
- Avoid drinking tap water when traveling in countries where the water may not be adequately filtered and treated.
- Boil water of unsafe or uncertain origin for the most reliable way to make water safe for drinking.
- Use filters and chemical disinfection, but the effectiveness of chlorine is dependent on several factors, including pH, temperature, and organic content of the water.
- Avoid use of recreational water venues for two weeks after symptoms resolve if you have had *Giardia*-associated diarrhea.

Giardiasis Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

L.K. Pickering, C.J. Baker, S.S. Long, and J.A. McMillan (eds.), *Red Book: 2006 Report of the Committee on Infectious Diseases*, 27th ed., American Academy of Pediatrics Press, 2006.

Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/ncidod/dpd/parasites/giardiasis/default.htm.

Gonorrhea

Disease Abstract

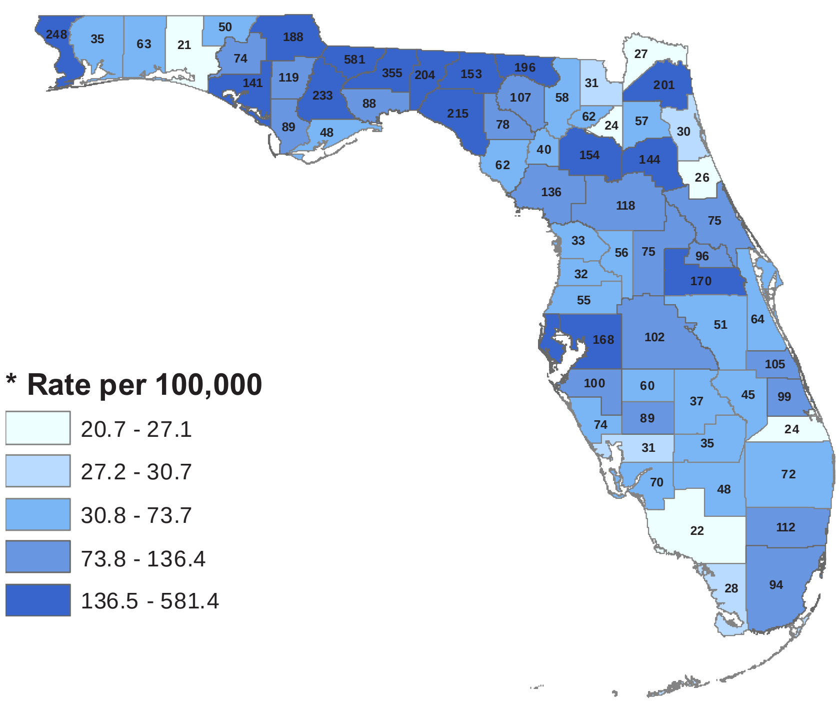
In 2009, 20,881 cases of infection with *Neisseria gonorrheae* (gonorrhea) were reported in Florida for a rate of 111.0 cases per 100,000 population. Gonorrhea cases and rates have continued to decrease although reporting measures such as electronic laboratory reporting have improved case identification. In 2009, cases decreased by an additional 11.2% over the previous year. While state rates have declined, parts of the state have a high burden of disease. Over 48% of all gonorrhea cases are reported from the more populous counties of Broward, Duval, Hillsborough, Miami-Dade, and Orange. While these counties consistently have a larger proportion of total cases, several smaller counties have much higher rates (Table 1).

Table 1. Counties with the Highest Rate/100,000 of Gonorrhea, Florida, 2009

County	Rank	Population	Cases	Rate/100,000
Gadsden	1	51,430	299	581.4
Leon	2	275,369	978	355.2
Escambia	3	314,698	782	248.5
Liberty	4	8,580	20	233.1
Taylor	5	23,701	51	215.2

In Florida, rates of infection are highest in the less populated and rural segments of the panhandle and the northern regions of the state (Figure 1).

Figure 1. Gonorrhea Rates* By County, Florida, 2009

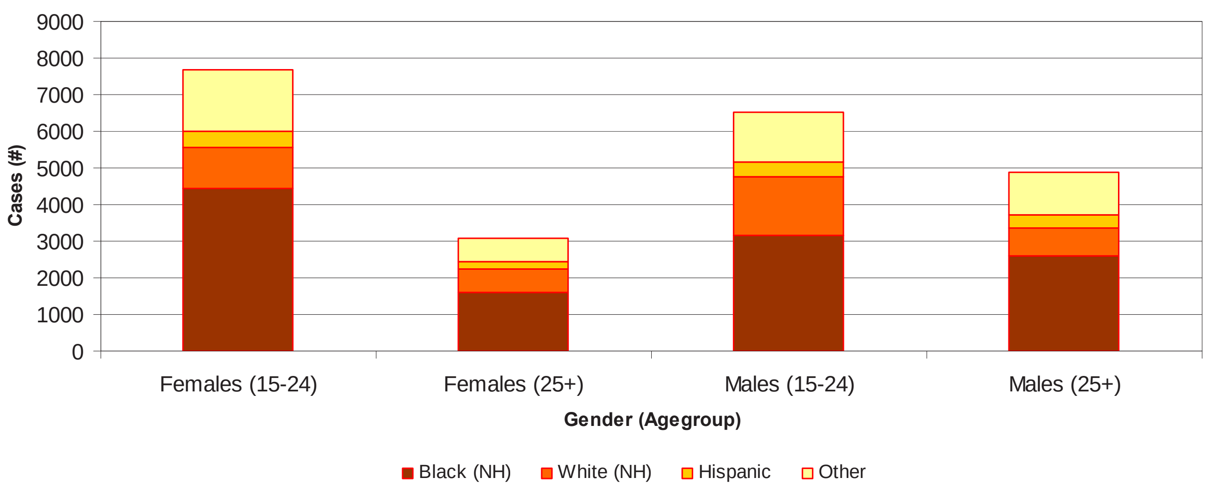


Age
Gonorrhea remains the second most prevalent sexually transmitted bacterial infection reported among 15 to 24 year olds in Florida. Much like *Chlamydia* infection, gonorrhea disproportionately affects those under the age of 25. The mean age of all reported gonorrhea cases was 24.8 years. The age-specific case rate for 15 to 24 year olds was 535.43 cases per 100,000, which is a slight decrease from 581.6 cases per 100,000 population in 2008.

Since 1998, more cases have been consistently reported in the 20 to 24 age group, when compared to other age groups. Age distribution shows that only 16% of all reported gonorrhea cases are in people between the ages of 25 and 29; whereas those under 25 account for 62% of reported infections.

Gender
Gender differences in incidence are less apparent for gonorrhea than other sexually transmitted diseases. Women account for the largest proportion of cases reported (52.6%). The highest rate (686.6 per 100,000 population) and number of cases (4,041) was reported in 15 to 19 year old women (Figure 2). This is a 12.5% decrease in cases for this group from the previous year. The second highest rate was in 20 to 24 year old women (613.7 per 100,000 population).

Figure 2. Reported Cases of Gonorrhea by Gender, Age, Race/Ethnicity, Florida, 2009



Among men, the highest numbers of cases were reported in the 20 to 24 year old age group (3,321 cases) with a rate of 536.6 cases per 100,000 population. Men 15 to 19 (310.4 cases per 100,000) and 25 to 29 years old (307.9 cases per 100,000) had similar rates. One explanation for the higher rates of gonorrhea among men as compared to chlamydia is that a majority of urethral infections with *N. gonorrhoeae* cause symptoms that prompt the patient to seek care. This could lead to greater detection of gonorrhea cases among men, but may not necessarily reflect higher incidence of infection.

Race and Ethnicity
In 2009, gonorrhea disproportionately affected non-Hispanic blacks (Table 2). Non-Hispanic black adolescents and young adults (those 15 to 24 years old) had the highest rates when cases were grouped by race, ethnicity, and age. In 2009, non-Hispanic blacks 15 to 24 years

old had a case rate of 1,510.27 cases per 100,000 population. Although this rate was a 20% decrease from the previous year, this rate was nine times higher than the second highest rate which was in non-Hispanic whites 15 to 24 years old (163.5 cases per 100,000 population). Nevertheless, all cases reported, regardless of race or ethnicity, disproportionately occur in people under 25 years of age. Table 2 displays the rate per 100,000 for all ages.

Table 2. Cases and Rate/100,000 of Gonorrhea by Race/Ethnicity, Florida, 2009

	Males		Females	
Race/Ethnicity	**Cases**	**Rate/100,000**	**Cases**	**Rate/100,000**
Black (NH)	5,750	407.1	6,034	398.1
White (NH)	1,152	20.7	1,761	30.2
Hispanic	719	35.6	618	30.7
Other/Unknown	2,481	N/A	2,293	N/A

Prevention

Many infections in women can lead to complications such as pelvic inflammatory disease (PID). Both symptomatic and asymptomatic cases of PID can result in tubal scarring that can lead to infertility or ectopic pregnancy. Because gonococcal infections among women are frequently asymptomatic, an essential component of gonorrhea control in the U.S. is screening of women at high risk for STDs.

The U.S. Preventive Services Task Force (USPSTF) recommends screening all sexually active women, including those who are pregnant, for gonorrhea infection if they are at increased risk. Risk factors include:

- age under 25 years,
- a previous gonorrhea infection,
- other sexually transmitted infections,
- new or multiple sex partners,
- inconsistent condom use,
- commercial sex work, and
- drug use.

The USPSTF does not recommend screening for men or women who are at low risk for infection.

Gonorrhea cases continue to decrease overall. However, some of the core risk factors for infection correlate to socio-economic indicators that are often unrecognized in data reporting. Gonorrhea continues to disproportionately impact minority populations and is increasing among men who have sex with men (MSM). These data suggest the need for specialized interventions and resources for these populations. Additionally, the sustained number of cases in youth and young adults indicates that people in these groups are participating in behaviors that put them at risk for STDs in general, including HIV. To understand further the contributory causes and risk factors for acquiring the disease, accurate, timely, and comprehensive reporting and disease investigation must continue. Additionally, clusters of infection must be understood.

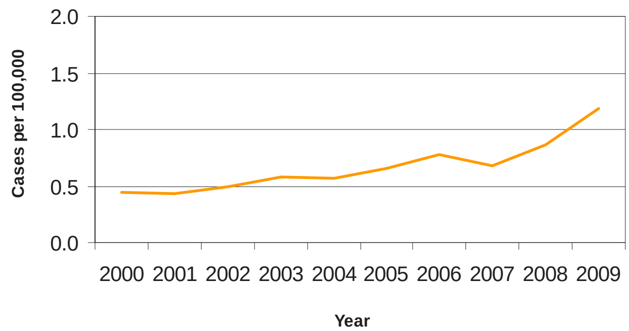
References

Centers for Disease Control and Prevention. “Sexually Transmitted Diseases Treatment Guidelines, 2006.” *MMWR*, 2006, Vol. 55, No. RR-11, pp. 42-49.

Haemophilus influenzae (Invasive Disease)

***Hemophilus influenzae* (Invasive Disease): Crude Data**	
Number of Cases	222
2009 incidence rate per 100,000	1.18
% change from average 5-year (2004-2008) incidence rate	66.78
Age (yrs)	
Mean	56.18
Median	63
Min-Max	<1 - 97

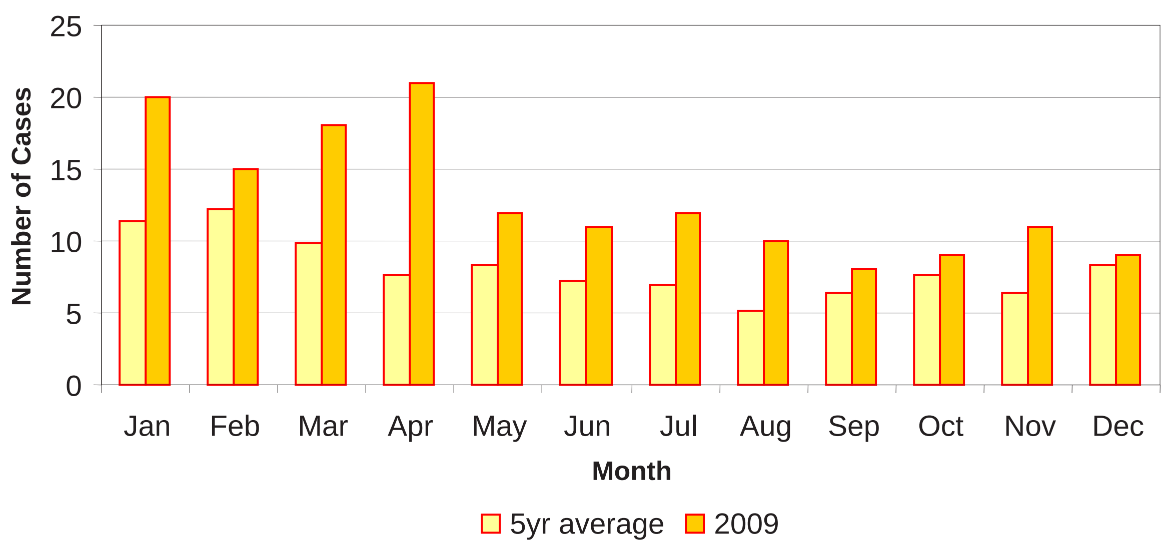
Figure 1. *Haemophilus influenzae,* Invasive Disease, Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

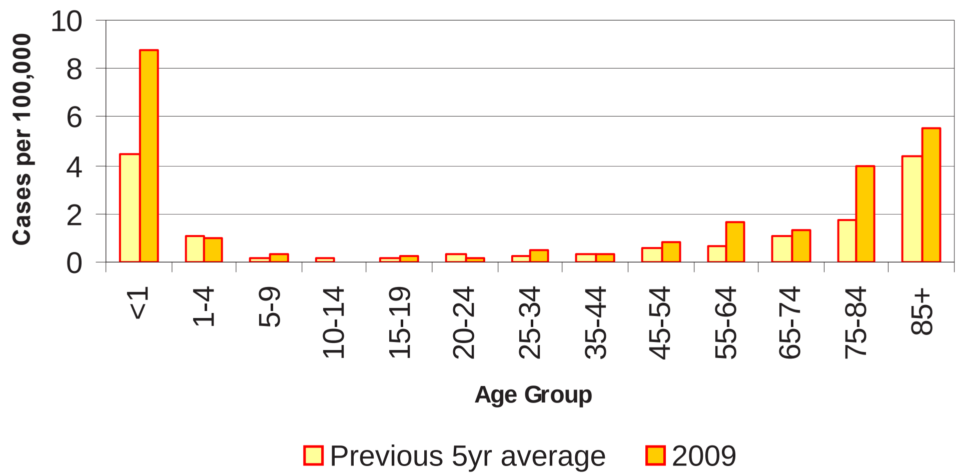
The incidence rate for all invasive diseases caused by *Haemophilus influenzae* has gradually increased over the past ten years (Figure 1). In 2009, there was a 66.8% increase compared to the average incidence from 2004 to 2008. In 2009, 222 cases were reported; all were confirmed. The number of cases reported is typically highest in the winter during the months of December through February, but there was significant disease through March and April 2009 (Figure 2). In 2009, the number of cases significantly exceeded the previous five-year average in most months of the year. Nearly all cases of invasive disease caused by *Haemophilus influenzae* are sporadic in nature.

Figure 2. *Haemophilus influenzae*, Invasive Disease, Cases by Month of Onset, Florida, 2009



The highest reported incidence rates occur in those aged under one year or in those over 85 years (Figure 3). In 2009, the incidence rates were higher than the previous five-year average in all age groups except those 1 to 4, 10 to 14, 20 to 24, and 35 to 44 years. The incidence of disease in males and females does not differ significantly (1.07 per 100,000 and 1.27 per 100,000 population, respectively). For 2009, the incidence rate in blacks was lower than that in whites, which is different from previous years (1.06 and 1.15 per 100,000 population respectively).

Figure 3. *Haemophilus influenzae*, Invasive Disease, Incidence Rate by Age Group, Florida, 2009



Invasive disease caused by *Haemophilus influenzae* was reported in two-thirds (44) of the 67 counties in Florida. Counties with the highest incidence rates were distributed throughout the state.

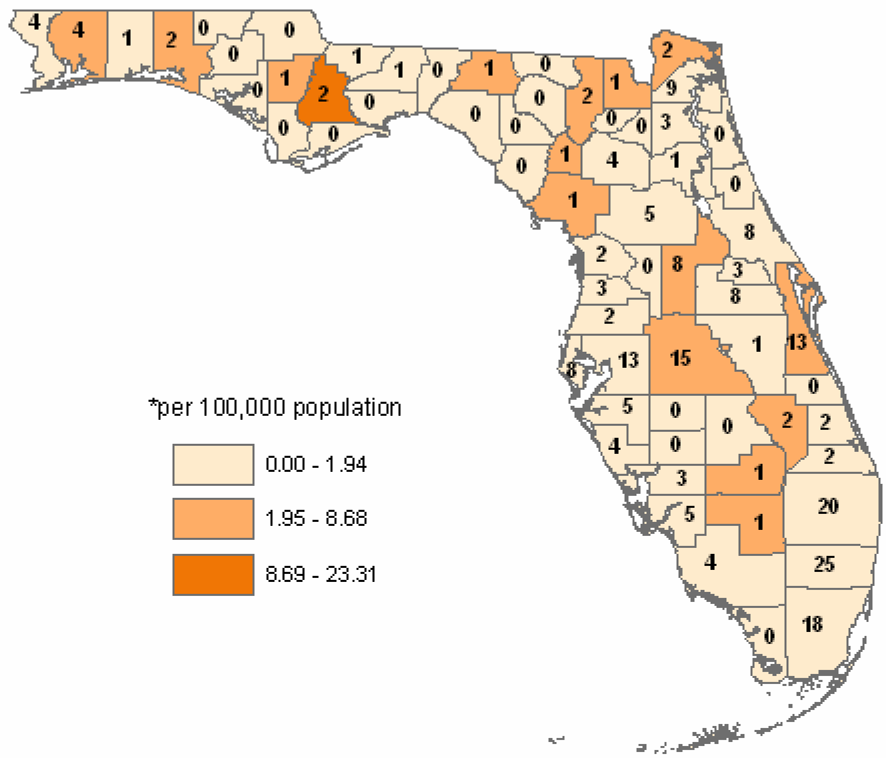
Invasive Disease in Those Under Age Five

In 2009, there was one case of invasive disease (meningitis) caused by *Haemophilus influenzae* serotype b in a child under age five, who recovered. No information about this child's specific vaccination history was available, but this is the portion of *H. influenzae* disease that is most vaccine-preventable.

Prevention

Conjugate vaccines against *Haemophilus influenzae* type b (Hib) for infants and children are recommended by the Advisory Committee on Immunization Practices. Additional information may be found at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4805a1.htm and http://www.cdc.gov/vaccines/ recs/schedules/downloads/child/2007/child-schedule-color-print.pdf

***Haemophilus influenzae,* Invasive Disease Incidence Rate* by County, Florida, 2009**



References

David L. Heyman (Ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004, p. 366.

Additional Resources

Additional information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/ncidod/dbmd/diseaseinfo/haeminfluserob_t.htm and http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4805a1.htm

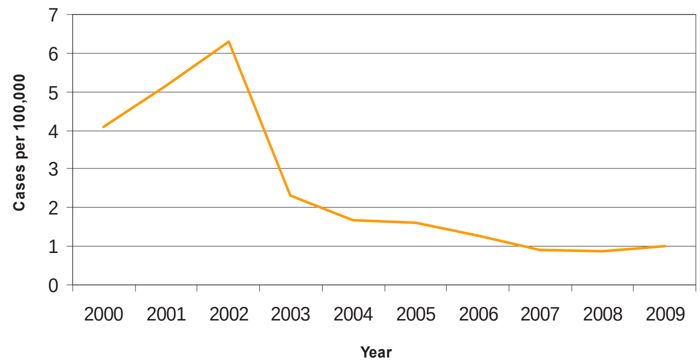
Immunization Recommendations are available from:

Centers for Disease Control and Prevention, "*Haemophilus* b Conjugate Vaccines for Prevention of *Haemophilus influenzae* Type b Disease Among Infants and Children Two Months of Age and Older. Recommendations of the ACIP," *MMWR*, Vol. 40, (RR01); pp.1-7. http://www.cdc.gov/mmwr/preview/mmwrhtml/00041736.htm.

Hepatitis A

Hepatitis A: Crude Data	
Number of Cases	191
2009 incidence rate per 100,000	1.01
% change from average 5-year (2004-2008) incidence rate	-19.35
Age (yrs)	
Mean	39.96
Median	37
Min-Max	4 - 90

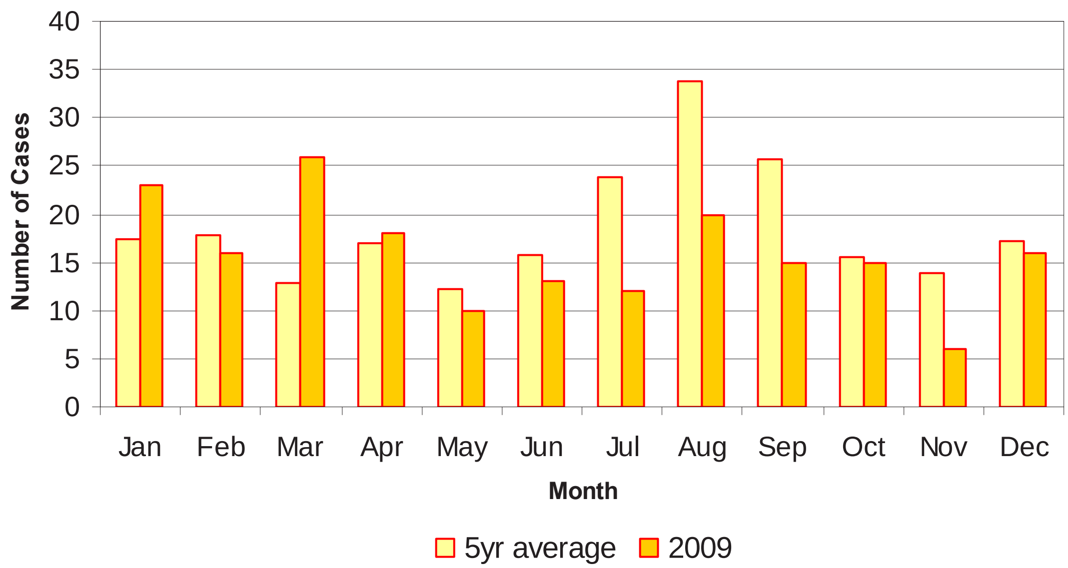
Figure 1. Hepatitis A Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

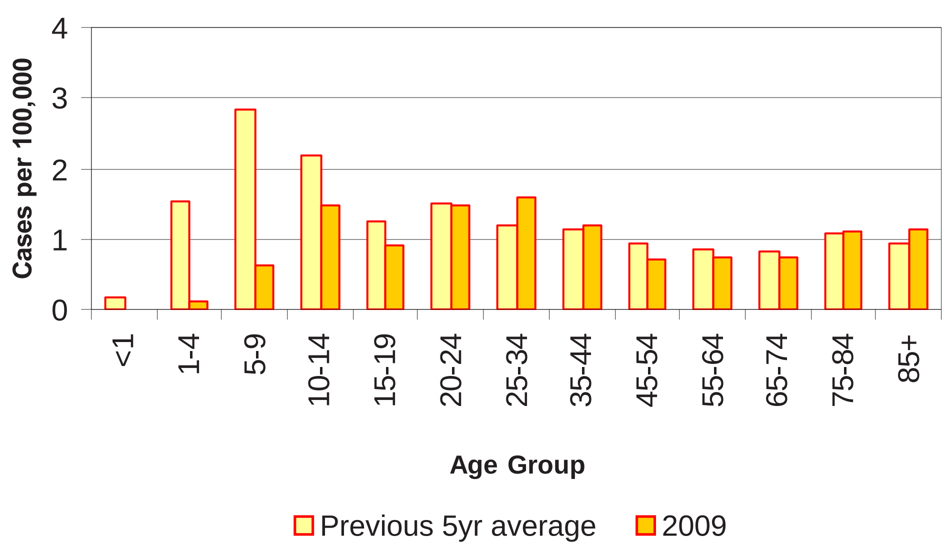
In 2009, 191 cases of hepatitis A were reported in Florida. This represents a slight increase from the 164 cases reported in 2008. In 2009, 89.5% of hepatitis A cases were classified as confirmed, 51% of cases were males, 77% of cases were white, and 42% were Hispanic people. Most cases were apparently isolated events and only 9% of cases reported contact with a person with confirmed or suspected hepatitis A infection in the two to six weeks prior to their illness. Approximately 35% of cases reported a travel history outside the U.S. and Canada in the two to six weeks prior to their illness with most (54%) traveling to a destination in South/Central America. Additionally, 21% of cases reported that a household member had traveled outside of the U.S. or Canada. Only 3% of cases were either a child or employee in a daycare center, preschool, or nursery and 2% of reported cases were in food-handlers. The incidence rate for hepatitis A in Florida has declined markedly since 2002, which mirrors a similar decline observed nationally (Figure 1). The annual incidence in Florida from 2004 to 2009 was one to two cases per 100,000. This is a substantial decrease from the annual incidence of four to six cases per 100,000 observed between 1998 and 2002. The decrease in Florida, and nationally, is likely due to increased use of vaccines to protect against hepatitis A virus, which first became commercially available in 1995. However, as data for 2009 indicate, these declines in disease incidence may have begun to plateau.

Figure 2. Hepatitis A Cases by Month of Onset, Florida, 2009



Hepatitis A occurs throughout the year (Figure 2). In 2009, incidence rates were lower than the previous five-year average in many age groups but the rate was increased in the 25- to 34-year-olds, as well as those over 75 (Figure 3). The largest decrease in incidence was observed among children under ten years old. The incidence in 2009 was higher among Hispanics than among non-Hispanics (1.98 and 0.70 per 100,000, respectively).

Figure 3. Hepatitis A, Incidence Rate by Age Group, Florida, 2009



During 2009, hepatitis A was reported in 32 of 67 counties in Florida.

Prevention

Currently, the single antigen, two-dose hepatitis A vaccine is recommended as part of the routine immunization schedule for all children, starting at age one. However, this is not a requirement for childcare or school entry in Florida. The doses should be spaced at least six months apart. A combined hepatitis A and hepatitis B vaccine is available for adults over18 years old, and is administered in three doses.

In addition to routine childhood immunization, hepatitis A vaccine is also recommended for people without a documented history of vaccine or past disease who are at increased risk of infection, including:

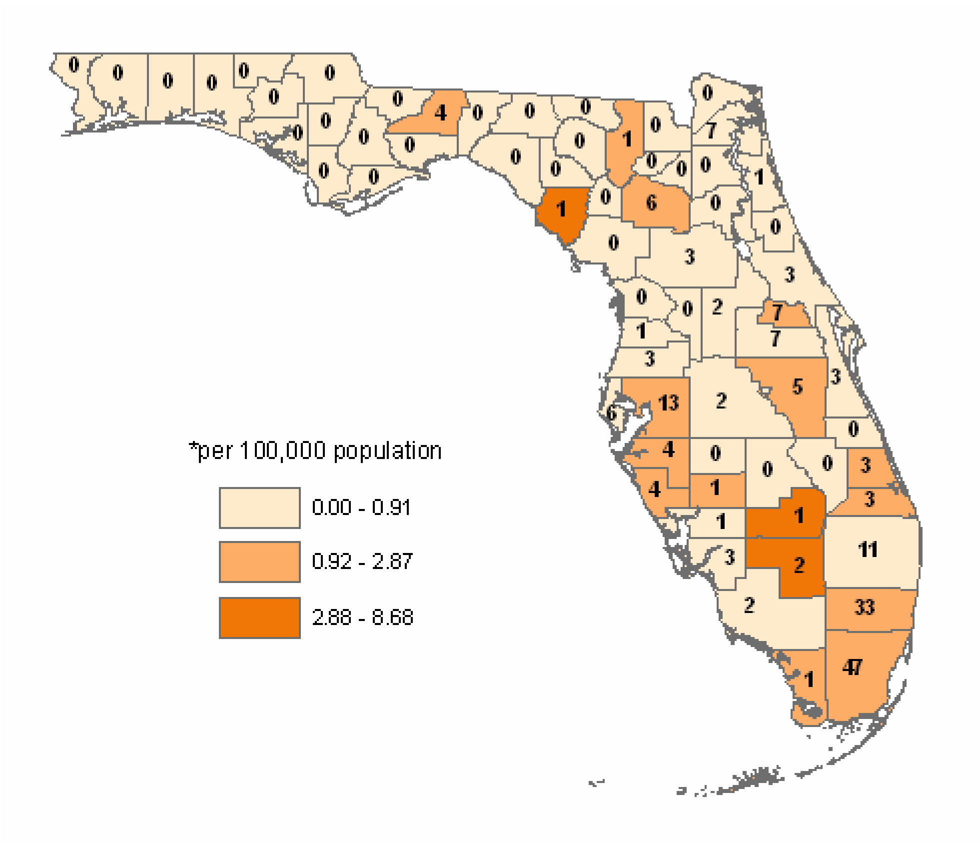
- those traveling to developing countries,
- men who have sex with men (MSM),
- injection and non-injection drug users, and
- people with a clotting factor disorder.

Other efforts to prevent hepatitis A infection should focus on disrupting transmission through:

- good personal hygiene,
- hand washing, and
- washing fruits and vegetables before eating.

Illness among food-handlers or persons in a childcare setting should be promptly identified and reported to prevent further spread of the disease in those settings. In outbreak settings, immune-globulin may be administered to at-risk contacts of infected individuals, particularly children under one year and adults over age 40. Recently updated guidelines based on results from a clinical trial, recommend using vaccine rather than immune globulin for post-exposure prophylaxis in healthy individuals between 1 and 40 years old. All post-exposure prophylaxis should be administered within two weeks of exposure.

Hepatitis A Incidence Rate* by County, Florida, 2009



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Centers for Disease Control and Prevention, “Prevention of Hepatitis A through Active or Passive Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP),” *MMWR* 2006; 55(RR07); pp1-23.

Centers for Disease Control and Prevention, “Update: Prevention of hepatitis A after exposure to hepatitis A virus and in international travelers. Updated recommendations of the Advisory Committee on Immunization Practices (ACIP),” *MMWR* 2007; 56(41); pp1080-84.

Centers for Disease Control and Prevention, “Summary of Notifiable Diseases-United States, 2006,” *MMWR* 2006; 55(53).

Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/NCIDOD/diseases/hepatitis/a/index.htm.

Hepatitis B (HBsAg +) Pregnant Women

Hepatitis B (HBsAg +) Pregnant Women: Crude Data	
Number of Cases	598
2009 incidence rate per 100,000	17.06
% change from average 5-year (2004-2008) incidence rate	6.95
Age (yrs)	
Mean	29.52
Median	30
Min-Max	15 - 46

Figure 1. Hepatitis B (HBsAg + Pregnant Women) Incidence Rate by Year Reported, Florida, 2000-2009

Disease Abstract

There were 598 pregnant women who tested positive for the hepatitis B surface antigen (HBsAg+) in 2009, which is a slight decrease from 599 women in 2008. In 2009, there were no Florida-born infants identified as perinatal cases of hepatitis B (disease code 07744). This is a decrease from the one infant identified as a perinatal hepatitis B case in 2008, and two identified the year before.

Prevention

Hepatitis B immune globulin (HBIG) is prepared from human plasma known to contain a high titer of antibody to HBsAg (anti-HBs). A regimen combining HBIG and hepatitis B vaccine is 85%-95% effective in preventing HBV infection when administered at birth to infants born to HBsAg+ mothers. HBIG and the first dose of hepatitis B vaccine should be administered within 12 hours of birth. The second dose should be given at one month of age and the third dose at six months of age. Dose three of hepatitis B vaccine should not be given before six months of age. These infants should have serologic testing at nine to fifteen months of age to determine if a protective antibody response developed after vaccination. Infants who do not respond to the primary vaccination series should be given three additional doses of hepatitis B vaccine in a zero, one to two, four to six month schedule, and have the HBsAg and anti-HBs blood tests repeated to determine response. Vaccine for children and adults is also available in combination vaccines.

References

Centers for Disease Control and Prevention, *Manual for the Surveillance of Vaccine-Preventable Diseases*, 4th ed., 2008, Chapter 4.

Centers for Disease Control and Prevention, “A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP); Part 1: Immunization of Infants, Children, and Adolescents,” *MMWR*, Vol. 54, No. RR-16, 2005.

Centers for Disease Control and Prevention, “A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices (ACIP) Part II: Immunization of Adults,” *MMWR*, Vol. 55, No. RR-16, 2006.

Additional Resources

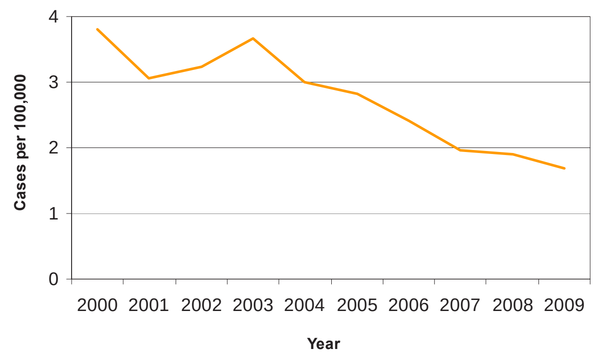
Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/vaccines/vpd-vac/hepatitis/default.htm

Recommended immunization schedule is available at http://www.cdc.gov/vaccines/recs/schedules/default.htm.

Hepatitis B, Acute

Hepatitis B, Acute: Crude Data	
Number of Cases	318
2009 incidence rate per 100,000	1.69
% change from average 5 year (2004-2008) incidence rate	-29.85
Age (yrs)	
Mean	40.35
Median	43
Min-Max	19 - 83

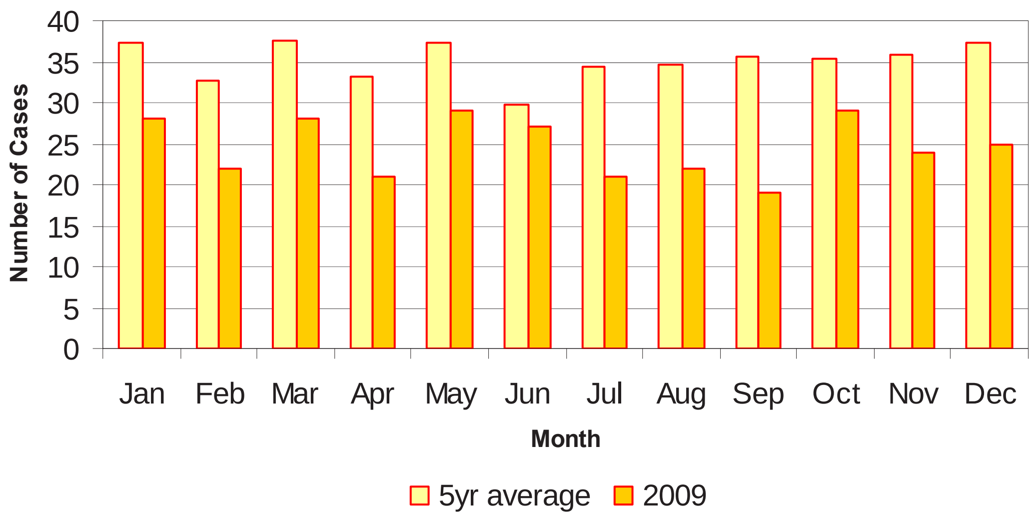
Figure 1. Hepatitis B, Acute Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

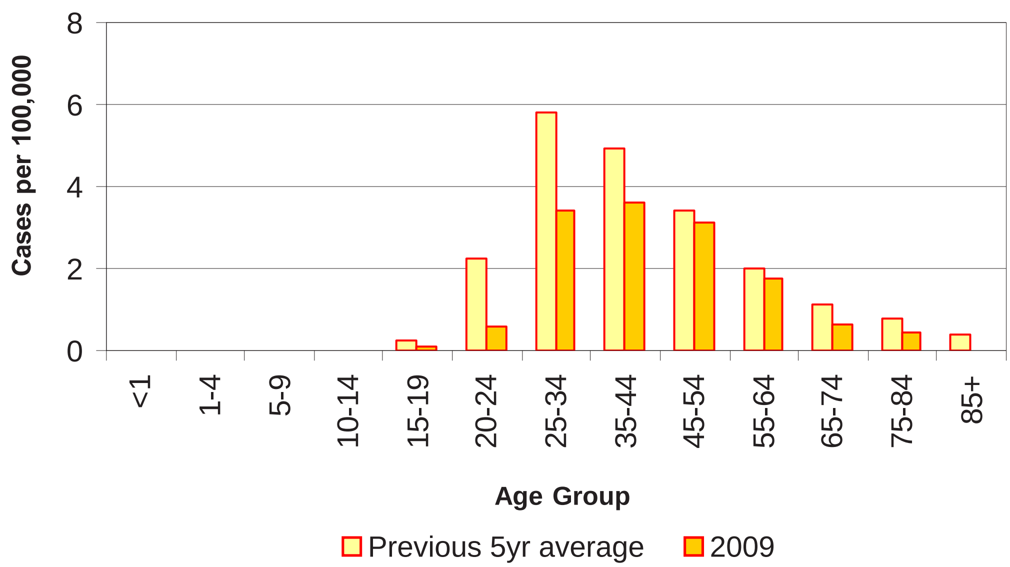
The incidence rate for acute Hepatitis B has declined gradually over the last ten years (Figure 1). The 2009 rate was 29.9% lower than the average from 2004 to 2008. In 2009, 94% of the 318 reported cases were confirmed. There is no seasonal trend for acute hepatitis B infection (Figure 2). Overall, 95.6% of the acute hepatitis B cases were classified as sporadic.

Figure 2. Hepatitis B, Acute Cases by Month of Onset, Florida, 2009



The highest historical incidence rates occurred in the 25 to 34 year old age group, and for 2009 the incidence rate in this group was high, but the highest incidence was among those aged 35 to 44, which was also true for 2007 and 2008. In 2009, the incidence rates were lower than the previous five-year average in all age groups (Figure 3). The incidence of hepatitis B is lowest in people under 19 years of age. Rates have always been low in children, and are even lower with widespread immunization. Males continue to have a higher incidence than females (2.09 per 100,000 and 1.30 per 100,000, respectively).

Figure 3. Hepatitis B, Acute Incidence Rate by Age Group, Florida, 2009



Hepatitis B is a vaccine-preventable disease. Among the 318 people diagnosed with acute hepatitis B, 62% never received the vaccine and 33% have unknown vaccine status. This demonstrates the importance of vaccination campaigns to eliminate hepatitis B in the U.S. The symptoms of acute viral hepatic illness may prompt individuals to seek immediate medical attention. Approximately 55% of those diagnosed with acute hepatitis B were hospitalized. In 2009, death occurred in two of the 318 people with acute hepatitis B infection. Thirty-two of the 318 people with acute hepatitis B reported having had contact with someone confirmed or suspected of having a hepatitis B infection, and of these, 78% reported the ill person was a sexual partner. Drug use has also been associated with hepatitis B infection. Of the 318 acute hepatitis B cases, 11% reported injection drug use and 22% reported using street drugs but not injection drug use. Hepatitis B infection has also been associated with improper sterilization or sharing of needles to create tattoos. In 2009, 8.8% of those with an acute hepatitis B infection had recently received a tattoo.

Sexual behavior may place an individual at risk for hepatitis B infection. However, individuals may often decline to comment on the frequency of sexual partners and/or their sexual preference. For 2009, sexual preference and frequency of sexual partnerships are summarized in Table 2. People’s risk factors may change over time.

Acute hepatitis B was reported in 43 of the 67 counties in Florida. A cluster of high-rate counties can be seen in the center of the state and along the northern border.

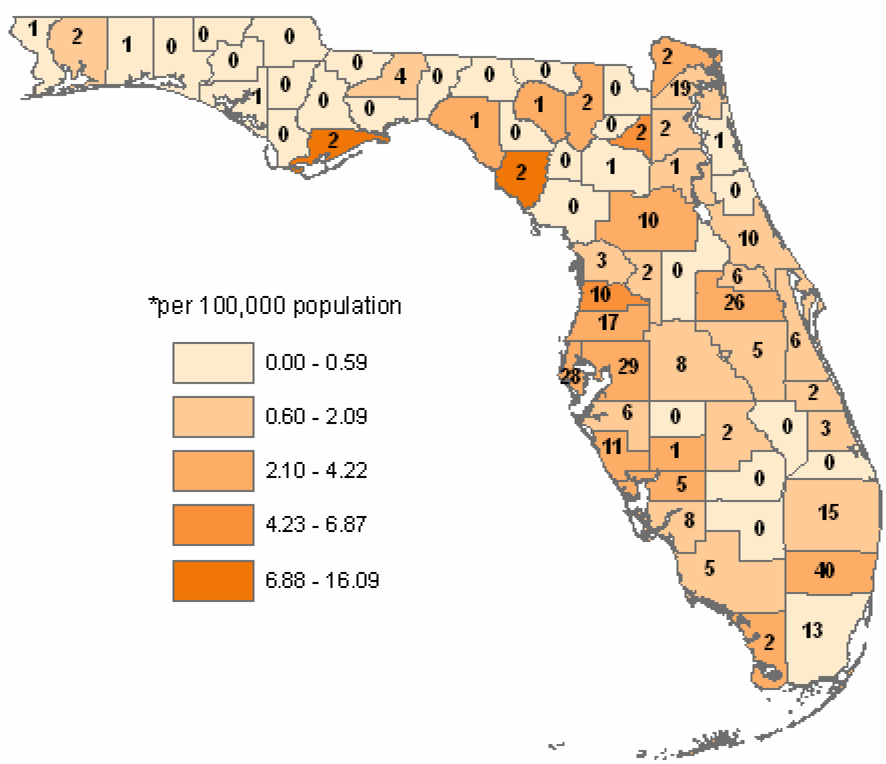
Table 2. Distribution of the Number of Sexual Partners in the Six Months Prior to Symptoms in Four Sexual Preference Groups, for People with Acute Hepatitis B Reported in 2009.

Sexual Behavior Risk Factors	Men having sex with men*	Men having sex with women*	Women having sex with men*	Women having sex with women*
1 Sexual Partner	8%	31%	34%	2%
2-5 Sexual Partners	5%	14%	22%	0%
More than 5 Sexual Partners	1%	3%	5%	1%
No Reported Sexual Partners	53%	20%	10%	68%
Not Answered	2%	2%	3%	2%
Unknown	32%	30%	26%	27%
Total	100%	100%	100%	100%
% of Cases in Each Sexual Preference Group†	13%	48%	61%	2%

* Total number of acute hepatitis B positive males is 193 and females is 125. One person identified themselves as unknown. In 2009, all 358 acute cases of hepatitis B occurred in individuals 18 years of age and older.

† Sexual history is collected by asking about the number of sexual partnerships in the last 6 months prior to having symptoms, regardless of gender.

Hepatitis B, Acute Incidence Rate* by County, Florida, 2009



Prevention

Hepatitis B vaccines are available to protect against hepatitis B virus infection. In addition, in healthcare settings, implement universal precautions for individuals in contact with body fluids.

High-risk groups for infection include:

- drug users who share needles,
- healthcare workers who have contact with infected blood,
- MSM (men who have sex with men),
- people who have multiple sexual partners,
- household contacts of infected persons, and
- infants born to mothers who are hepatitis B carriers.

References

Centers for Disease Control and Prevention, "A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States," *MMWR*, Vol. 55, No. RR16, pp. 1-25.

Centers for Disease Control and Prevention, "Incidence of Acute Hepatitis B-United States, 1990-2002," *MMWR*, Vol. 52, 2004, pp. 1252-1254.

Centers for Disease Control and Prevention, "Surveillance for Acute Viral Hepatitis-United States, 2005," *MMWR*, Vol. 56, No. SS03, 2007, pp. 1-24.

Centers for Disease Control and Prevention, "Update: Recommendations to Prevent Hepatitis B Virus Transmission-United States," *MMWR*, Vol. 48, 1999, pp. 33-34.

Centers for Disease Control and Prevention, "Hepatitis B Vaccination-United States, 1982-2002," *MMWR Report*, Vol. 51, 2002, pp. 549-52, 563.

J.T. Redd, J. Baumbach, W. Kohn, et al, "Patient-to Patient Transmission of Hepatitis B virus Associated with Oral Surgery," *Journal of Infectious Diseases*, Vol. 195, 2007, pp. 1311-1314.

American Academy of Pediatrics, Red Book 2003: Report of the Committee on Infectious Diseases, 26th ed., American Academy of Pediatrics Press, Elk Grove Village, Illinois, 2003.

Additional Resources

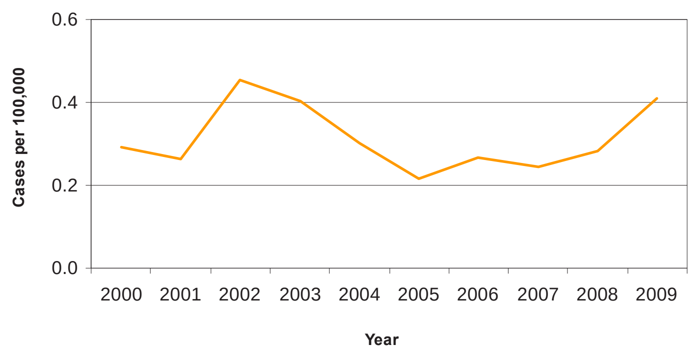
Disease information is available from the Centers for Disease Control and Prevention (CDC) website at http://www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm and http://www.cdc.gov/ncidod/diseases/hepatitis/recs/index.htm

Disease information is also available from the World Health Organization (WHO) website at http://www.who.int/mediacentre/factsheets/fs204/en/

Hepatitis C, Acute

Hepatitis C, Acute: Crude Data	
Number of Cases	77
2009 incidence rate per 100,000	0.41
% change from average 5 year (2004-2008) incidence rate	56.19
Age (yrs)	
Mean	40.35
Median	38
Min-Max	20 - 88

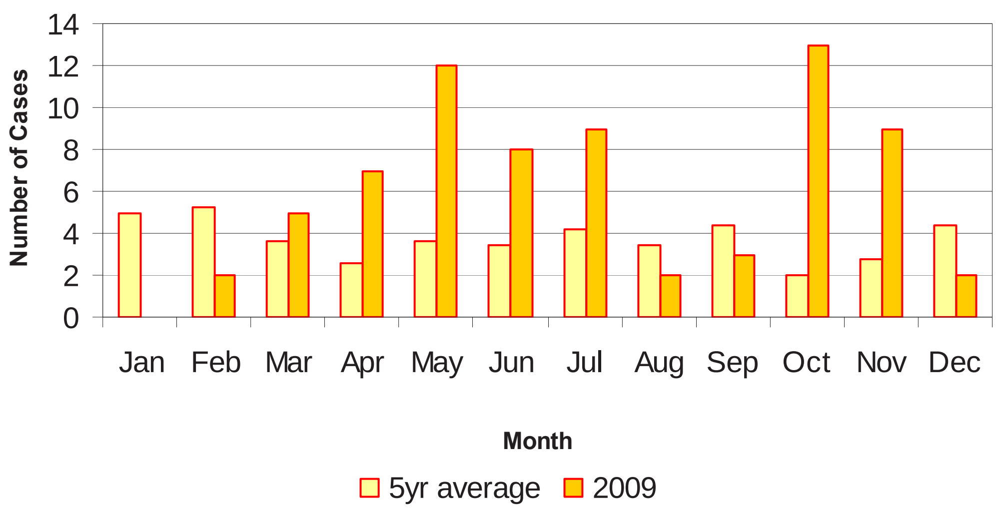
Figure 1. Hepatitis C, Acute Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

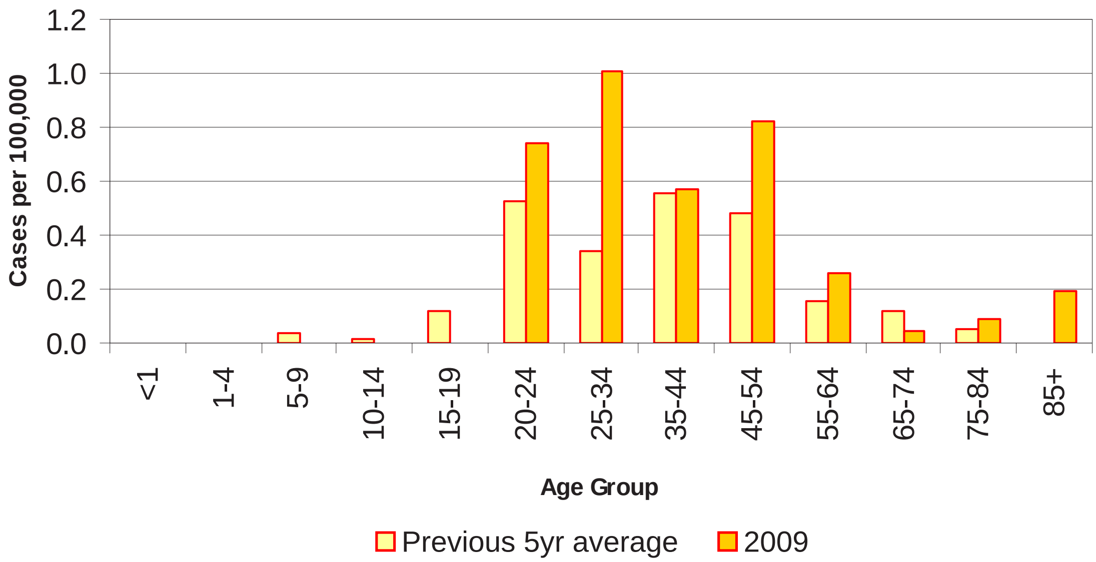
The incidence rate for acute hepatitis C has been variable over the last eight years. It was low from 2005 to 2008 but has been increasing since 2005 (Figure 1). In 2009, there was a 56.2% increase in comparison to the average incidence from 2004 to 2008. A total of 77 cases were reported in 2009. Sixty-nine percent of the cases were classified as confirmed. The hepatitis C acute surveillance case definition changed in 2008, therefore more cases may have been classified as confirmed compared to previous reporting years (2006: 36%, 2007: 34.7%, 2008: 60.4%). There is no seasonal trend for acute hepatitis C infection (Figure 2). Six acute hepatitis C cases were classified as outbreak associated. Five of the six cases classified as outbreak associated were related to an outbreak of hepatitis C in an outpatient holistic care center. The one remaining outbreak-associated case occurred in a healthcare setting where a healthcare worker was infected via an accidental occupational exposure to a hepatitis C-infected patient.

Figure 2. Hepatitis C, Acute Cases by Month of Onset, Florida, 2009



The highest incidence rates for 2009 occurred among those 20- to 54-years-old, which is consistent with historical trends, but the individual age groups do have differences when compared to the historical trend. In 2009, the incidence rates were higher than the previous five-year average in all age groups in which cases were reported except for those 65 to 74 years old (Figure 3).

Figure 3. Hepatitis C, Acute Incidence Rate by Age Group, Florida, 2009



The passive transfer of maternal HCV antibodies may be present in infants up to 18 months of age. A positive Anti-HCV result in an infant under 18 months is not a true indicator of hepatitis C infection in an infant. In 2008, men and women had similar incidence of acute hepatitis C (0.38 per 100,000 and 0.44 per 100,000, respectively). The incidence rates in whites are greater than those in non-whites.

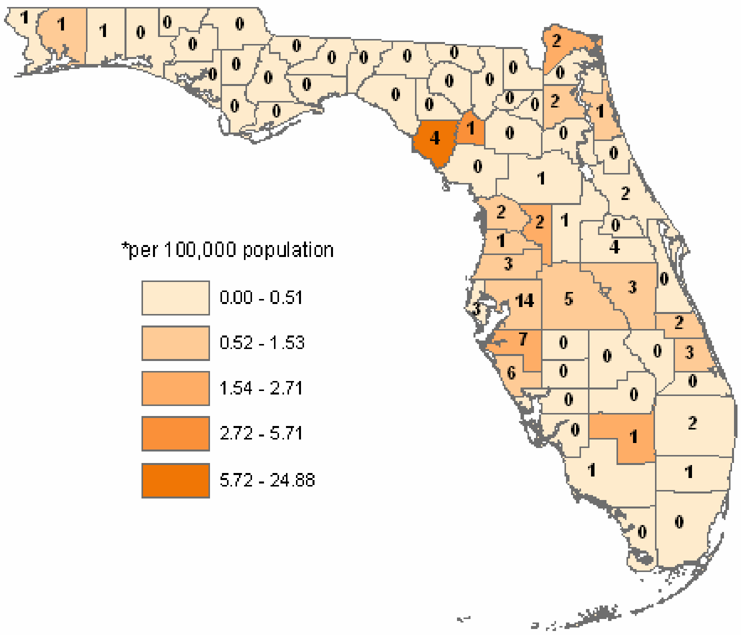
Acute hepatitis C cases were reported in 28 of 67 counties in Florida.

Prevention

Use universal precautions for individuals in contact with body fluids in healthcare settings. High-risk groups for infection include:

- drug abusers who share needles,
- healthcare workers who have contact with infected blood,
- men who have sex with men,
- people who have multiple sexual partners,
- household contacts of infected persons, and
- infants born to mothers who are hepatitis C carriers.

Hepatitis C, Acute Incidence Rate* by County, Florida, 2009



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Centers for Disease Control and Prevention, “Sexually Transmitted Diseases Treatment Guidelines, 2006,” *MMWR*, Vol. 55, No. RR-11, 2006, pp. 1-101.

J.L. Dienstag, “Sexual and perinatal transmission of hepatitis C,” *Hepatology*, Vol. 26, No. 66S-70S, 1997.

Centers for Disease Control and Prevention, “Guidelines for Laboratory Testing and Result Reporting of Antibody to Hepatitis C Virus,” *MMWR*, Vol. 52, No. RR-03, 2003, pp. 1-16.

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Centers for Disease Control and Prevention, *Frequently Asked Questions About Hepatitis C*, accessed at: http://www.cdc.gov/ncidod/diseases/hepatitis/c/faq.htm#1a.

M.I Gismondi, E.I. Turazza, S. Grinstein, et al., “Hepatitic C Virus Infection in Infants and Children from Argentina,” *Journal of Clinical Microbiology*, Vol. 42, 2004, pp. 1199-1202.

J.A. Hochman, W.F. Balistreri, “Chronic Viral Hepatitis: Always Be Current!,” *Pediatrics in Review*, Vol. 24, 2003, pp. 399-410.

S. Kamili, et al., “Infectivity of Hepatitis C Virus in Plasma After Drying and Storage at Room Temperature,” *Infection Control and Hospital Epidemiology*, Vol. 28, 2007, pp. 519-524.

Lead Poisoning, 2008

Description

Lead poisoning can affect nearly every system in the human body. Lead poisoning can be present with no obvious symptoms and usually goes undetected among individuals exposed to lead. Lead poisoning is diagnosed through a blood lead test. Blood lead levels greater than or equal to 10ug/dL are classified as lead poisoning. Lead poisoning usually occurs when an individual ingests or inhales lead particles, such as dust or chips, from lead-based paint in older homes. Dust from lead-based paint and the former use of leaded gasoline both contribute to lead in soil, which can also be an exposure route. Other sources of lead include some imported ceramics (e.g., lead-glazed pottery), home remedies, hair dyes, toys, folk medicines, and cosmetics. Children less than six years of age are more likely to become lead poisoned because of certain distinct behaviors. Such behaviors include placing hands and toys in their mouths and eating non-food items (e.g., paint chips and dust) that may contain or be contaminated by lead. Additionally, the body of a child absorbs lead more readily than that of an adult and can reach the threshold for poisoning much more quickly. Lead poisoning can cause serious health effects in children, including learning disabilities, behavioral problems, and, at very high levels, seizures, coma, and even death.

Disease Abstract

In 2003, the Centers for Disease Control and Prevention (CDC) estimated that 22,000 children (0 to 16 years old) were lead poisoned in Florida (CDC 2003 Program Announcement 03007, Appendix III). The CDC further approximates that 7,400 of these lead-poisoned individuals reside in nine highly populated (≥ 100,000 residents) Florida cities. Florida ranked eighth in the nation, according to the CDC, for lead poisoning among children. The Florida Childhood Lead Poisoning Prevention and Healthy Homes Program (FL CLPPP) monitors all reported blood-lead levels within the state. The program documents the reported number of children less than six years of age who meet the case definition of lead poisoning (≥ 10ug/dL) and the reported number of children screened for lead poisoning each year. Although some children are tested multiple times in a single year, only the first test per year is considered a screening test, all subsequent tests are considered follow-up tests. Cases are then classified as new or persistent poisonings. A new case is a case that was not confirmed in any previous year. A persistent case is case that was confirmed during a previous year and whose blood-lead level remains at least 10 µg/dL in a subsequent year.

Cases of children less than six years of age with confirmed blood-lead levels that meet the case definition for lead poisoning are investigated and receive disease case management by the local county health department. The child's blood-lead level determines his or her follow-up blood-lead testing schedule and the type of investigation and/or case management services received. The goal of the investigation and case management is to reduce the child's blood-lead level to below the level of concern (10µg/dL) by identifying and eliminating possible lead exposure sources, preventing continued exposure and improving nutrition. The child should be monitored by a physician and the case manager until the blood-lead level returns to below this level.

Figure 1 shows an overall increase (24%) in the number of screenings for lead poisoning from 2004 to 2008. (Data from 2009 is not summarized in this report.) This increase may be due to several reasons including improvement in the reporting of blood lead test results by laboratories and physicians as well as targeted screening of high-risk populations within specific geographic areas. Conversely, the number of reported new lead poisoning cases in Florida declined by

42% from 2004 (475 cases) to 2008 (274 cases). This decline indicates that there were fewer children with a blood-lead level of 10ug/dL or greater among the population of children screened from 2004 to 2008. It is not clear if all of those screened represent the children who are most at-risk for lead poisoning. Further analysis is needed to assess the statistical significance of these findings and to fully understand the prevalence of lead poisoning among high-risk groups in Florida.

Figure 1. Number of Reported New Lead Poisoning Cases and Blood-Lead Screenings, Florida, 2004-2008

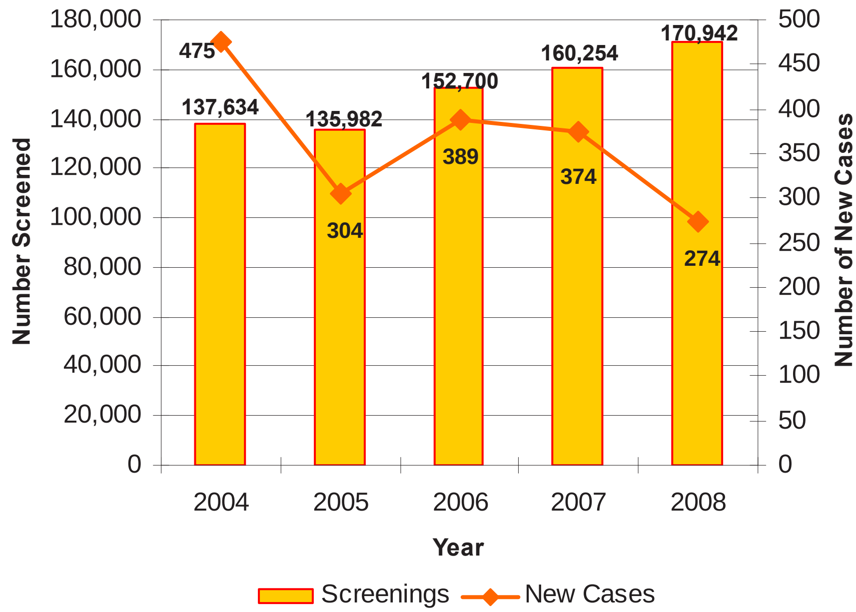
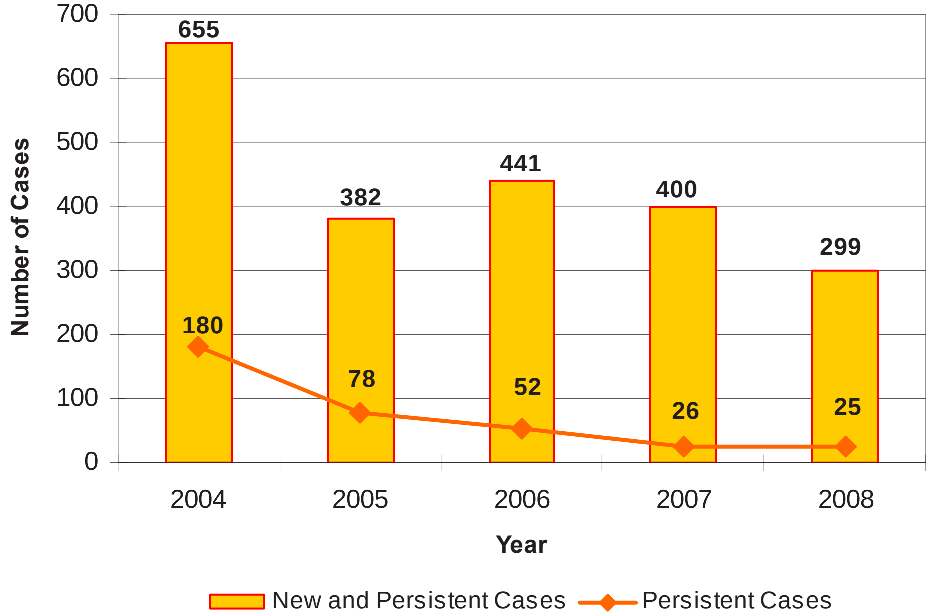


Figure 2 illustrates the number of reported new and persistent cases per year. In general, the number of reported cases (persistent and new) of lead poisoning decreased by 54% from 655 in 2004 to 299 in 2008. For 2007 to 2008, the decline in the number of new and persistent cases was less steep (25%) with 400 cases in 2007 and 299 in 2008. There was a decline (86%) in the annual number of recognized persistent cases from 180 in 2004 to 25 in 2008. This decline in persistent cases may be due to enhanced efforts by CHD staff to recommend services for the management of the disease, as well as the elimination of lead exposure sources among identified cases.

Figure 2. Number of New and Persistent Cases of Lead Poisoning, Florida, 2004-2008



Prevention

Despite the fact that lead persists in several forms in the human environment, lead poisoning is completely preventable. Primary prevention activities that are conducted through the FL CLPPP include ensuring that parents, property owners, healthcare professionals, workers, and individuals who care for young children are informed about the risks of lead poisoning and how to prevent lead exposures. Secondary prevention efforts include following up on lead poisoned individuals, particularly children, to ensure that they received adequate medical care and support to improve their health and reduce further lead exposures.

Resources

Florida Department of Health website
http://www.doh.state.fl.us/environment/community/lead/index.html

Centers for Disease Control and Prevention website
http://www.cdc.gov/nceh/lead/faq/about.htm

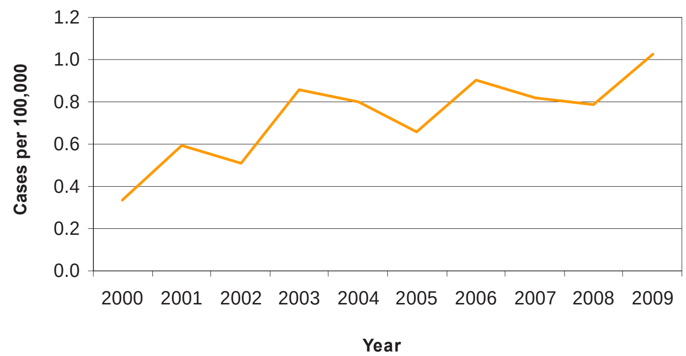
Additional Information

Florida Department of Health Lead Program website also includes additional information and disease statistics
http://www.doh.state.fl.us/environment/medicine/lead/index.

Legionellosis

Legionellosis: Crude Data	
Number of Cases	193
2009 incidence rate per 100,000	1.03
% change from average 5 year (2004-2008) incidence rate	29.06
Age (yrs)	
Mean	62.98
Median	63
Min-Max	<1 - 95

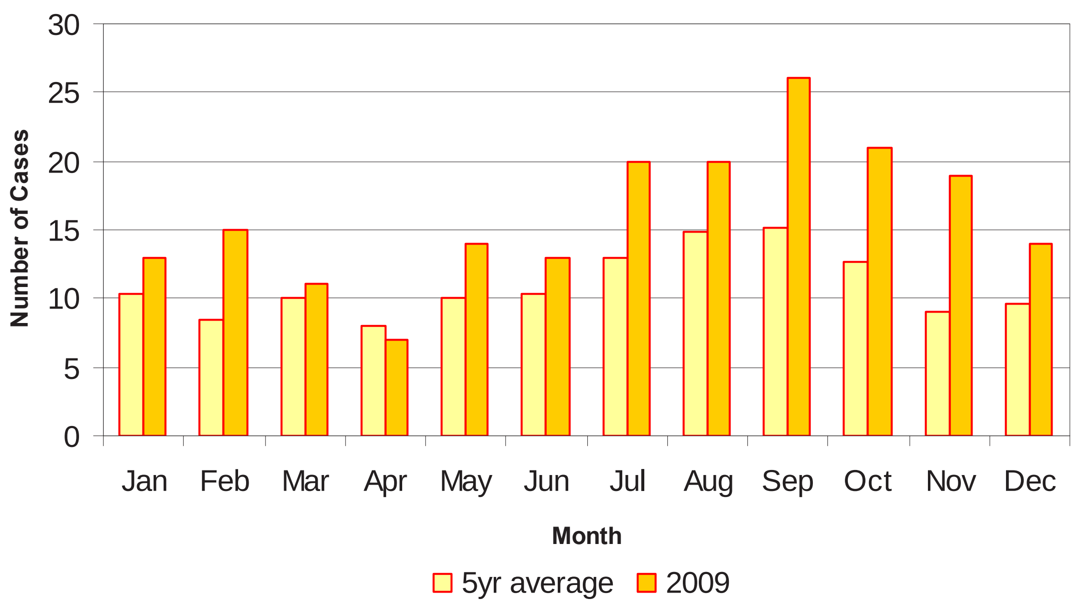
Figure 1. Legionellosis Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

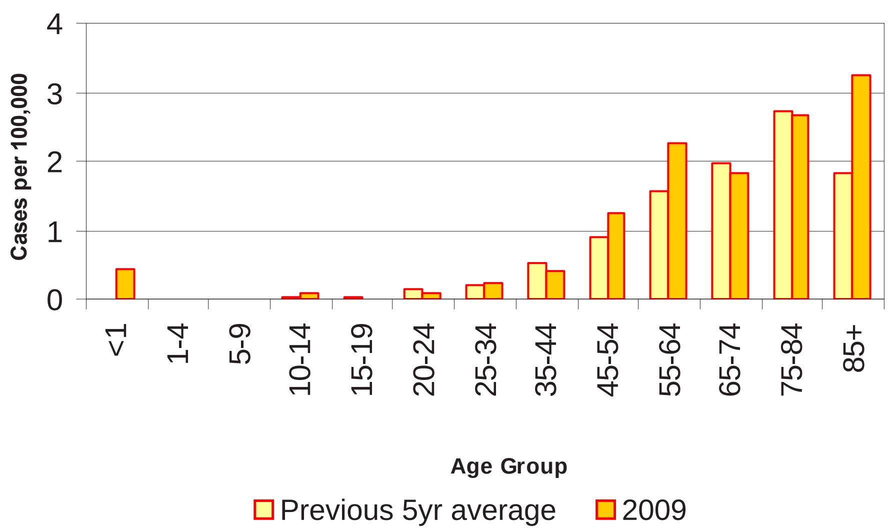
The Florida incidence rate for legionellosis has steadily increased over the last ten years (Figure 1). In 2009, there was a 29.1% increase in comparison to the average incidence from 2004 to 2008. In 2009, 193 cases were reported, of which 100% were classified as confirmed cases and 6.2% were acquired outside of Florida. The number of cases reported tends to increase in the summer months. In 2009, the number of cases exceeded the previous five-year average for many of the months, most notably those in the fall and winter (Figure 2). Two of the legionellosis cases were classified as outbreak associated and were associated with exposure to the same fitness club. (See the Summary of Notable Outbreaks and Case Investigations section of this document.)

Figure 2. Legionellosis Cases by Month of Onset, Florida, 2009



The highest incidence rates continue to occur among adults 45 years of age and older with rates ranging from 1.2 per 100,000 in the 45-54 age group to 3.2 per 100,000 in the over 85 age group. In 2009, the incidence rates were higher than the previous five-year average in most age groups with the largest difference in those 85 and older. There was also a very interesting increase in incidence among those 10 to14 years old compared to the historic average, but it actually represents a recent decrease in total cases among those 10 to 14 years of age, with one case reported in this age group for 2009 compared to four in 2008. (Figure 3). Males continue to have a higher incidence than females and this gap widened in 2009 (1.30 and 0.76 per 100,000, respectively).

Figure 3. Legionellosis Incidence Rate by Age Group, Florida, 2009

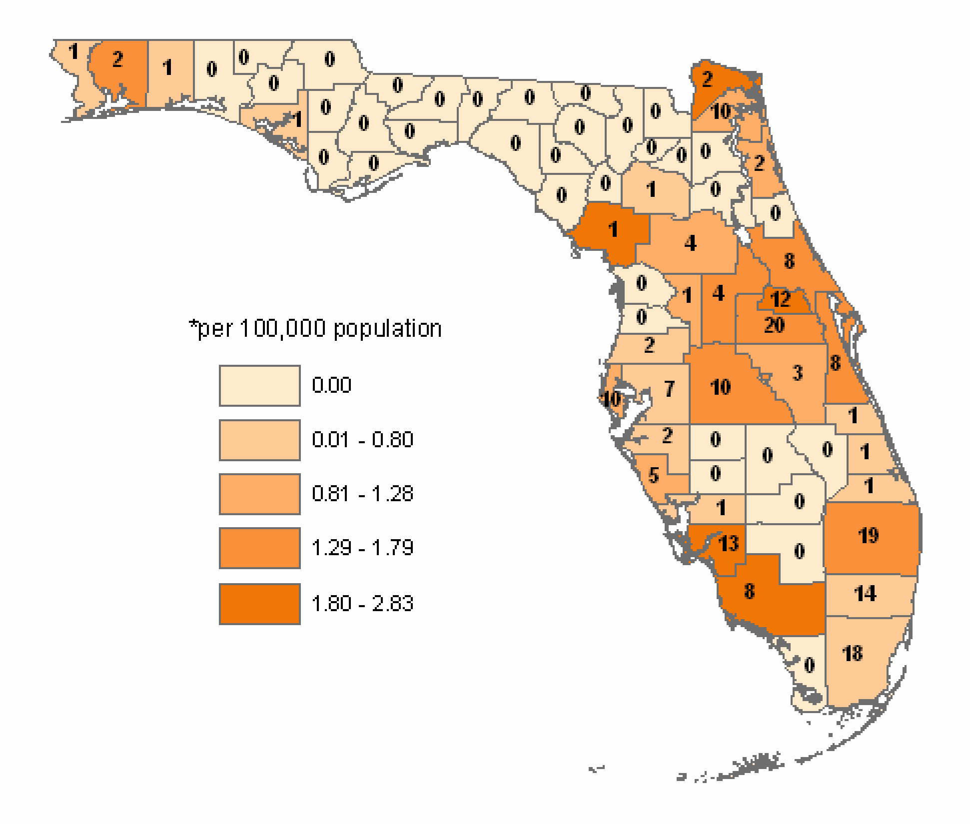


Legionellosis cases were reported in 31 of 67 counties in Florida. Counties in the central, southwestern, and southeastern regions Florida reported the highest incidence rates.

Prevention

- Drain cooling towers when not in use, and mechanically clean periodically to remove scale and sediment.
- Use appropriate biocides to limit the growth of slime-forming organisms.
- Do not use tap water in respiratory therapy devices.
- Maintain hot water system temperatures at 50°C (122°F) or higher.
- Provide proper maintenance of hot tub/spas.

Legionellosis Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/ncidod/dbmd/diseaseinfo/legionellosis_g.htm.

Listeriosis

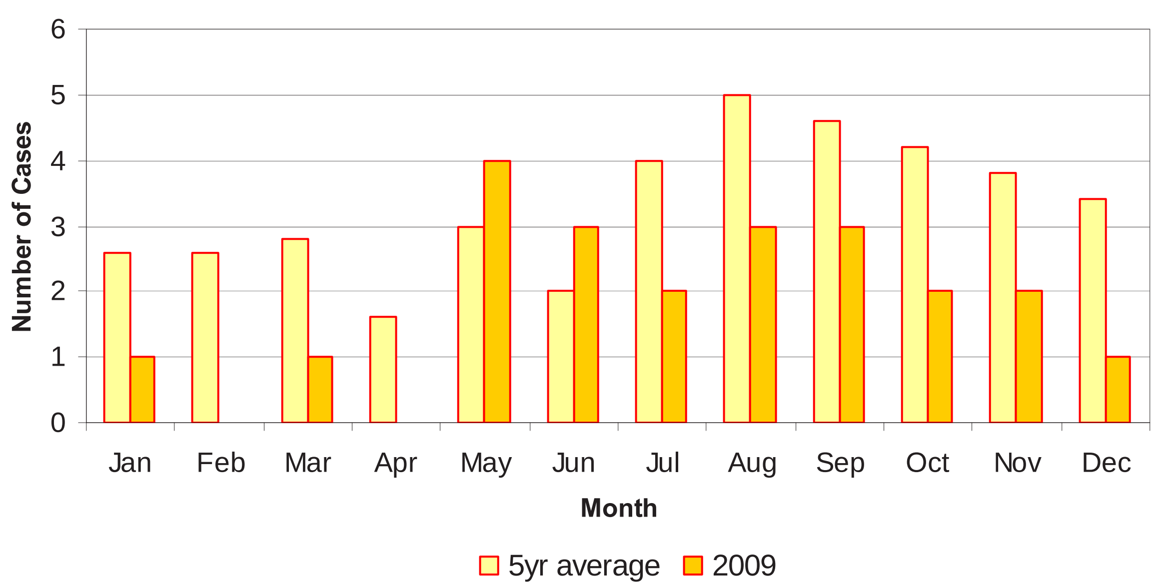
Listeriosis: Crude Data	
Number of Cases	25
2009 incidence rate per 100,000	0.13
% change from average 5 year (2004-2008) incidence rate	-44.68
Age (yrs)	
Mean	66.24
Median	73
Min-Max	<1 - 96

Figure 1. Listeriosis Incidence Rate by Year Reported, Florida, 2000-2009

Disease Abstract

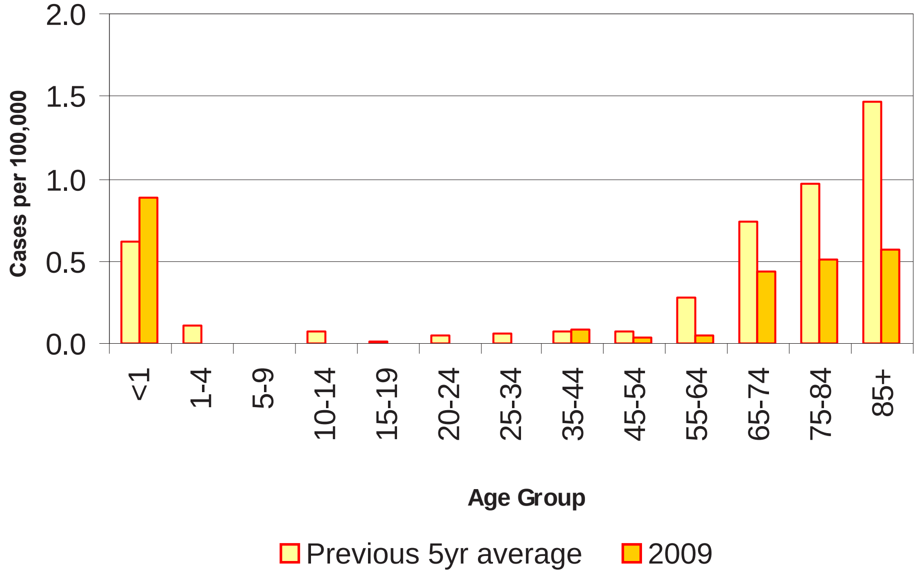
The reported incidence rate for listeriosis has shown no clear trend over the last ten years (Figure 1). In 2009, there was a 44.7% decrease in comparison to the previous five-year average incidence. A total of 25 cases were reported in 2009, which is about half as many as were reported in 2008. All of the 2009 cases were sporadic and not outbreak related. Historically, the number of cases reported tends to increase slightly in the late summer months with a high number of cases in July, August, and September. In 2009, a similar trend was observed but with a notably early peak in May and June (Figure 2).

Figure 2. Listeriosis Cases by Month of Onset, Florida, 2009



The very young and the elderly are at increased risk of infection in comparison to other age groups (Figure 3). In 2009, the incidence rate was lower than the previous five-year average for all age groups except those less than one year old. The incidence rate in males was lower than in females (0.08 and 0.19 per 100,000 population, respectively) for 2009, which is similar to the historical trend.

Figure 3. Listeriosis Incidence Rate by Age Group, Florida, 2009



Listeriosis was reported in 15 of 67 counties in Florida.

Prevention

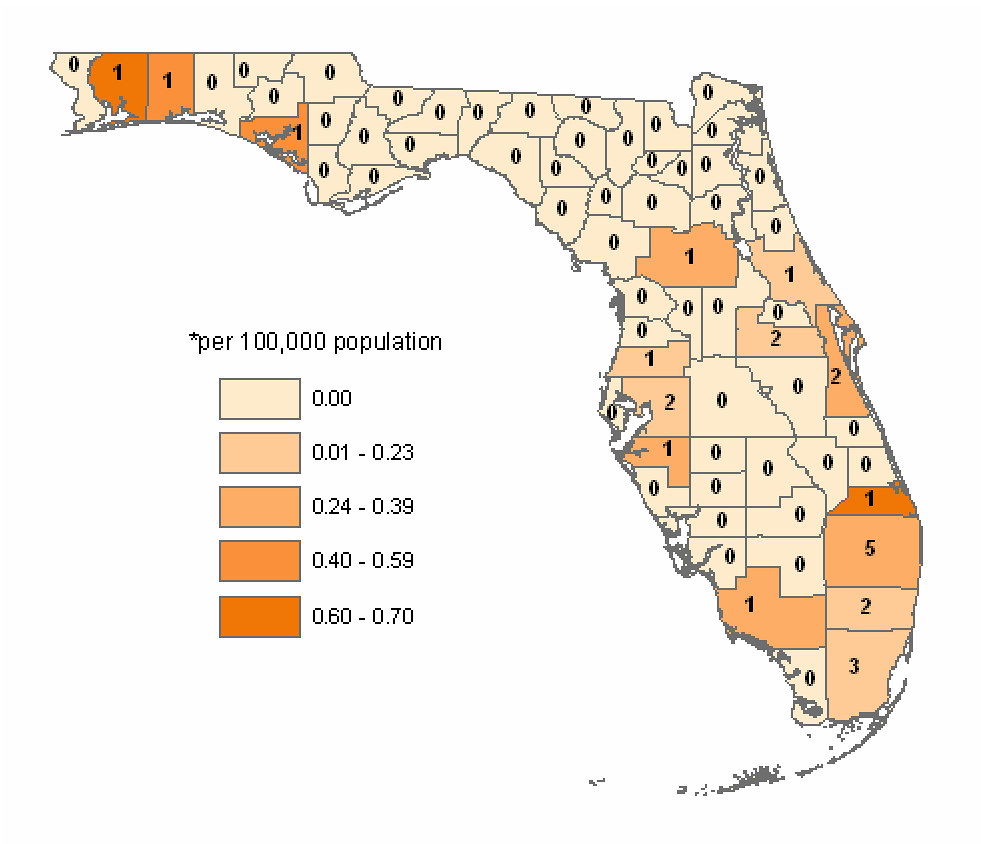
Generally, to prevent listeriosis:

- thoroughly cook raw food from animal sources, such as beef, pork, or poultry.
- wash raw vegetables before eating; and keep uncooked meats separate from vegetables, cooked foods, and ready-to-eat foods.
- avoid unpasteurized milk or foods made from unpasteurized milk, and
- wash hands, knives, and cutting boards after handling uncooked foods.

Those at high risk for listeriosis (the elderly, pregnant women, those with cancer, HIV, diabetes, or weakened immune systems) should follow additional recommendations:

- Avoid soft cheeses such as feta, brie, camembert, blue-veined, and Mexican-style cheese.
- Cook leftover foods as well as ready-to-eat foods, such as hot dogs or cold cuts, until steaming hot before eating.

Listeriosis Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

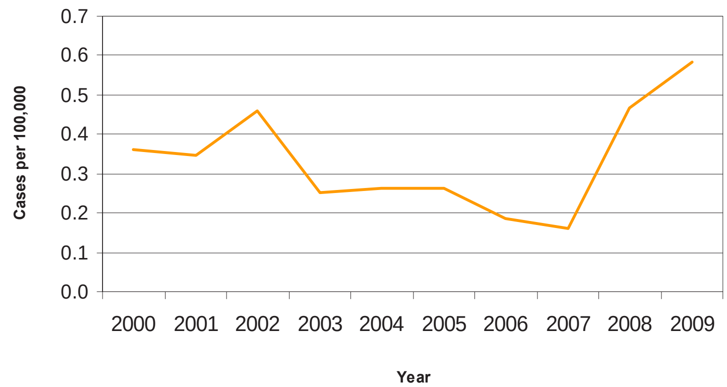
Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm.

Lyme Disease

Lyme Disease: Crude Data	
Number of Cases	110
2009 incidence rate per 100,000	0.58
% change from average 5-year (2004-2008) incidence rate	118.58
Age (yrs)	
Mean	46.86
Median	51.5
Min-Max	2 – 84

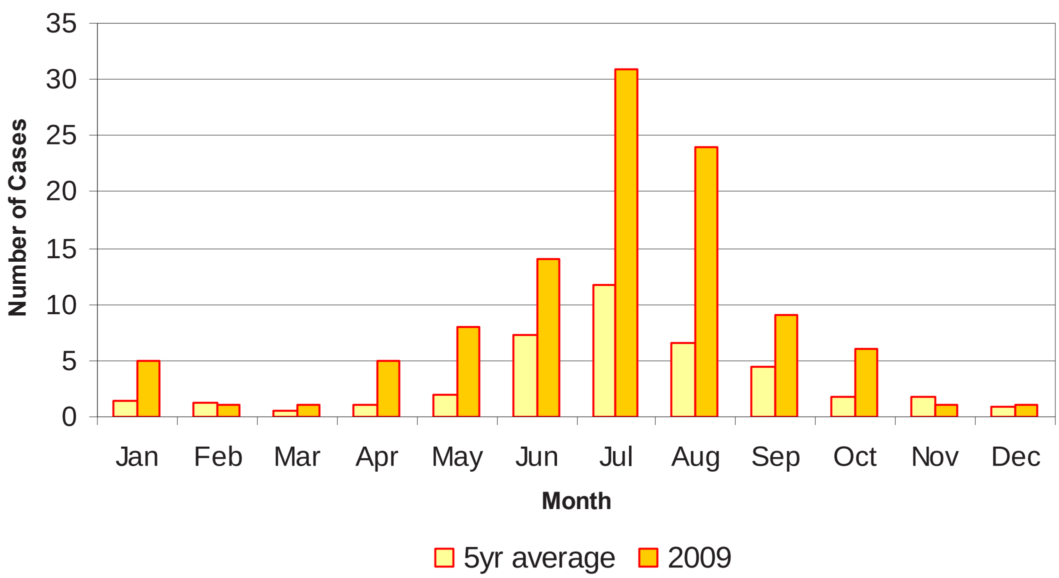
Figure 1. Lyme Disease Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

Lyme Disease is caused by infection with *Borrelia burgdorferi,* resulting from a bite by an infected tick. After declines in the reported incidence rate of Lyme disease for most of the decade, there has been a sharp increase in reported incidence in 2008 and 2009 (Figure 1). In 2009, 110 cases were reported, which represented a 118.6% increase over the average incidence from 2004 to 2008. This may be attributed to, at least partly, a change in the case definition in 2008 as well as to a true increase in cases. In Florida, the increase occurred primarily in cases imported from out of state, particularly from the northeast U.S.

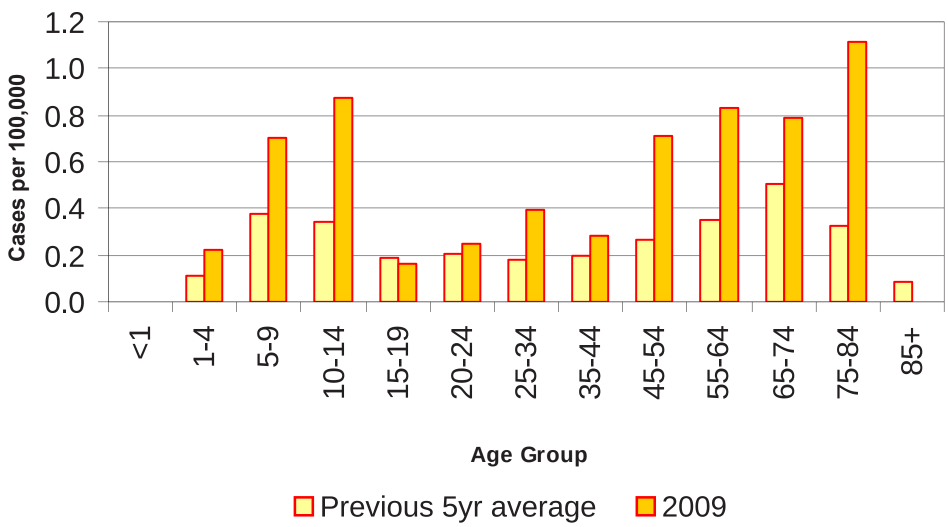
Figure 2. Lyme Disease Cases by Month of Onset, Florida, 2009



Eighty-two percent of cases were classified as confirmed in 2009. The majority of cases were acquired outside Florida, with only 13% (11 cases) in 2008 and 20% (22 cases) in 2009 reported as acquired in Florida. Exposures in the northeast U.S., particularly New York, New Jersey, Connecticut, and Pennsylvania, accounted for the largest number of cases. Highest case incidence was in the summer, with peak incidence in July, but cases occurred year round. In 2009, the number of cases exceeded the previous five-year average in all months except February and December; winter is a period of decreased tick activity in most states (Figure 2). Forty-one percent (45) of all cases reported erythema migrans (EM), compared with 64% (7) of Florida-acquired cases.

In 2009, there was a higher incidence of Lyme disease in age groups 45 and older and in five- to nine- and 10- to 14-year-olds, with the highest incidence in the 75 to 84 year group. This general trend is consistent with the previous five-year average for age; however, the age groups in Florida tend to be older than the nationally reported peak incidence group of 45 to 54. The peak in children between five and fourteen is more consistent with national trends (Figure 3). Incidence rates in whites continue to be higher than in non-whites.

Figure 3. Lyme Disease Incidence Rate by Age Group, Florida, 2009



Lyme disease was reported in residents of 37 of 67 Florida counties, but only 18 counties reported cases as acquired in Florida. Forty-six percent of cases acquired in Florida were reported from central Florida, 29% from south Florida, and 25% from the Panhandle.

Prevention

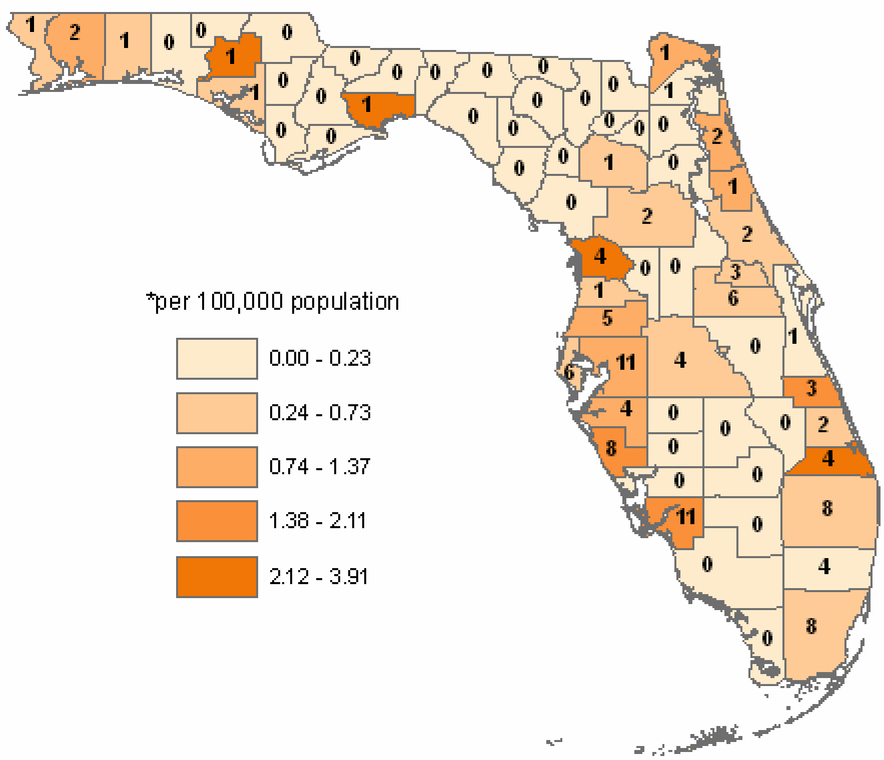
The most effective prevention is avoiding human and pet exposure to ticks by using the following strategies.

- Avoid tick infested areas.
- Cover exposed skin as much as possible.
- Wear light-colored clothing to better see ticks.
- Tuck in pant legs and button sleeves;
- Apply permethrin to clothing and DEET to skin (per CDC recommendations).

- Inspect children, pets, and adults for ticks immediately following likely exposure;
- Use appropriate veterinary products as recommended by a veterinarian to prevent tick exposure to pets.
- Use landscaping measures around the home to reduce ground cover to reduce contact with ticks and use any type of fencing around a home.
- Bathe soon after being in tick habitats to decrease risk of infection in endemic areas.
- Remove promptly any ticks found attached to children, adults, or pets. Use fine tweezers or a tissue to protect fingers, grasp the tick close to the skin and gently pull straight out without twisting. Do not use bare fingers to crush ticks. Wash hands following tick removal.

As most Florida cases are acquired in Lyme-endemic areas of the northeastern U.S., these prevention measures are especially important while visiting those areas.

Lyme Disease Incidence Rate* by County, Florida, 2009



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David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 19th ed., American Public Health Association Press, Washington, District of Columbia, 2008.

L.K. Pickering, C.J. Baker, S.S. Long, and J.A. McMillan (eds.), *Red Book: 2006 Report of the Committee on Infectious Diseases*, 27th ed., American Academy of Pediatrics Press, 2006.

Connecticut Agricultural Experiment Station. 2007. Tick Management Handbook, Bulletin 1010.
http://www.cdc.gov/ncidod/dvbid/lyme/resources/handbook.pdf

Additional Resources

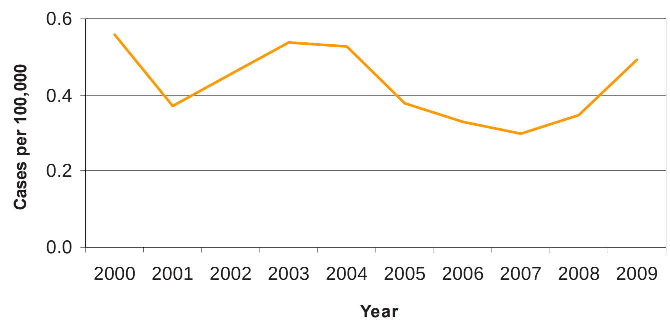
Disease information is available from the Centers for Disease Control and Prevention at http://www.cdc.gov/ncidod/dvbid/lyme/ and http://www.cdc.gov/healthypets/diseases/lyme.htm

Disease information is available from the Florida Department of Health at http://myfloridaeh.com/medicine/arboviral/Tick_Borne_Diseases/Tick_Index.htm

Malaria

Malaria: Crude Data	
Number of Cases	93
2009 incidence rate per 100,000	0.49
% change from average 5-year (2004-2008) incidence rate	32.00
Age (yrs)	
Mean	41.2
Median	43
Min-Max	1 - 78

Figure 1. Malaria Incidence Rate by Year Reported, Florida, 2000-2009



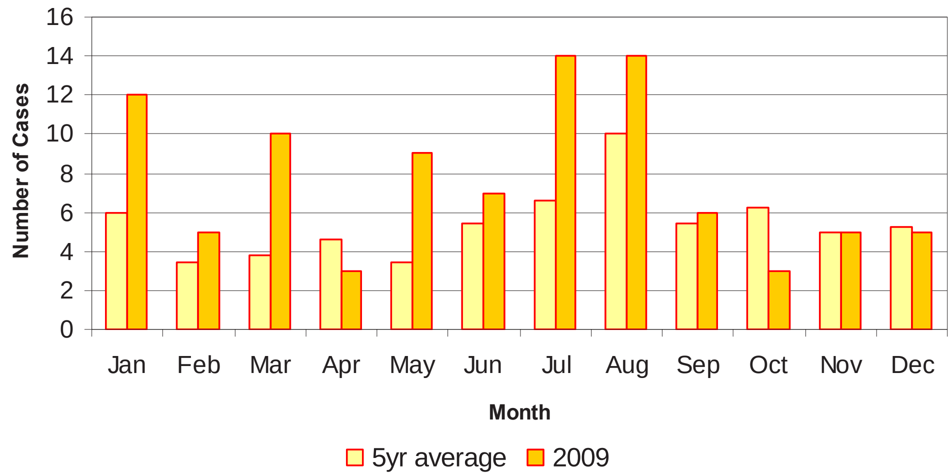
Disease Abstract

Human malaria is caused by five species of protozoan parasites of the genus *Plasmodium*: *P. vivax, P. falciparum, P. malariae, P. ovale* and *P. knowlesi*. All except *P. knowlesi* are transmitted from person to person via the bite and blood-feeding behavior of mosquitos of the genus *Anopheles*; non-human primates act as the reservoir for *P. knowlesi*. Malaria was endemic in Florida up until the 1940s. Currently, nearly all cases are in travelers returning to the state from malaria endemic regions of the world, though competent vectors do exist in the state, providing the potential for local transmission. The incidence rate for malaria in Florida declined over the last 10 years (Figure 1) until 2008; 93 cases were reported in 2009. In 2009, there was a 32% increase in cases compared to the average incidence from 2004 to 2008.

More cases are reported during the summer and early fall months, which correlates with the rainy season in source countries such as Haiti, but cases are reported year-round (Figure 2). High incidence rates have been consistent among those in the 20 to 34 age group, and this is what was seen in 2009 (Figure 3). The mean age of reported malaria cases in Florida is 41.2 years (range: 1-78). In 2009, 76% of the 93 reported malaria cases were diagnosed with *P. falciparum* and 15% were diagnosed with *P. vivax*. One case was diagnosed with *P. ovale* and species was unable to be determined for seven cases. Seventy-seven percent of cases were non-white and 66% were male.

One individual acquired malaria via a blood transfusion from an asymptomatic donor. The remaining cases were all imported. Forty-two percent of cases had recent travel history to Haiti, 13% traveled to Nigeria, 26% traveled to another African country, 10% to Asia, 4% to Central or South America, and 2% to the Dominican Republic. Of those for whom additional data were available (86 out of 93 total cases), the largest proportion (59%) acquired malaria while visiting relatives or friends. Persons “visiting friends and relatives” or VFRs are considered a high-risk group since prior immunity they may have had has waned and they tend not to take proper malaria prevention precautions. Other reasons for travel to malaria endemic areas were missionary/volunteer work (15%), tourism (9%), and business (6%). Immigrants to Florida made up 10% of the cases. Seventy-five percent of cases reported not using anti-malarial chemoprophylaxis; 12% reported missing doses; and 10% reported taking all doses as scheduled. Anti-malarial chemoprophylaxis treatment history for the remainder was unknown.

Figure 2. Malaria Cases by Month of Onset, Florida, 2009



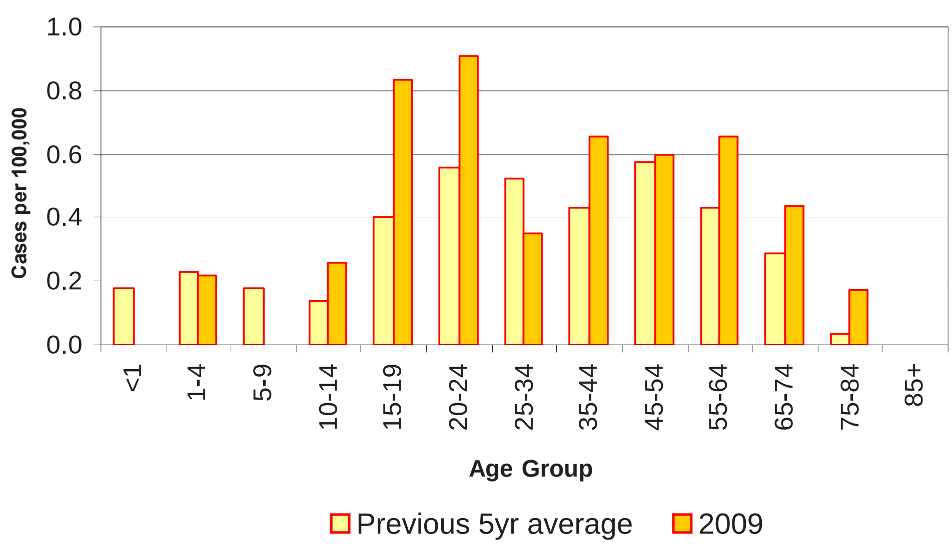
Prevention

No vaccine is currently available. Travelers to malaria-endemic countries should consult with their doctors to make sure they receive an appropriate preventative chemoprophylactic regimen and should also take the full course of chemoprophylaxis as prescribed. A number of factors should be taken into consideration prior to prescribing chemoprophylaxis including risk, the species of malaria present, drug resistance, and how well the drug is tolerated.

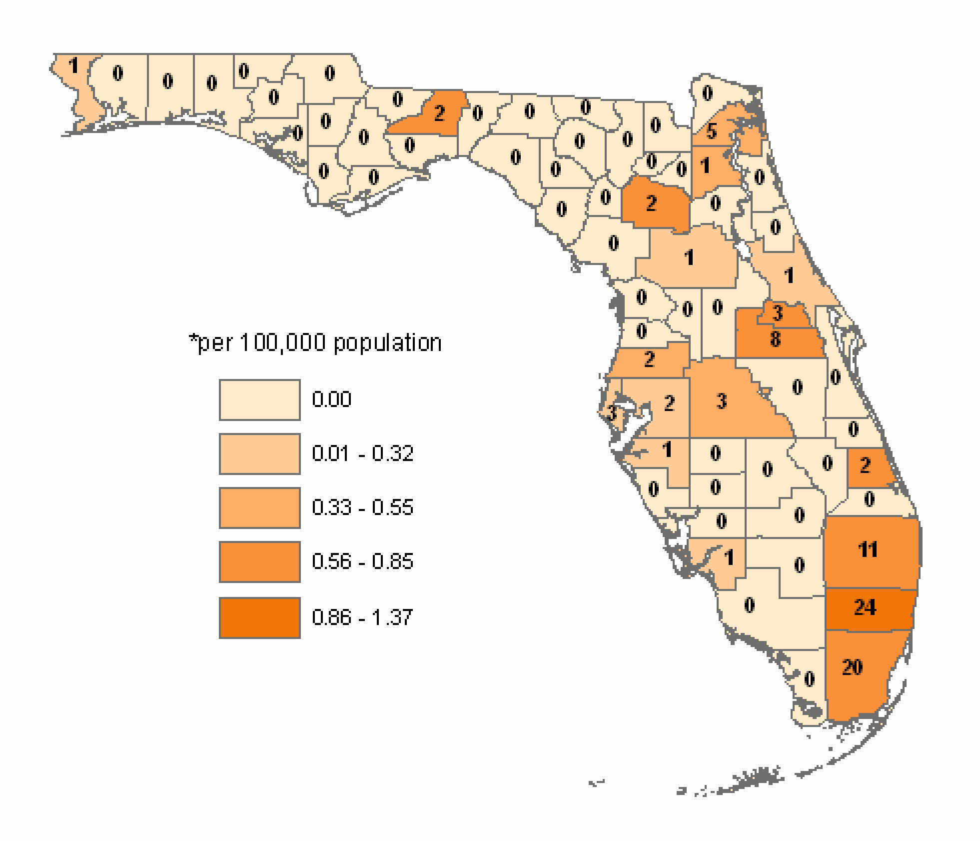
Following these personal protection measures can also help prevent malaria infection:

- Avoid contact with mosquitoes by using an insect repellent containing DEET or other EPA-approved ingredient.
- Remain in well-screened areas.
- Keep skin covered in clothing.
- Use insecticide-treated bed nets.

Figure 3. Malaria Incidence Rate by Age Group, Florida, 2009



Malaria Incidence Rate* by County, Florida, 2009



References

Centers for Disease Control and Prevention, “Traveler’s Health: Yellow Book, Health Information for International Travel, 2008,” 22 June 2007, http://wwwn.cdc.gov/travel/contentYellowBook.aspx

Additional Resources

A table containing drugs used in malaria prophylaxis can be found in the CDC Yellow Book, online http://wwwn.cdc.gov/travel/yellowBookCh4-Malaria.aspx#404

Additional information on malaria and other mosquito-borne diseases can be found in the *Surveillance and Control of Arthropod-borne Diseases in Florida Guidebook*, online at http://www.doh.state.fl.us/environment/medicine/arboviral/pdf_files/2009MosquitoGuide.pdf

Malaria fact sheets for immigrants are available at http://www.doh.state.fl.us/Environment/medicine/arboviral/Malaria.html.

Measles

Measles: Crude Data	
Number of Cases	5
2009 incidence rate per 100,000	0.03
% change from average 5-year (2004-2008) reported cases	127.27
Age (yrs)	
Mean	5.8
Median	3
Min-Max	<1 - 14

Disease Abstract

In 2009, five laboratory-confirmed cases of measles were reported, for a statewide incidence rate of 0.03 cases per 100,000 population. Of the five confirmed cases reported, one was imported from Africa, in a child who was too young to receive the measles vaccine. Four of the confirmed cases occurred within the same family and were imported from England. These four children had not received measles vaccine. The United Kingdom continues to have an increase in measles activity over the past few years due to decreased vaccination rates. The U.K. currently has endemic transmission of measles. A case is officially classified as internationally imported when the exposure was outside the country, with rash onset within 21 days after entering the country, and the case is not linked to local transmission.

Measles is a disease of urgent public health importance, so even one case requires tracking of all contacts and conducting interviews to assess susceptibility. Florida has many possible sources of infection due to the many foreign visitors each year, the ease of international travel, and the increasing incidence of measles in the U.S. and abroad. When a case is identified in another state or country, all possible contacts in Florida must be tracked in order to identify other potential cases and prevent continued transmission.

Prevention

Vaccination against measles is recommended for all children after their first birthday. Two doses of measles vaccine (preferably as MMR) are required for entry and attendance in kindergarten through twelfth grade. All children attending or entering childcare facilities or family daycare must be age-appropriately vaccinated with one or two doses of measles vaccine.

References

Centers for Disease Control and Prevention, *Manual for the Surveillance of Vaccine-Preventable Diseases*, 4th ed., 2008, Chapter 7.

Additional Resources

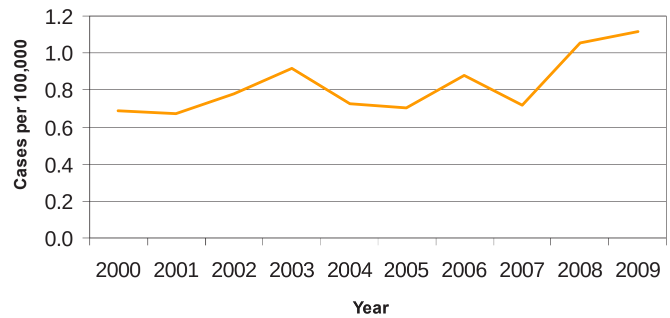
Disease information is available from the Centers for Disease Control and Prevention (CDC) at www.cdc.gov/vaccines/vpd-vac/measles/default.htm.

Recommended immunization schedule is available at: http://www.cdc.gov/vaccines/recs/schedules/default.htm.

Meningitis, Other

Meningitis, Other (Bacterial, Cryptococcal, or Mycotic): Crude Data	
Number of Cases	210
2009 incidence rate per 100,000	1.12
% change from average 5-year (2004-2008) incidence rate	36.13
Age (yrs)	
Mean	36.74
Median	41.5
Min-Max	<1 - 109

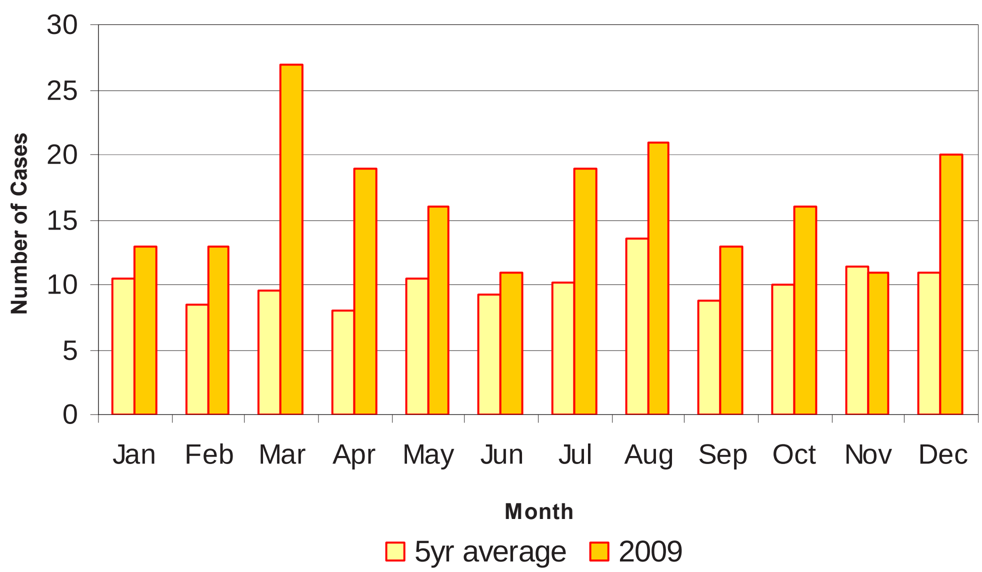
Figure 1. Meningitis, Other (Bacterial, Cryptococcal, or Mycotic) Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

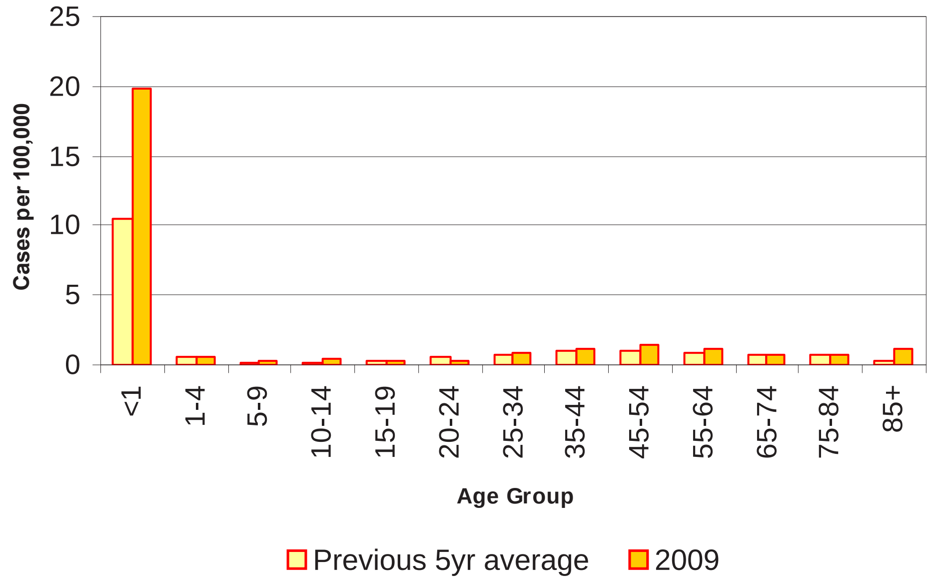
The "meningitis, other" category includes any meningitis due to any bacterial or fungal species other than *Neisseria meningitidis* or *Haemophilus influenzae*, with an isolate from the blood or cerebrospinal fluid. In 2009, some common pathogens isolated were *Cryptococcus neoformans*, *Escherichia coli*, *Klebsiella pneumoniae*, Staphylococcal species, Streptococcal species, and Enterococcal species. Please see Table 1 for a complete list of etiologic agents identified for the past seven years.

Figure 2. Meningitis, Other (Bacterial, Cryptococcal, or Mycotic) Cases by Month of Onset, Florida, 2009



The incidence rate of “meningitis, other” has increased gradually over the previous 10 years and in 2009 there was a 36.13% increase in the incidence rate as compared to the previous five-year average (Figure 1). In 2009, 210 cases were reported, all confirmed. The number of cases of “meningitis, other” shows little difference by season when averaged over several years but there did seem to be increased incidence in the late spring of 2009 (Figure 2). The majority of cases were sporadic in 2009. One case of tuberculosis (TB) meningitis was linked to a known TB case.

Figure 3. Meningitis, Other (Bacterial, Cryptococcal, or Mycotic) Disease Incidence Rate by Age Group, Florida, 2009



The highest incidence rates continue to occur in infants under one year (Figure 3). Immuno-suppressed or immuno-compromised people in the older age groups may also be at risk for infection. Males continue to have a higher incidence than females (1.42 per 100,000 and 0.82 per 100,000, respectively).

“Meningitis, other” cases were reported by 34 of 67 counties in Florida. Counties with the highest incidence rates were widely scattered.

Table 1. Etiologic Agents Identified in Cases Reported as Meningitis, Other, Florida, 2003-2009

	Year						
Organism	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Bacteria	**72**	**63**	**72**	**91**	**72**	**128**	**144**
Acinetobacter sp.	2	0	2	4	0	4	3
Escherichia coli	4	8	6	9	10	8	10
Enterococcus	4	6	5	4	2	5	7
Haemophilus influenzae	2	0	2	0	0	0	1
Klebsiella sp.	3	1	0	2	7	8	6
Pseudomonas sp.	2	1	4	0	5	5	1
Salmonella sp.	3	1	1	4	1	3	5
Staphylococcus aureus	13	13	16	24	15	22	18
Staphylococcus epidermidis	0	1	2	1	2	7	2
Staphylococcus hominis	0	0	0	2	1	2	1
Other Staphylococcal sp.	11	5	10	18	8	16	11
Beta Hemolytic *Streptococcus*							
Group A	3	1	2	2	0	1	2
Group B	2	6	4	0	1	13	23
Alpha Hemolytic *Streptococcus*							
Streptococcus pneumoniae	4	1	1	0	0	9	29
Streptococcus Viridans Group	8	9	5	6	5	5	7
Other Streptococcal sp.	1	1	1	3	0	5	0
Other bacterial species	8	8	9	11	15	15	14
Non-specific bacterial species	2	1	2	1	0	0	3
Mycotic	**37**	**48**	**45**	**68**	**57**	**66**	**64**
Cryptococcal sp.	35	48	45	65	55	61	62
Other and non-specific mycotic results	2	0	0	3	2	5	2
Other	**2**	**1**	**4**	**2**	**0**	**0**	**0**
Unknown	**5**	**3**	**0**	**0**	**0**	**2**	**0**

Prevention

Practicing good personal hygiene will reduce the chances of a bacterial, cryptococcal, or fungal infection.

References

American Academy of Pediatrics. *Red Book 2003: Report of the Committee on Infectious Diseases*, 26th ed., Elk Grove Village, Illinois, American Academy of Pediatrics Press, 2003.

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J.H. Price, J. de Louvois, M. R. Workman, "Antibiotics for *Salmonella* meningitis in children," *Journal of Antimicrobial Chemotherapy*, Vol. 46, 2000, pp. 653-655.

A. Varaiya, K. Saraswathi, U. Tendolkar, A. De, S. Shah, M. Mathur, "*Salmonella enteritidis* meningitis – A case report," *Indian Journal of Medical Microbiology*, Vol. 19. 2001, pp. 151-152.

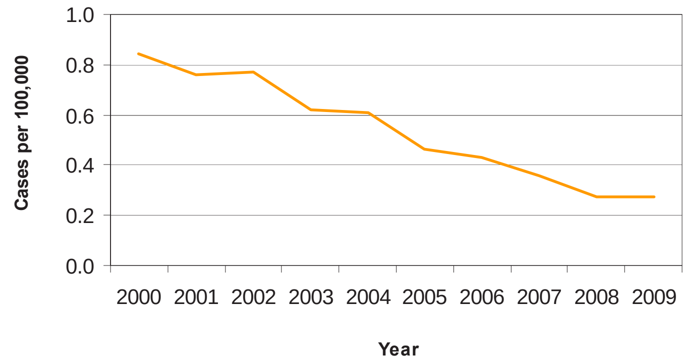
A. Zuger, E. Louie, R.S. Holzman, M.S. Simberkoff, J.J. Rahal, "*Cryptococcal* disease in patients with the acquired immunodeficiency syndrome. Diagnostic features and outcome of treatment," *Annals of Internal Medicine*, Vol. 104, 1986, pp. 234-40.

A. Lerche, N. Rasmussen, J.H. Wandall, V.A. Bohr, "*Staphylococcus aureus* meningitis: a review of 28 community acquired cases," *Scandinavian Journal of Infectious Diseases*, Vol. 27, No. 6, 1995, pp. 569-573.

Meningococcal Disease

Meningococcal Disease: Crude Data	
Number of Cases	52
2009 incidence rate per 100,000	0.28
% change from average 5-year (2004-2008) incidence rate	-34.76
Age (yrs)	
Mean	37.67
Median	31.5
Min-Max	<1 - 91

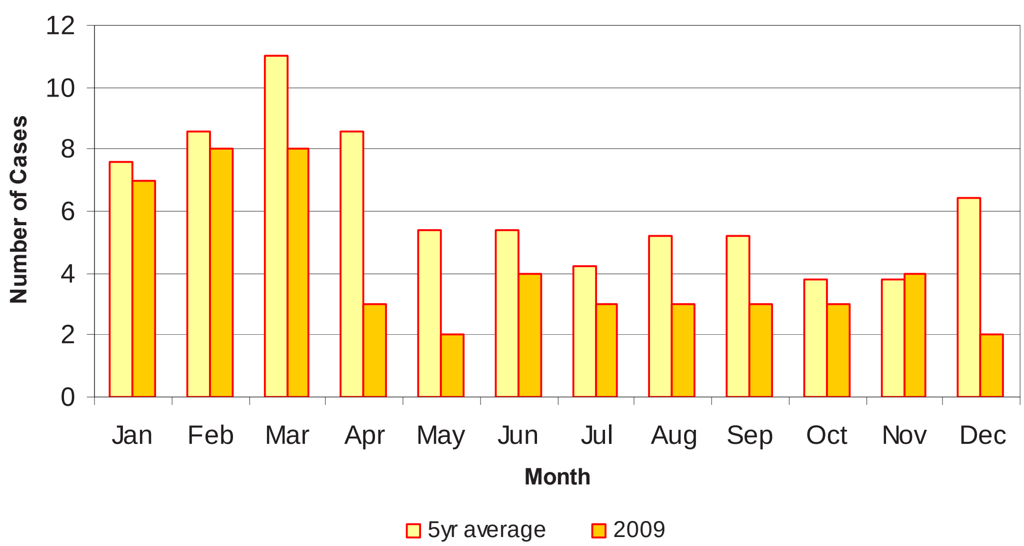
Figure 1. Meningococcal Disease Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

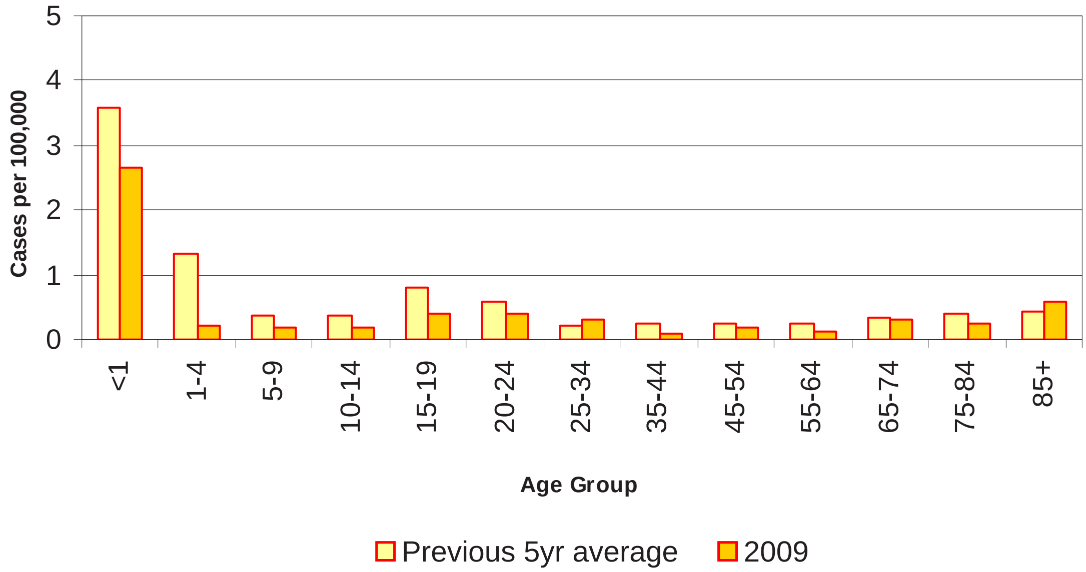
Meningococcal disease includes both meningitis and septicemia due to the bacteria *Neisseria meningitidis*. There are many different serogroups of *Neisseria meningitidis* around the world. The common ones in the United States include A, B, C, W-135, and Y. The reported incidence rate for meningococcal disease has declined gradually over the previous 10 years, and in 2009 was less than half of what it was 10 years ago (Figure 1). In 2009, there was a 34.8% decrease in comparison to the average incidence from 2004 to 2008. In 2009, 52 cases were reported, and all were confirmed. There is a general seasonal increase in cases in early winter and late spring (Figure 2). This may be due in part to social gatherings as well as staying indoors in the fall and winter months. There were 14 cases reported as outbreak-related in 2009; 13 cases were related to a laboratory-confirmed cluster of serogroup W-135 in southeast Florida and one case related to transmission among family members. There were seven cases that resulted in death.

Figure 2. Meningococcal Disease Cases by Month of Onset, Florida, 2009



The highest incidence rates continue to occur in infants less than one year. There are no vaccines approved for use in those less than two years old. In 2009, the incidence rates were lower than or equal to the previous five-year average in all age groups except those 25 to 34 and those over 85 years (Figure 3). Forty-nine of the 52 cases had specimens submitted to the Bureau of Laboratories for serogrouping (Table 1).

Figure 3. Meningococcal Disease Incidence Rate by Age Group, Florida, 2009



Meningococcal disease was reported in 22 of 67 counties in Florida. Counties in central and southeastern Florida reported the highest incidence rates.

Table 1. Cases of Meningococcal Disease by Serogroup, Florida 2009

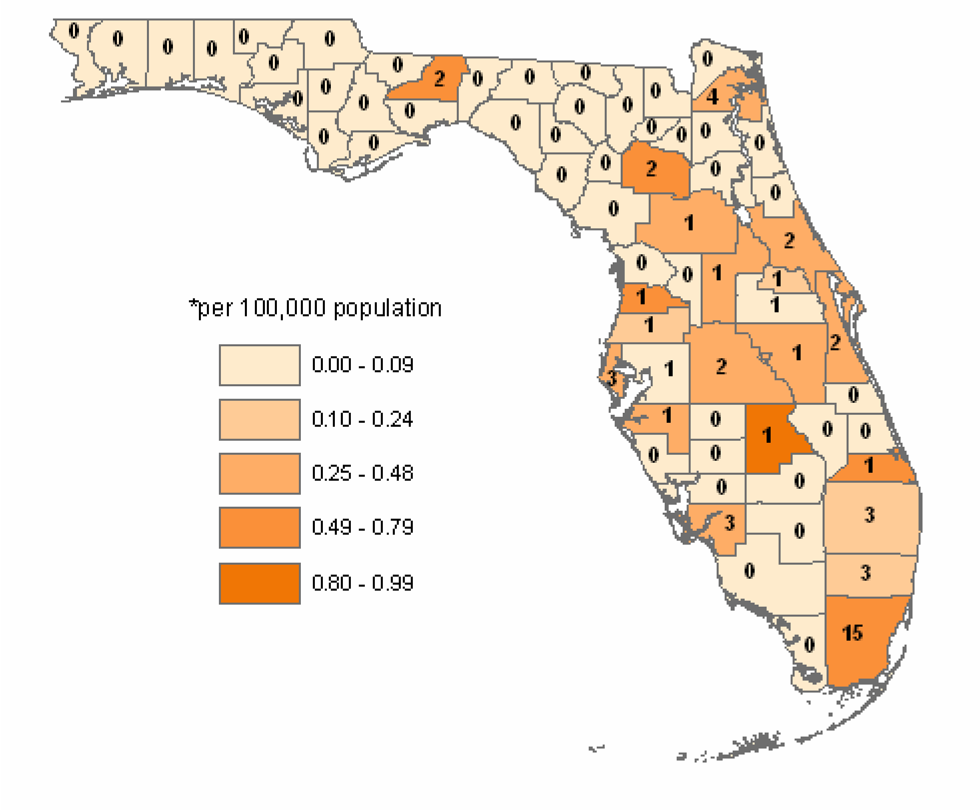
Serogroup	Number of Cases
Group A	0
Group B	13
Group C	6
Group Y	12
Group W-135	15
Non-Viable	3
Unknown	3
Total	52

Prevention

Meningococcal vaccines are available to reduce the likelihood of contracting *Neisseria meningitidis*. Two vaccines, licensed in 1978 and 2005, each provide protection against four serogroups (A, C, Y, and W-135). Droplet precautions should be implemented if the individual is hospitalized. Anyone who has close contact with an infected person's respiratory or oral secretions (i.e., kissing, sharing utensils or drinks, exposure to respiratory secretions during healthcare or resuscitation) or close household or social contact should receive antibiotic prophylaxis with an approved regimen (most often used are ciprofloxacin and rifampin).

Please see "Section 4: Summary of Antimicrobial Resistance Surveillance" for additional information on MeningNet, an enhanced meningococcal surveillance system used to monitor antimicrobial susceptibility.

Meningococcal Disease Incidence Rate* by County, Florida, 2009



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Centers for Disease Control and Prevention, "Prevention and Control of Meningococcal Disease," *MMWR*, Vol. 54, No. RR07, 2005, pp.1-21.

Centers for Disease Control and Prevention, "Control and prevention of meningococcal disease and control and prevention of serogroup C meningococcal disease: evaluation and management of suspected outbreaks; recommendations of the Advisory Committee on Immunization Practices (ACIP)," *MMWR*, Vol. 46, No. RR-5, 1997, pp. 1-21.

Centers for Disease Control and Prevention, "Meningococcal disease and college students: recommendations of the Advisory Committee on Immunization Practices (ACIP)," *MMWR*, Vol. 49, No. RR-7, 2000, pp. 11-20.

Doyle TJ, Mejia-Echeverry A, Fiorella P, Leguen F, Livengood J, Kay R, et al. Cluster of serogroup W135 meningococci, southeastern Florida, 2008–2009. *Emerg Infect Dis* 2010 Jan. Available at http://www.cdc.gov/EID/content/16/1/113.htm

Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) website at http://www.cdc.gov/ncidod/dbmd/diseaseinfo/meningococcal_g.htm and http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/mening.pdf.

Mercury Poisoning, 2008-2009

Description
Mercury is a naturally occurring element. Its distribution in the environment is the result of both natural and man-made processes. There are three categories of mercury with unique characteristics and unique potential health effects: elemental mercury, organic mercury compounds, and inorganic mercury compounds. The organic mercury compound methyl mercury is the most likely to cause adverse health effects in the general population.

Common sources of mercury include:
- Elemental or metallic mercury – Broken mercury thermometers, blood pressure monitors, fluorescent light bulbs, dental amalgam, neon signs, outdoor lighting, cameras, electrical switches, batteries, and some folk medicines
- Organic mercury compounds – Certain freshwater and saltwater fish, and marine mammals. Ethyl mercury and methyl mercury are used medically as fungicides and antibacterials. Thimerosal (merthiolate) may be included in vaccines.
- Inorganic mercury compounds – Sometimes used in skin lightening creams and as antiseptic creams and ointments, as well as in folk medicines. Used in preserving solutions for biological specimens. Used as a reagent in analytical chemistry reactions, photography, and metal etching solutions.

The clinical presentation of mercury poisoning varies depending on the form of mercury (elemental, organic, or inorganic) as well as the route of exposure and the dose. Any organ system may be affected. For elemental mercury, acute toxicity might result in fever, fatigue, and clinical signs of pneumonitis. For inorganic mercury, symptoms might include profuse vomiting and diarrhea that is often bloody, followed by hypovolemic shock, oliguric (decreased urine production) renal failure, and possibly death. Delayed toxicity symptoms (more than 1 month) are typical of organic mercury poisoning and usually involve the central nervous system. These symptoms might include paresthesias, headaches, ataxia, dysarthria (motor speech disorder), visual field constriction, blindness, and hearing impairment.

Disease Abstract
Mercury poisoning may be diagnosed by laboratory testing. Elevated levels of mercury are defined as more than10 micrograms per liter (μg/L) of urine, more than 10 micrograms per liter (μg/L) of whole blood, or more than 5 micrograms per gram (μg/g) of hair. However, urine mercury levels are not useful in evaluating organic mercury poisonings.

For analysis, cases with exposures occurring in 2008 or 2009 were included. The case definition used for mercury poisoning reported during 2008 requires only laboratory confirmation to classify a case as confirmed. The new case definition classifies all cases reported in 2009 based on clinical illness, laboratory tests, exposure history, or epidemiologic linkage.

There were 81 confirmed cases of mercury poisoning reported during 2008 and 2009. There were fewer reported cases of mercury poisoning during 2009 (14) as compared to 2008 (67). One of the main reasons for the decrease in cases was the change in case definition, which is more stringent and requires clinical illness. Potential sources of mercury exposure were recorded during 2009 only. Among the 14 cases reported in 2009, 13 had eaten fish within a month of report. Along with fish consumption, one case had exposure to a broken thermometer and another reported exposure to dental amalgam.

For the years 2008 and 2009, a majority of the confirmed cases were reported from Miami-Dade (N=31, 38.3%), Palm Beach (N=20, 24.7%), and Broward (N=16, 19.8%) counties. Cases were predominantly male (53, 65.4%).

The majority of mercury-poisoning cases were reported among those 35 to 64 years of age (N=64, 79%) and those 65 years and older (N=11, 14%) (Figure 1). Cases ranged from four months to 86 years old, the mean and median case age was 52 and 50, respectively.

About half of the reported cases of mercury poisoning were among whites (both Hispanic and non-Hispanic) while 40% were reported with unknown race and ethnicity. Hispanic ethnicity was reported among 12.5% (N=6) of the cases with known race and ethnicity (Figure 2).

Figure 1. Mercury Poisoning Cases by Age Group, Florida, 2008-2009

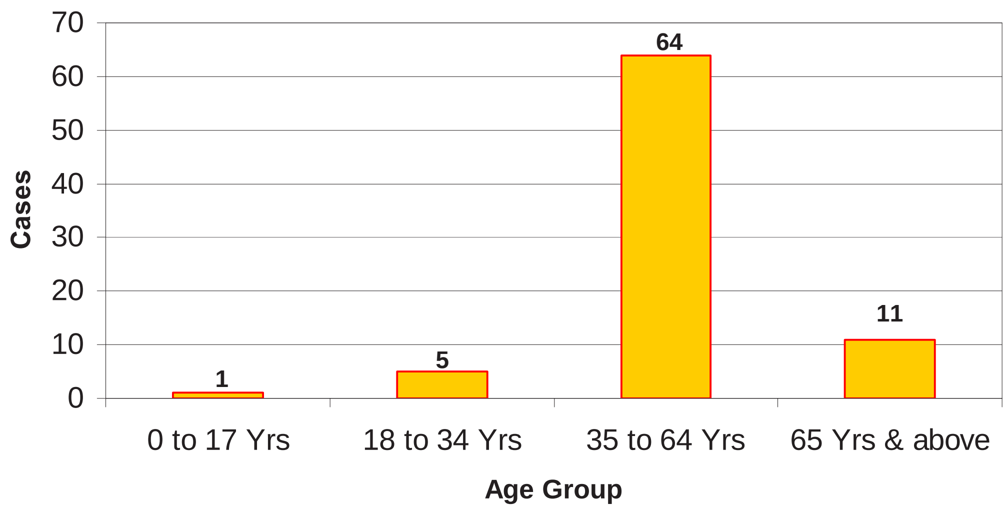
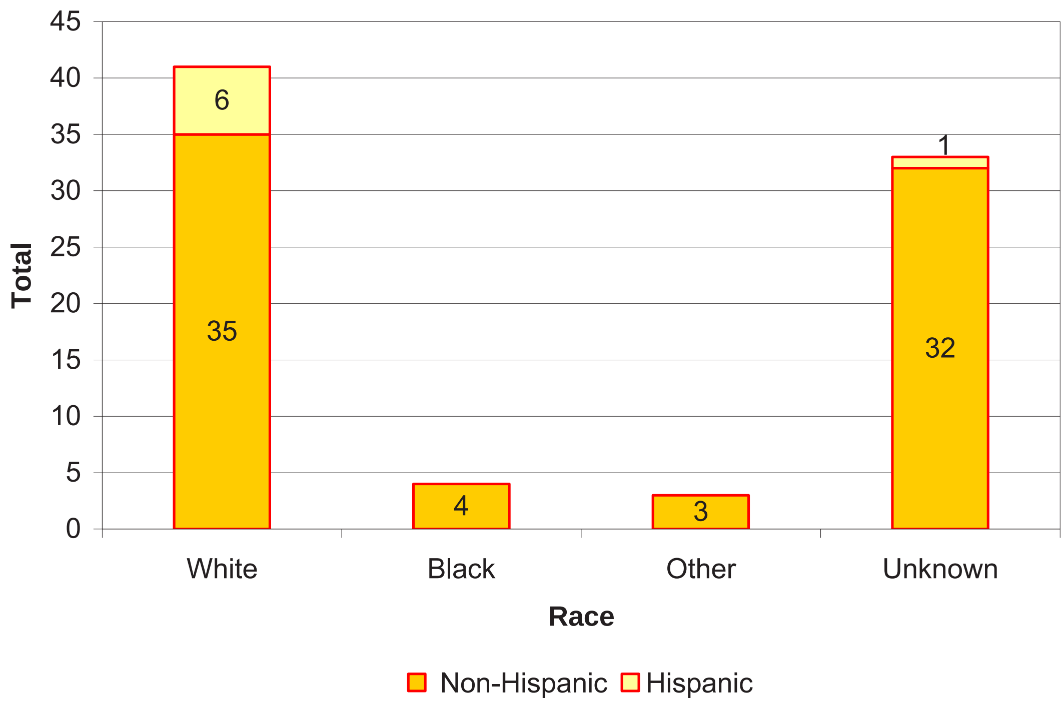


Figure 2. Mercury Poisoning Cases by Race & Ethinicity, Florida, 2008-2009



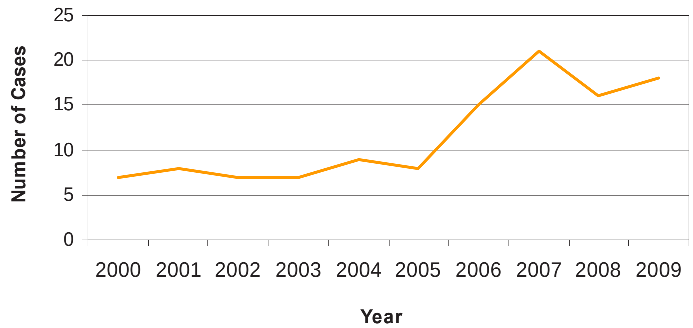
Prevention
The Florida Department of Health, Division of Environmental Health provides health advisories related to fish consumption in Florida. The *Florida Commercial Fish Wallet Card for Women of Child-Bearing Age* has been developed to educate all consumers about mercury levels found in fish commonly available in Florida (both commercial and recreational fish species) and their safe consumption levels during pregnancy.

Additional Resources
The Chemical Disease Surveillance Program collects mercury poisoning data as a part of our disease reporting system. For more information about the program please visit http://www.myfloridaeh.com/medicine/Chemical_Surveillance/index.html.

Mumps

Mumps: Crude Data	
Number of Cases	18
2009 incidence rate per 100,000	0.10
% change from average 5 year (2004-2008) reported cases	30.43
Age (yrs)	
Mean	30.6
Median	23.5
Min-Max	1 - 75

Figure 1. Mumps Cases by Year Reported, Florida, 2000-2009

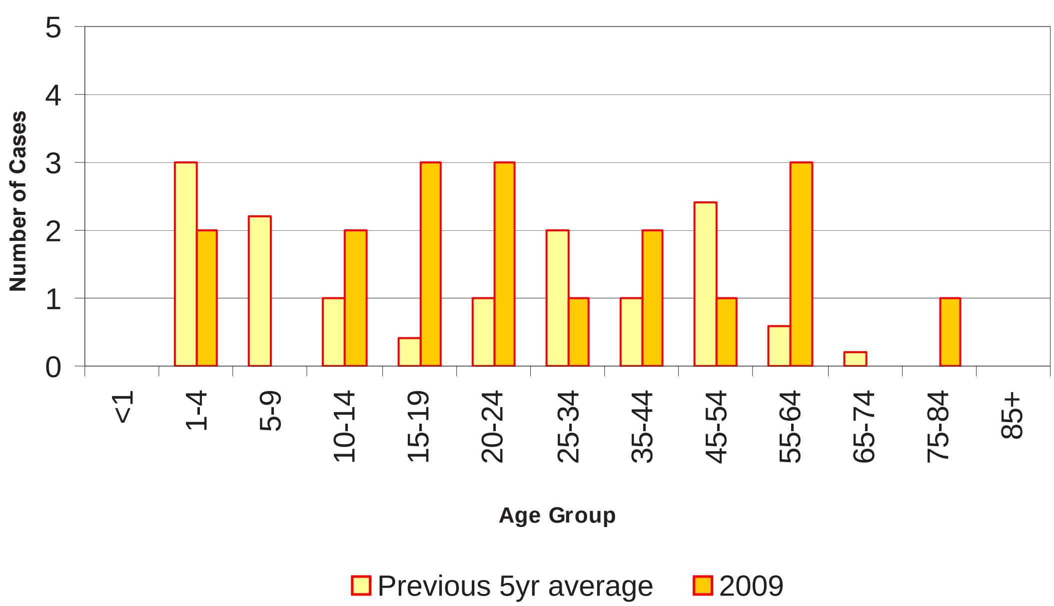


Disease Abstract

The 2009 statewide incidence rate for mumps was 0.10 per 100,000 population. Cases in 2009 ranged from 1 to 75 years of age (Figure 2) and all 18 were confirmed cases. Three cases were acquired outside of the U.S. Three of the cases were hospitalized. Eight of the cases had received vaccine, six had no history of vaccine, and four had unknown immunization status.

The 18 confirmed cases represent an increase from 12 confirmed cases in 2008. Incidence of mumps was relatively unchanged from 2000 to 2005. However, in 2006, there was a significant increase in cases in the U.S., especially in the college-age population. This trend continued in 2008 with an increase of 33.33% over the average number of cases reported in the previous five years, but slowed for 2009 when there was an increase of 30.6% over the previous five-year average.

Figure 2. Mumps Cases by Age Group, Florida, 2009



Prevention

Vaccination with two doses of mumps (preferably MMR) vaccine is recommended. The first dose of MMR should be given at 12 months of age and the second dose at kindergarten entrance. Proof of MMR is required for entry and attendance in childcare facilities, family daycare homes, and kindergarten through twelfth grade. Many colleges in Florida also require mumps vaccination for entry. After the 2006 multi-state mumps outbreak in young adults, two doses of mumps vaccine are now recommended for all children and young adults.

References

Centers for Disease Control and Prevention, *Manual for the Surveillance of Vaccine-Preventable Diseases*, 4th ed., 2008, Chapter 9.

Additional Resources

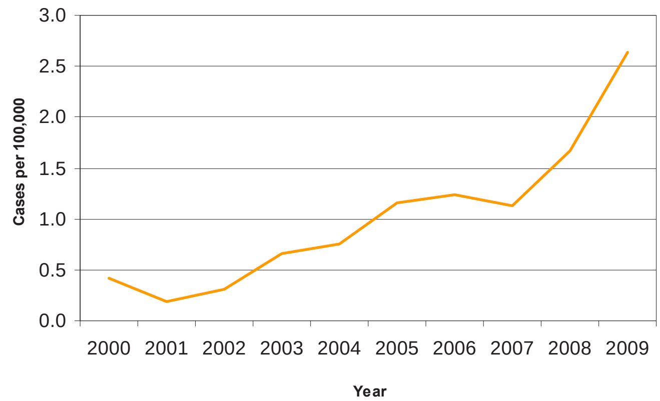
Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/vaccines/vpd-vac/mumps/default.htm#clinical.

Recommended immunization schedule is available at http://www.cdc.gov/vaccines/recs/schedules/default.htm.

Pertussis

Pertussis: Crude Data	
Number of Cases	497
2009 incidence rate per 100,000	2.64
% change from average 5-year (2004-2008) incidence rate	121.37
Age (yrs)	
Mean	15.41
Median	9
Min-Max	<1 - 86

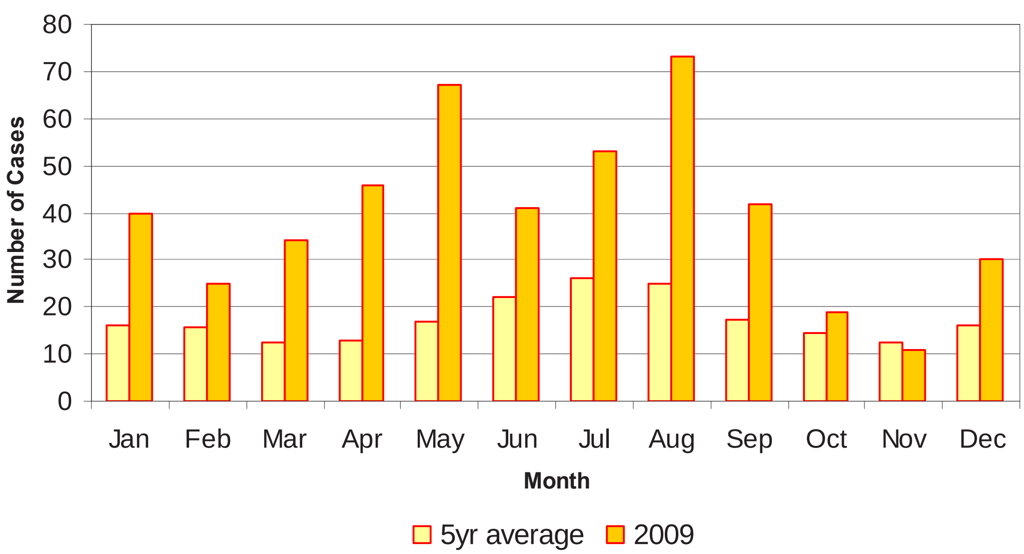
Figure 1. Pertussis Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract
Pertussis is a severe respiratory disease caused by *Bordetella pertussis*. It is also known as whooping cough.

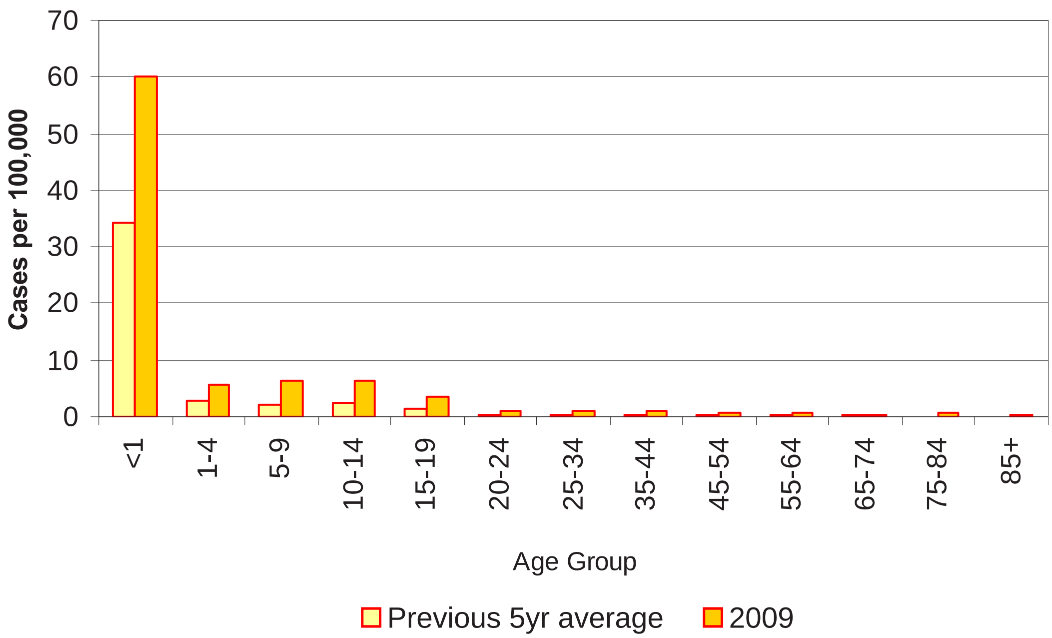
Disease trends in Florida, and nationwide, indicate that pertussis rates have increased steadily since 2001 (Figure 1). Case numbers went from 30 cases in 2001 (22 confirmed and 8 probable) to a peak of 497 cases in 2009 (376 confirmed and 121 probable). In the previous five years, most cases occurred during the summer months, and a similar trend was observed in 2009 (Figure 2). In the previous years, pertussis cases were consistent between gender and race. In 2009, rates were slightly higher in whites than non-whites and females than males.

Figure 2. Pertussis Cases by Month of Onset, Florida, 2009



As in the previous five years, most pertussis cases were identified in infants and young children. Of the 497 reported cases in 2009, 137 were reported in infants less than 12 months of age, too young to have completed the vaccination series (Figure 3). Of the reported cases, 102 were hospitalized, with one case developing acute encephalopathy. No deaths occurred in confirmed cases of pertussis in 2009. One death occurred in a probable case of a 69-year-old with negative culture and PCR results and positive clinical symptoms. There was no record of vaccination for 125 cases; of these, 32 (25%) refused vaccination. Two hundred and forty (48%) cases throughout 17 counties were outbreak associated.

Figure 3. Pertussis Incidence Rate by Age Group, Florida, 2009

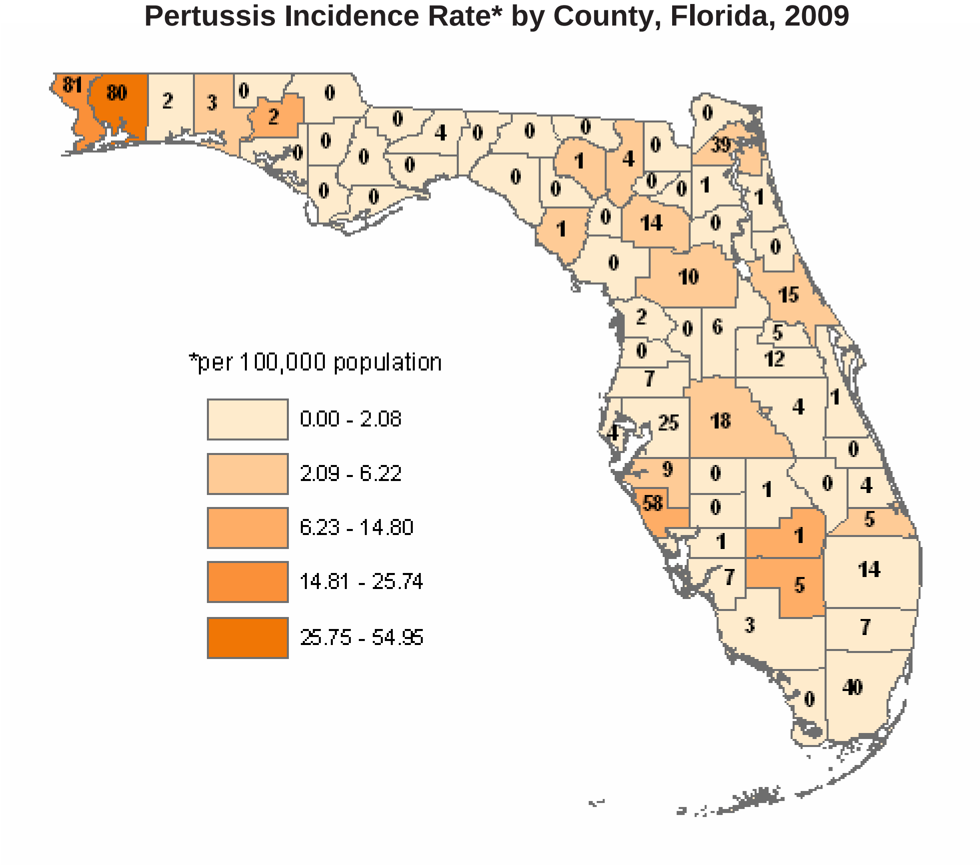


Pertussis was reported in 38 of 67 counties in Florida. Counties in the northeast and southwest regions of Florida reported the highest incidence rates.

Prevention

Currently, only acellular pertussis vaccines combined with diphtheria and tetanus toxoids (DTaP and Tdap) are available in the U.S. The five DTaP doses should be administered to children at two months, four months, six months, 15 to 18 months, and four to six years of age. This vaccine is also available in combination with other childhood vaccines. The increase in disease in the early teenage years indicates that immunity decreases over time. Vaccine recommendations now include one dose of Tdap vaccine to be given between 10 and 64 years of age. As of school year 2009-2010, Tdap vaccine is required for children entering seventh grade. Post-exposure antibiotic and vaccine prophylaxis of close contacts of a case are the major outbreak control measures to prevent pertussis transmission.

Pertussis Incidence Rate* by County, Florida, 2009



References

Centers for Disease Control and Prevention, *Manual for the Surveillance of Vaccine-Preventable Diseases*, 4th ed., 2008, Chapter 10.

Centers for Disease Control and Prevention, *Guidelines for the Control of Pertussis Outbreaks*. Centers for Disease Control and Prevention: Atlanta, GA, 2000. Web site: http://www.cdc.gov/vaccines/pubs/pertussis-guide/guide.htm

Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at www.cdc.gov/vaccines/vpd-vac/pertussis/default.htm.

Recommended immunization schedule is available at: http://www.cdc.gov/vaccines/recs/schedules/default.htm.

Pesticide Poisoning, 2007-2008

Description

Acute onset of pesticide-related illness or injury usually occurs within 24 to 48 hours after the exposure. Sub-acute illness or injury due to pesticide exposure also occurs, with symptoms appearing within 30 days of exposure. Health effects of acute and sub-acute pesticide poisoning include rash, hives, or blisters, redness of the eyes, blurred vision, or systemic signs and symptoms (e.g., respiratory, gastrointestinal, and neurological). Sub-chronic pesticide poisoning illness or injury may occur after repeated exposures over longer periods, usually 30 to 90 days. Chronic effects are also possible after long-term, prolonged and repeated exposures to pesticide products. Chronic conditions may be cancers or developmental, neurological, or reproductive disorders.

Pesticide exposures may be occupational or non-occupational. After the initial report, follow-up interviews of exposed people or their proxies are conducted to obtain details about exposure and health effects. Investigation reports from the Department of Agriculture and Consumer Services and medical and laboratory reports are also used to complete and classify cases.

The FDOH Chemical Disease Surveillance Program (CDSP) uses a standard protocol, based on National Institute of Occupational Safety and Health (NIOSH) surveillance guidelines for classifying cases. Incorporation of Florida Poison Center Information Network (FPCIN) and Emergency Department (ED) chief-complaint data into the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) has provided an additional tool for trained CHD users to access clinical pesticide poisoning reports.

Disease Abstract

From 1998 through 2008, there were 2,539 cases of pesticide poisoning reported in Florida, of which 410 were identified as work related. NIOSH has been collecting standardized information about acute occupational pesticide exposure from selected states since 1998 under the Sentinel Event Notification System for Occupational Risk (SENSOR) program. FDOH annually reports summarized case data (without personal identifiers) to the SENSOR program.

In Florida, there were 449 cases of acute pesticide poisoning reported during 2007 and 455 reported during 2008 (Figure 1). The increase in cases seen since 2006 is related to additional cases identified because of direct access to FPICN data by the CDSP, which has led to more complete case ascertainment. Case distribution is not uniform throughout the year, with more cases reported during the summer months (Figure 2).

Figure 1. Number of Pesticide Poisoning Cases by Year, Florida 1998-2008

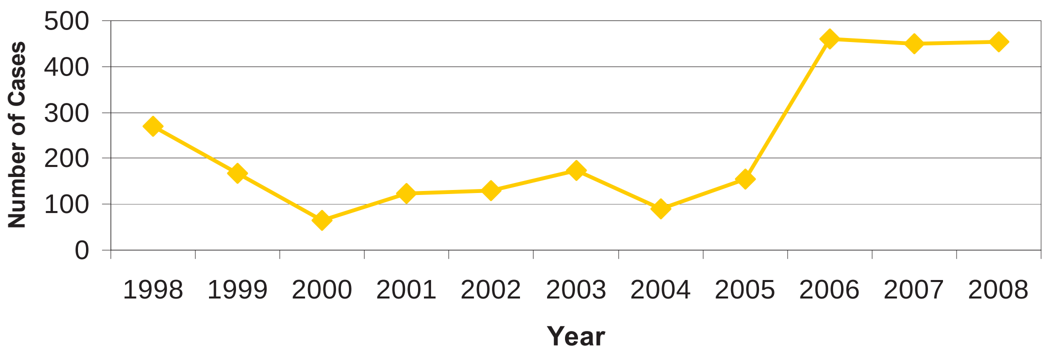
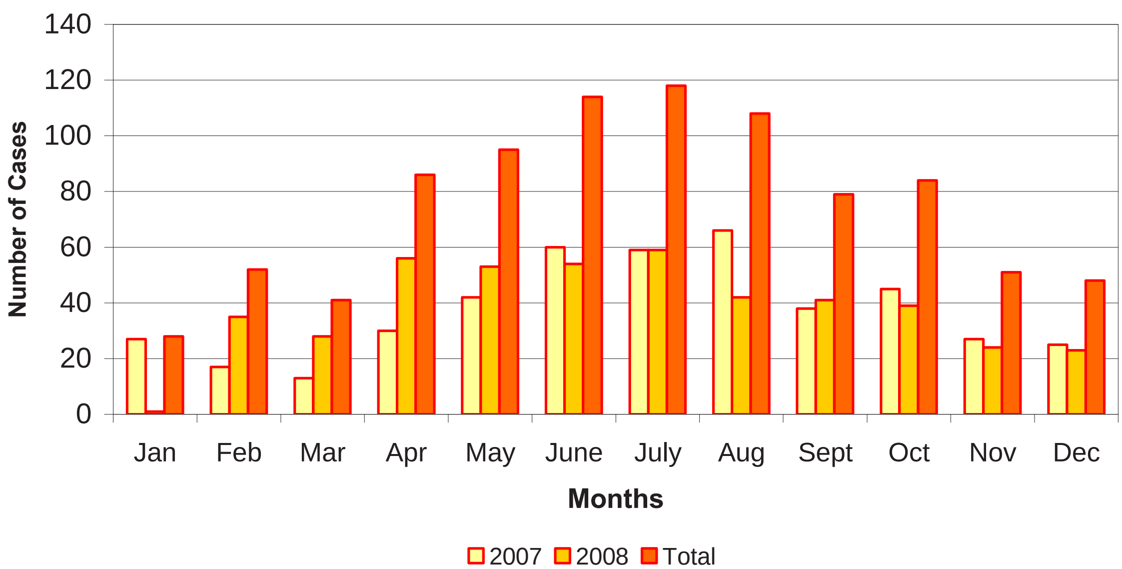
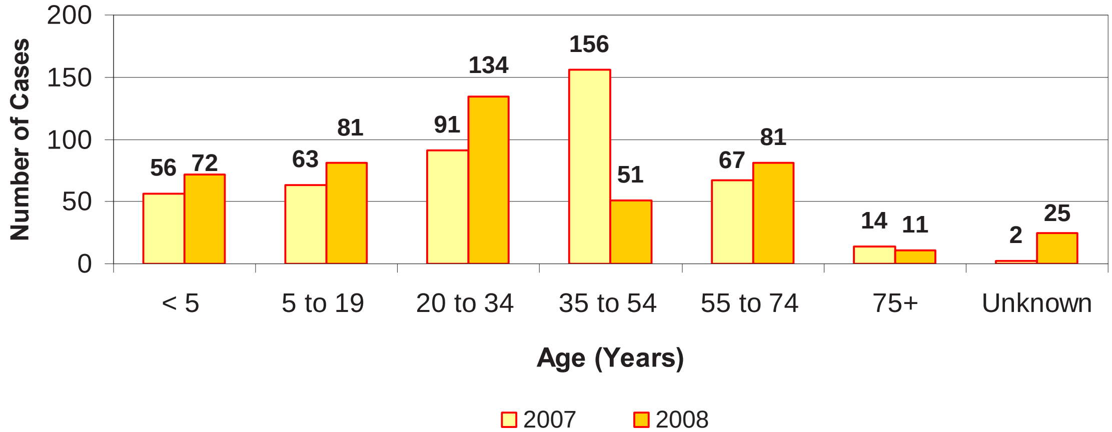


Figure 2. Pesticide Poisoning Cases by Month of Exposure, FL 2007-2008



The majority of the cases were classified as suspected during 2007 (361, 80%) and 2008 (316, 69%). The FPICN has become the major reporting source since 2006. In 2007, 427 (95%) cases were identified through the FPICN. During 2008, self-reports (114, 25%) and friends or relatives (103, 22.64%) were also frequent reporting sources in addition to the FPICN (147, 32%). Cases ranged from less than one year of age to 95 years, with 64 and 37 as the mean and median ages, respectively (Figure 3). The majority of cases were in people 35 to 54 years old (35% in 2007; 29% in 2008). There were slightly more males reported with pesticide poisoning (52%) than females.

Figure 3. Pesticide Poisoning Cases by Age Group, Florida 2007-2008



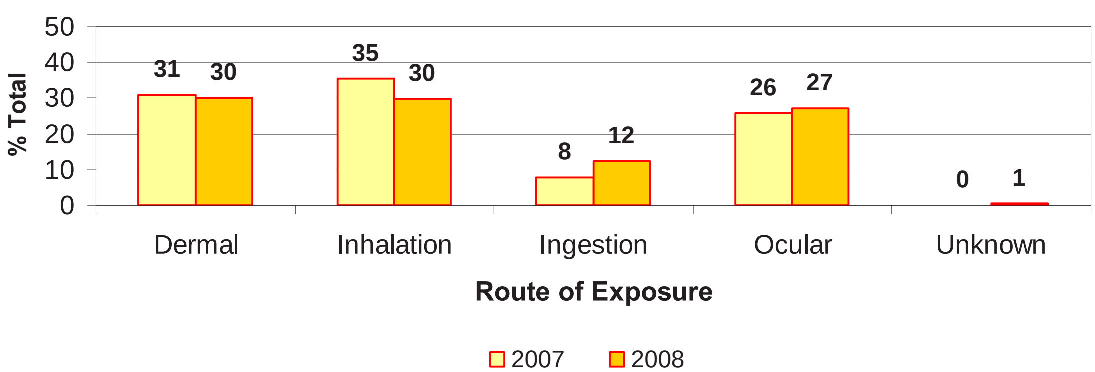
To meet the disease reporting criteria for pesticide poisoning, patients must report two or more acute pesticide-related health effects. The largest number of patients reported the following health effects during 2007 and 2008:

- dermal (21% in 2007; 18% in 2008);
- ocular (22% in 2007; 23% in 2008);
- respiratory (16% in 2007; 19% in 2008);
- gastrointestinal (18% in 2007; 15% in 2008); and
- neurological (17% in 2007; 15% in 2008) health effects.

Most cases reported during 2007 (79%) and 2008 (83%) were categorized as low severity. Only one death was reported as pesticide-related during 2008 and none were reported in 2007.

Routes of exposure for pesticide poisonings are shown in Figure 4. During 2007 and 2008, inhalation, dermal, and ocular were the most frequent routes of exposure.

Figure 4. Pesticide-Related Cases by Route of Exposure, Florida 2007-2008



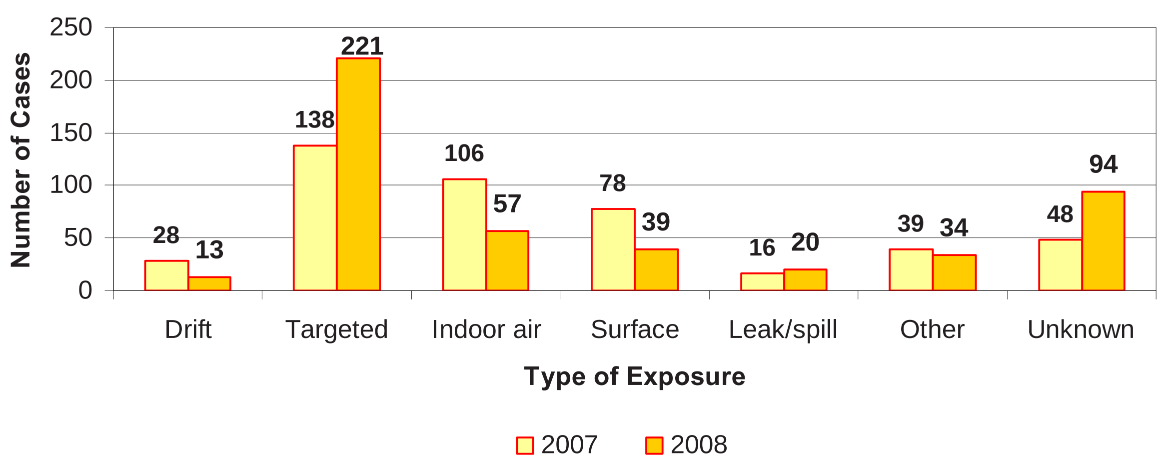
Most of the cases reported during 2007 (406, 90%) and 2008 (230, 50%) occurred in the home. Other sites of exposure reported include farms, schools, private vehicles, and service establishments. The majority reported that they were applying pesticides at the time of exposure (Table 1). Less than 5% of reported cases were at work at the time of exposure but were not applying pesticides.

Table 1. Activity at the Time of Pesticide Exposure for Reported Cases of Pesticide Poisoning, Florida 2007-2008

Activity at the time of exposure	2007	%	2008	%
Applying pesticides	203	45.21	157	34.51
Mixing or loading	3	0.67	2	0.44
Transport or disposal	0	0.00	1	0.22
Any combination of above three	0	0.00	5	1.10
Emergency response	0	0.00	4	0.88
Routine work/not application	14	3.12	19	4.18
Routine indoor living	94	20.94	73	16.04
Routine outdoor living	40	8.91	15	3.30
Not applicable	2	0.45	27	5.93
Unknown	93	20.71	152	33.41
Total	**449**	**100.00**	**455**	**100.00**

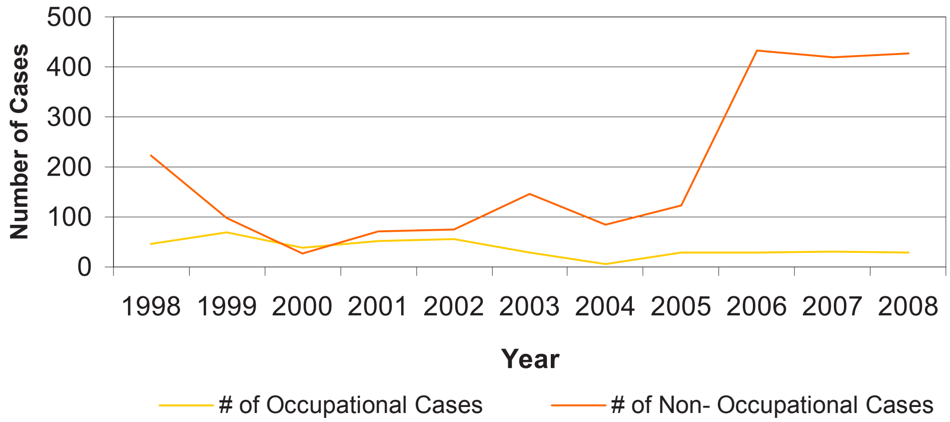
Applications of a pesticide material released at the intended location (target site) and not carried from that location to another area by air are considered to be targeted applications. Pesticide exposure occurred during targeted application for 138 cases in 2007 (30%) and 221 cases in 2008 (46%) (Figure 5). Pesticide drift accounted for only 6% and 3% of cases during 2007 and 2008, respectively.

Figure 5. Pesticide-Related Cases
by Type of Exposure, Florida 2007-2008



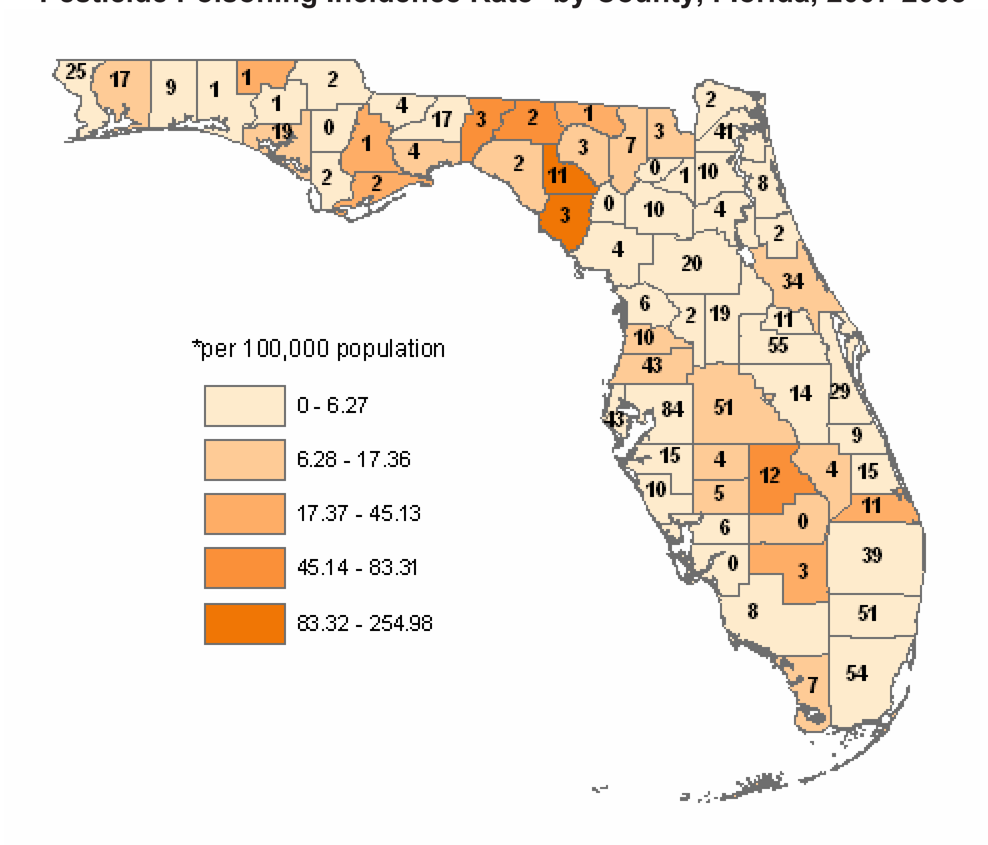
Direct access to FPICN data has led to the identification of more non-occupational cases, but not more occupational ones. During 2007 and 2008, 30 (6%) and 28 (6%) cases were occupational (Figure 6).

Figure 6. Pesticide Poisoning Cases by Exposure Category, Florida 2007-2008



The following map shows the distribution of reported pesticide poisoning cases by county of residence.

Pesticide Poisoning Incidence Rate* by County, Florida, 2007-2008



Prevention
The CDSP analyzes the data collected on pesticide exposures and related illnesses to determine risk factors, identify populations at risk, identify areas for further investigation, and determine prevention and intervention activities that are needed to prevent further exposures. The program intervenes through education and outreach activities. The program also makes recommendations for regulatory actions and/or changes.

To prevent exposure to pesticides, use the following measures.

- Always read the label first and strictly follow the directions.
- Use pesticides safely by not using products for pests that are not indicated on the label and not using more pesticide than directed by the label.
- Use protective measures when handling pesticides as directed by the label including impermeable gloves, long pants, and long-sleeve shirts.
- Change clothes after applying pesticides.
- Wash your hands immediately after applying pesticides.
- Remove children, their toys, and pets from the area to be sprayed and do not allow them to return until the pesticide has dried or as specified by label instructions.

Educational materials are available in three languages (English, Spanish, and Haitian-Creole) on the program website listed below to promote safe practices when using pesticides at work and at home.

Additional Resources
CDSP collects pesticide-related illness and injury (or pesticide poisoning) data as a part of our disease reporting system. For more information about the program, please visit http://www.myfloridaeh.com/medicine/Chemical_Surveillance/index.html.

FDOH has been conducting surveillance on acute pesticide-related illnesses and injuries since 1998. Details about pesticide surveillance activities are available at http://www.doh.state.fl.us/environment/medicine/pesticide/index.html.

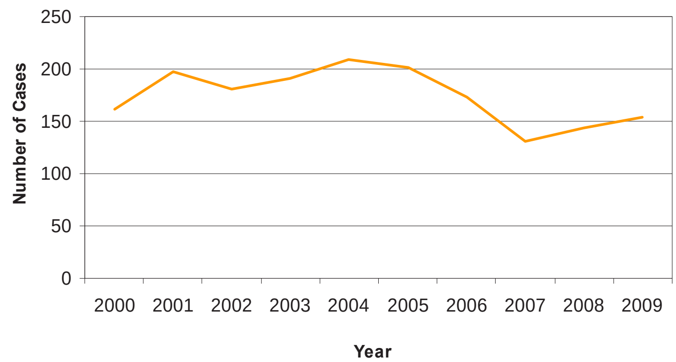
The case definition for pesticide-related illness and injury is available at http://www.doh.state.fl.us/environment/medicine/pesticide/Professional-Resources.html.

CDC/NIOSH website for Pesticide Illness and Injury Surveillance can be found at http://www.cdc.gov/niosh/topics/pesticides/.

Rabies, Animal

Rabies, Animal: Crude Data	
Number of Cases	154
2009 incidence rate per 100,000	NA
% change from average 5-year (2004-2008) reported cases	-10.5
Age (yrs)	
Mean	NA
Median	NA
Min-Max	NA

Figure 1. Animal Rabies by Year Reported, Florida, 2000-2009



Disease Abstract

From 2000 through 2009, there was one human rabies case in Florida. That infection occurred when an adult male was bitten by a dog in Haiti in 2004 and became ill after returning to Florida. A canine variant strain of rabies then circulating in Haiti was isolated from the patient. In 2009, rabies post-exposure treatment was recommended for 1,913 people in Florida; there were no human cases reported.

Rabies is endemic in the raccoon and bat populations of Florida, and frequently spills out from raccoons into other animal species such as foxes and cats. Laboratory testing for animal rabies is only done when animals expose humans or domestic animals, and thus the data do not necessarily correlate with the true prevalence of rabies by animal species in Florida. Among the 3,003 animals tested at the Bureau of Laboratories (BOL) in 2009, there were 154 confirmed rabid animals, representing a 10% decrease from the previous five-year average but a 7% increase from 2008. After a decrease in reported cases in 2007, apparently due to decreases in the raccoon population because of raccoon distemper outbreaks statewide, overall case numbers seem to be increasing to more typical levels (20-year average is 183 cases per year). No cases were associated with domestic animal rabies outbreaks. In 2009, rabid animals were found in 46 of 67 counties in Florida, with the highest activity concentrated in the central part of the state. Three counties reported 10 or more cases: Leon (12); Marion (10); and Orange (10) (see map). Cases were reported in each month of the year, with most activity in summer: July (18), August (20), September (18), followed by a smaller winter peak: January (14), February (15), and March (15). It is typical to see summer and winter increases, but these peaks in activity usually occur over one- to two-month intervals rather than extending over a three-month period. Highest numbers of positive raccoon rabies cases were reported in August (13), January (12), and March, (12). July, May, and September had the most rabid fox reports, with five, four, and four cases, respectively. Rabid bat cases typically peak in late summer. In 2009 the most bat rabies cases were identified in July (5) and August (4). Rabid cats were identified in all months of the year except March, May, and August.

Raccoons once again accounted for the majority of cases (92, 60%), followed by bats (23, 15%), foxes (21, 14%), and cats (11, 7%). One dog was found to be rabid in 2009, although over 700 were tested. Since 1997, rabid cats have continued to outnumber rabid dogs, although rabies vaccination is compulsory for both. All positive cats were either not vaccinated for rabies, were significantly overdue for vaccination, or had unknown rabies vaccination history. All positive cats were feral or pets allowed to roam outdoors. In 2009, one horse was found to be rabid, and two bobcats, two skunks, and one otter were positive for rabies. See the “Outbreak Section” for specific accounts of multi-person exposures to rabid animals.

Molecular sequencing of select samples by Kansas State Rabies Lab confirmed 11 of the terrestrial animals (three raccoons, two cats, three foxes and one dog) were infected with eastern U.S. raccoon rabies variant. Bat samples that were sequenced generally typed in species specific variant clusters: Five Brazilian free-tail bats were *Tadarida* variant, one Brazilian free-tail bat virus was uncharacterized; two Seminole bats were *Lasiurus* variant, two Florida yellow bats were *Lasiurus intermedius* variant, and one unknown bat species was *Eptesicus* (big brown bat) variant.

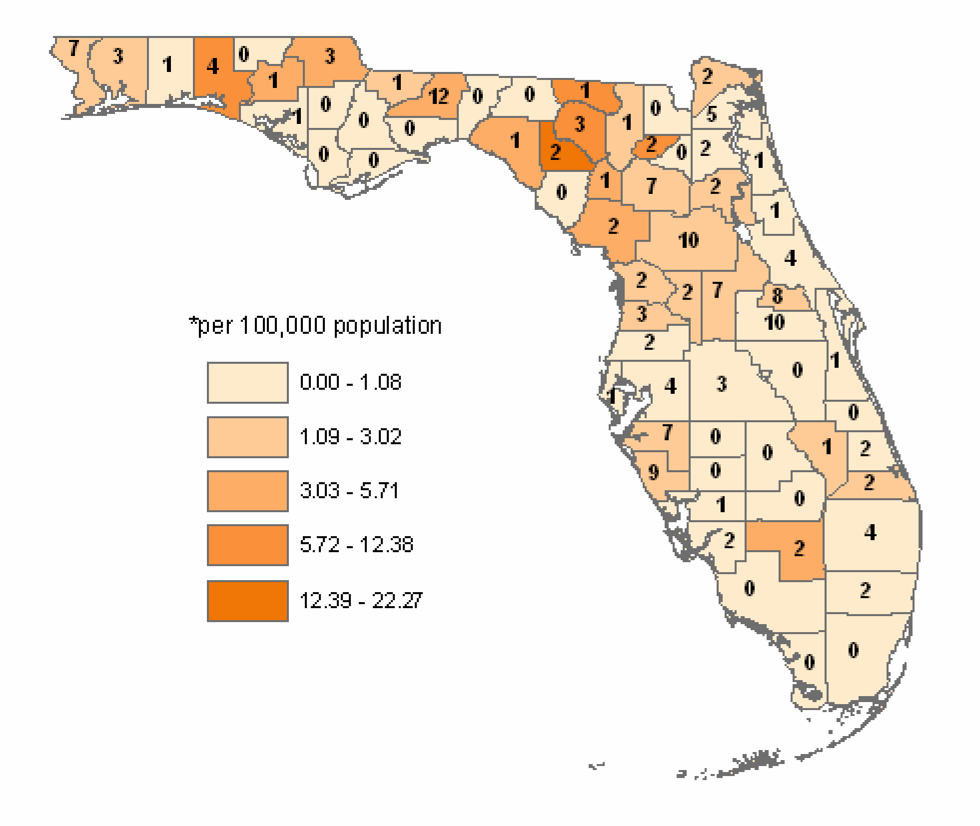
Prevention
During 2009, the Florida Rabies Advisory Committee revised the rabies guidebook to provide information for county health departments and others involved in rabies control and prevention.

Use preventive measures that include the following strategies.

- Vaccinate pets and at-risk livestock.
- Avoid direct human and domestic animal contact with wild animals.
- Educate the public to reduce contact with stray and feral animals.
- Support animal control in efforts to reduce feral and stray animal populations.
- Bat-proof homes.
- Provide pre-exposure prophylaxis for people in high-risk professions, such as animal control and veterinary personnel, laboratory workers, and those working with wildlife.

Consider pre-exposure prophylaxis for those traveling extensively where rabies is common in domestic animals. Oral bait vaccination programs for wildlife are justified in some situations. These programs can be effective but require careful advance planning and substantial time and financial commitments.

Animal Rabies Cases by County, Florida, 2007-2008



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David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

Pickering LK, Baker CJ, Long SS, and McMillan JA (eds.), *Red Book: 2006 Report of the Committee on Infectious Diseases*, 27th ed., American Academy of Pediatrics Press, 2006.

Additional Resources

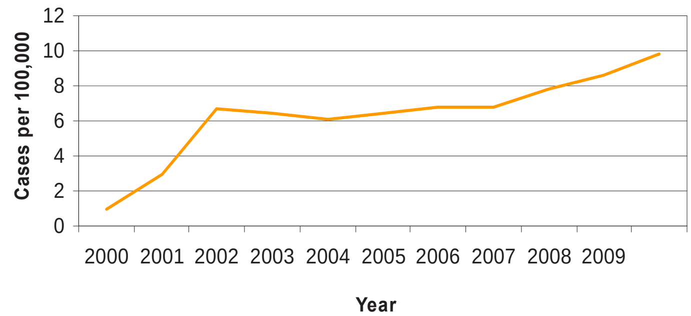
Information is available from the Florida Department of Health website at http://www.doh.state.fl.us/environment/medicine/rabies/rabies-index.html

Disease information is also available from the Centers for Disease Control and Prevention at http://www.cdc.gov/rabies/

Rabies, Possible Exposure

Rabies, Possible Exposure: Crude Data	
Number of Cases	1,853
2009 incidence rate per 100,000	9.85
% change from average 5 year (2004-2008) incidence rate	35.06
Age (yrs)	
Mean	37.34
Median	38
Min-Max	<1 - 108

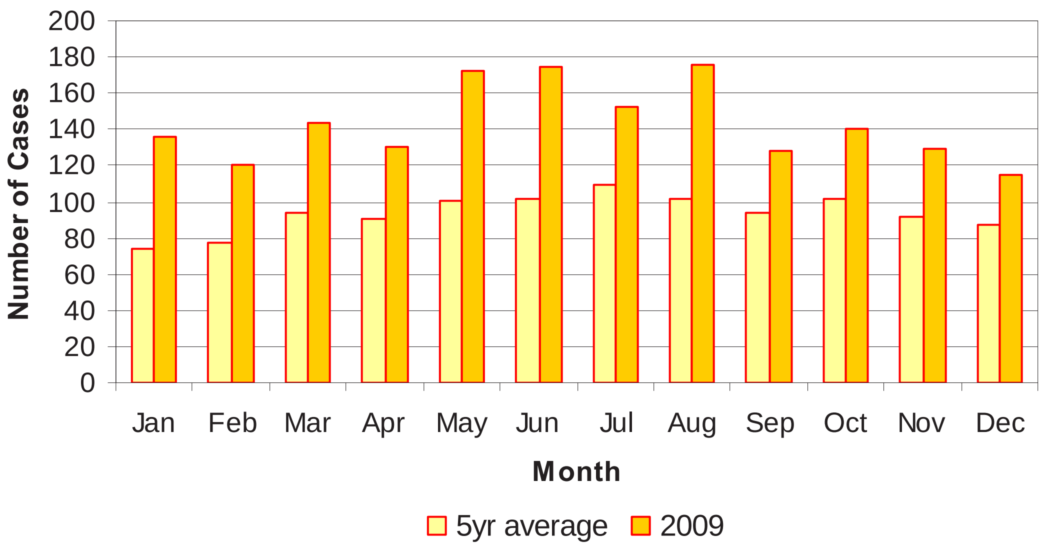
Figure 1. Rabies Possible Exposure Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

Electronic reporting was initiated in 2001 of animal encounters (bites, scratches, etc.) for which rabies post-exposure prophylaxis (PEP) is recommended through the Merlin system. Additional data summaries of rabies PEP cases, including total 2009 cases based on the date of exposure, are included in *Rabies Prevention and Control in Florida, 2010* located at http://myfloridaeh.com/medicine/rabies/rabies-index.html. Rabies PEP is recommended when an individual is bitten, scratched, or has mucous membrane or fresh wound contact with the saliva or nervous tissue of a laboratory-confirmed rabid animal, or a suspected rabid animal that is not available for testing.

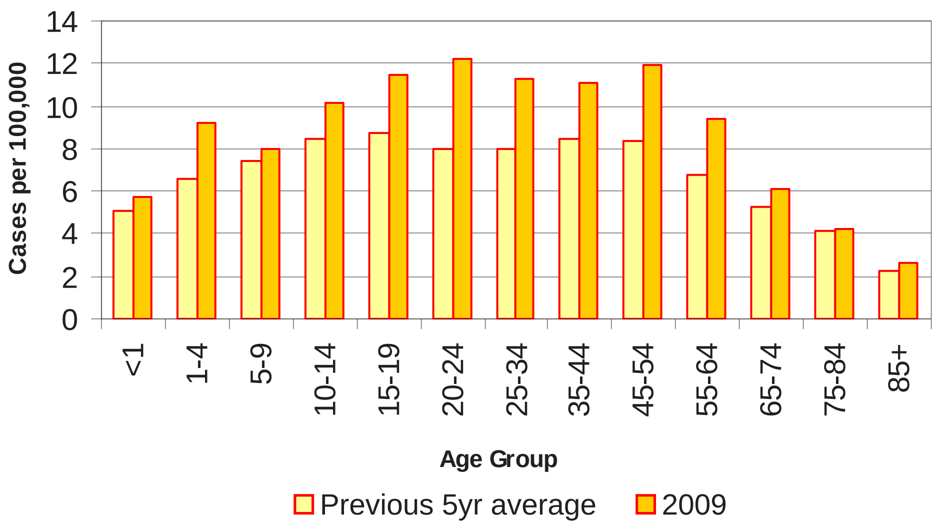
Figure 2. Rabies, Possible Exposure Cases by Month of Exposure, Florida, 2009



The annual incidence of exposures for which PEP is recommended has increased since electronic reporting was initiated (Figure 1). In 2009, the incidence rate was up 35.1% over the previous five-year average. This increase is thought to be largely due to the human rabies vaccine shortage experienced throughout most of 2008 and 2009. During much of this time, healthcare providers were required to contact local and state health officials on a case by case basis to obtain rabies post-exposure vaccines, which led to more reporting of exposures with PEP recommended.

PEP is recommended year round in Florida, though the number of treatment incidents increases somewhat during the summer months (Figure 2). The average age of the victim for the 1,853 cases reported in 2009 was 37.3 years, with a range from under one year to 108 years of age. In 2009, the highest incidence was seen in individuals between 20 and 24 years of age, but incidence was similar from ages 15 to 54 (Figure 3). The incidence rate for males is approximately the same as that for females, but the incidence rate among whites is almost three times that of blacks.

Figure 3. Rabies, Possible Exposure Incidence Rate by Age Group, Florida, 2009

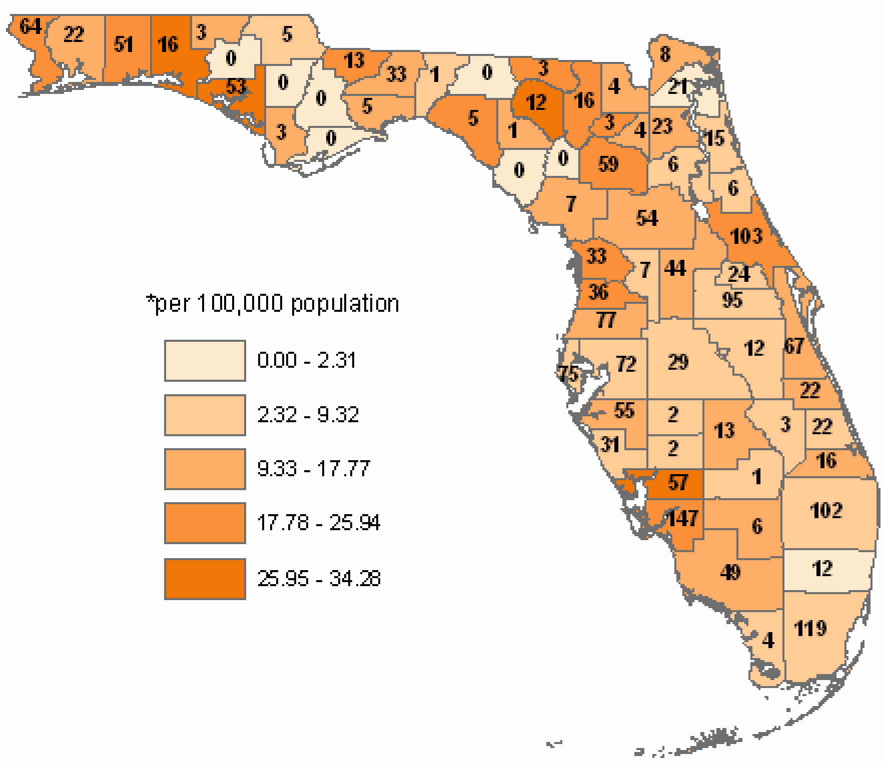


Of the 1,853 cases reported in 2009, the largest proportion of exposed people for whom treatment was recommended reported exposure to dogs (n=850, 46%). Other animals to which people were exposed include cats (24%), raccoons (13%), and bats (7%). Other, less numerous exposures included contact with bobcats, foxes, squirrels, horses, opossums, pigs, skunks, and otters. Enhanced data collection in Merlin, Florida's reportable disease database, for animal bites and cases where PEP was recommended was started in 2009. Additional data elements captured include body exposure location (neck, arm, etc.), type of exposure (bite, scratch, etc.), whether PEP was recommended, and whether PEP was actually started or completed. These new data elements were added to the system mid-year. The first complete year for which the enhanced data collection will be available is 2010.

Prevention

Contact with wildlife and unfamiliar domestic animals should be limited. It is especially important to educate children about appropriate interactions with animals. If bitten, wash the area thoroughly with soap and water, seek medical attention, and report the bite to the local county health department.

Rabies, Possible Exposure Incidence Rate* by County, Florida, 2009



Additional Resources

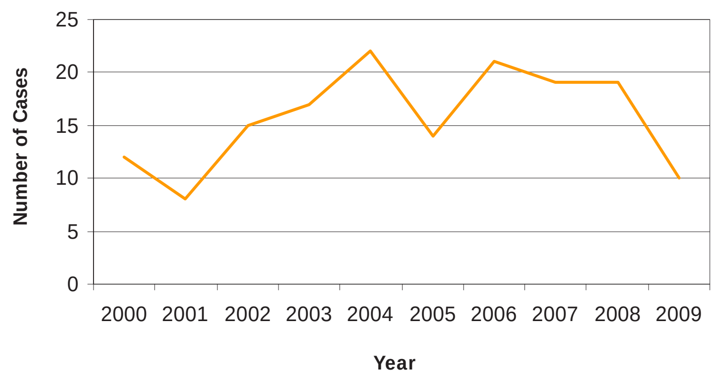
Additional information on animal bites and PEP can be found in the *Rabies Prevention and Control in Florida, 2008 Guidebook*, online at http://www.doh.state.fl.us/environment/community/arboviral/Zoonoses/Rabiesguide2008.pdf

Dog bite prevention and rabies information can also be found on the Department of Health website at www.MyFloridaEH.com and http://www.doh.state.fl.us/environment/community/rabies/rabies-index.html

Rocky Mountain Spotted Fever

Rocky Mountain Spotted Fever: Crude Data	
Number of Cases	10
2009 incidence rate per 100,000	0.05
% change from average 5-year (2004-2008) reported cases	-47.37
Age (yrs)	
Mean	49.3
Median	53
Min-Max	<1 - 78

Figure 1. Rocky Mountain Spotted Fever Cases by Year Reported, Florida, 2000-2009

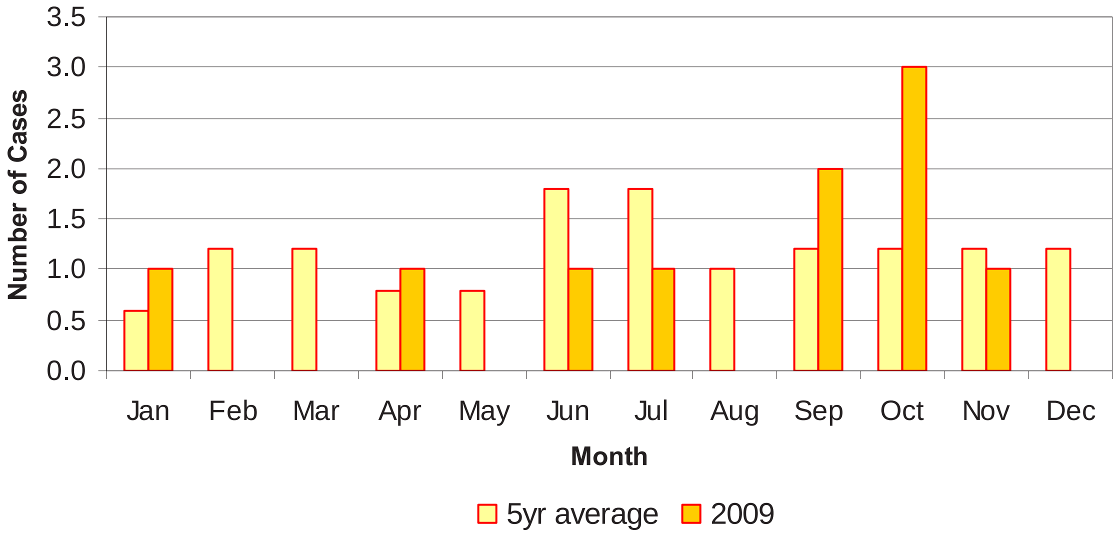


Disease Abstract

After a marked increase in reported Rocky Mountain Spotted Fever (RMSF) in the early part of the decade, incidence dropped off in 2009 (Figure 1). This decrease is partly, but not entirely, due to the recognition of the presence of disease due to rickettsial spotted fever agents other than *Rickettsia rickettsii* in Florida that had previously been diagnosed as RMSF. Currently, only disease due to *Rickettsia rickettsii* is reportable in Florida. Antibodies for other rickettsial species, such as *Rickettsia parkeri* and *Rickettsia amblyommii,* cross-react with tests for the RMSF agent, *Rickettsia rickettsii*, which may explain changes in apparent national and Florida disease incidence and geographic distribution in recent years. Florida has plans to modify Rule 64D-3, *Florida Administrative Code* to expand surveillance to include all spotted fever rickettsioses. No suspect cases of RMSF (cases with a positive laboratory tests but no clinical information) were reported in Florida in 2009.

The extent that ecological factors such as rainfall, ambient temperature, fluctuations in tick host densities, and other factors have on incidence of disease in humans in Florida is unknown. In Florida, cases of RMSF are reported year-round, though peak transmission typically occurs during the summer months (Figure 2). In 2009, more cases were reported in September and October than usual. Interestingly, the adult stage of *Amblyomma maculatum*, the Gulf Coast tick, is believed to be more active during late summer and early fall. Of the 10 cases reported in 2009, seven (70%) acquired the disease in Florida and three (30%) acquired the disease in another U.S. state.

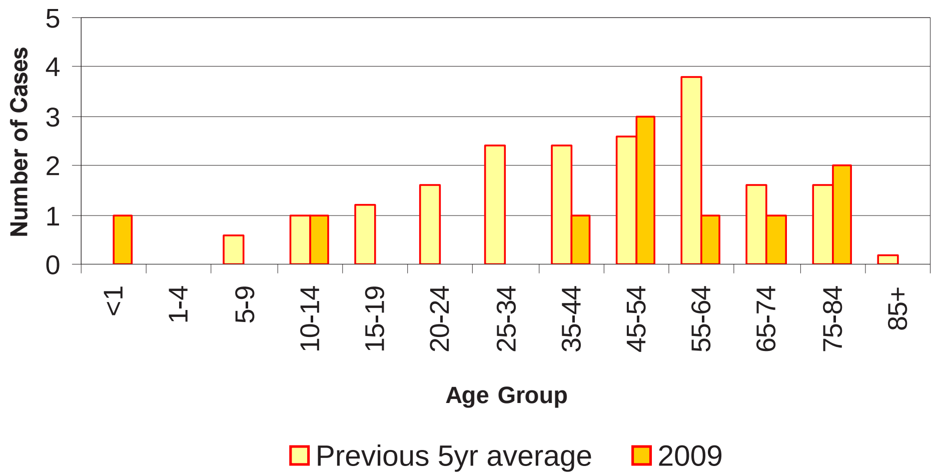
Figure 2. Rocky Mountain Spotted Fever Cases by Month of Onset, Florida, 2009



RMSF tends to affect adults more than other age groups, and in 2009, there were more cases reported in those aged 45 to 54 than in any other age group (Figure 3). The elderly, males, blacks, those with glucose-6-phosphate-dehydrogenase (G6PD) deficiency, and those with a history of alcohol abuse are at greatest risk for severe disease. In 2009, males accounted for eight cases (80%) and all cases were white. No deaths were reported in 2009, but five patients (50%) were hospitalized. The national case fatality rate for treated cases is approximately 5% and for untreated cases is up to 20%.

Eschars at the site of the tick bite are associated with *R. parkeri* infections, but rare in cases of RMSF. The American dog tick, *Dermacentor variabilis*, is the principal RMSF vector in Florida; the primary vector for *R. parkeri* is the Gulf Coast tick, *Amblyomma maculatum*; and the primary vector for *R. amblyomma* is believed to be the Lone Star tick, *Amblyomma americanum*. The Florida Department of Health does not have the capacity to test for *R. amblyomma*, however four additional patients who developed eschar lesions at the site of tick bites were confirmed (two PCR of eschar biopsies or eschar swabs and one serologically) or probable (one serologically) to be due to *R. parkeri* through testing performed at the CDC. These four cases were adult white males ranging in age from 37 to 62 years with a median age of 47 years. Two patients were hospitalized. One-PCR positive patient had saved the biting tick (*A. maculatum*), which tested positive for *R. parkeri* at the CDC. Two cases were believed to have been exposed in Lee County, one in Polk, and the fourth in Santa Rosa. Exposures occurred between September 10 and October 18. Tick exposure time was known to be short in two cases (less than three hours). Other species of *Rickettsia* associated with human illness continue to be identified across the U.S. and will require additional surveillance efforts in the future.

Figure 3. Rocky Mountain Spotted Fever Cases by Age Group, Florida, 2009

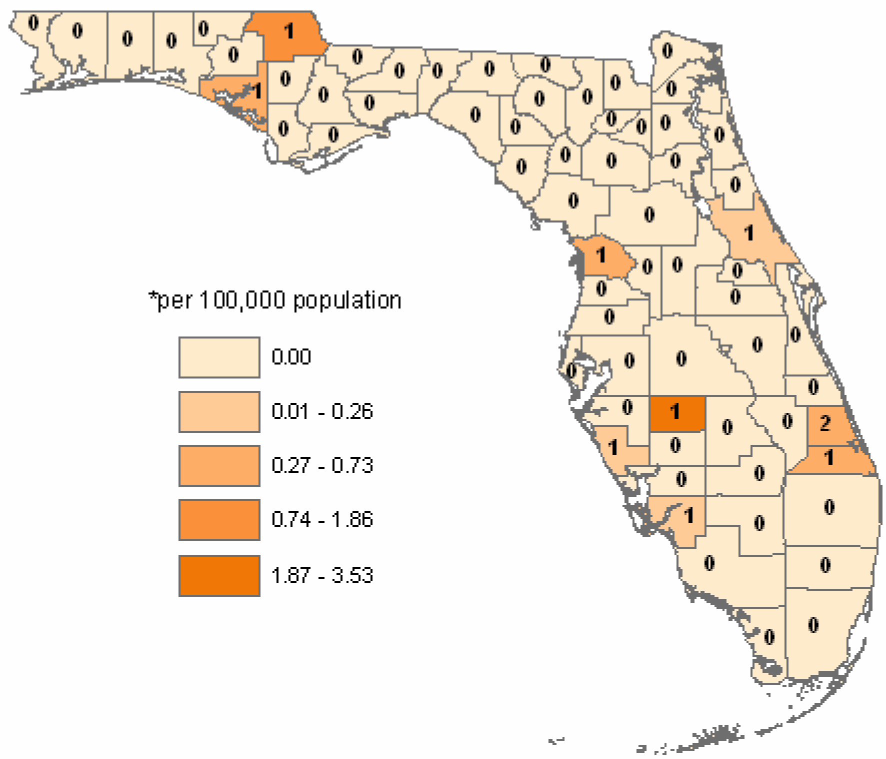


Prevention

Prevention of tick bites is the best way to avoid disease.

- Wear light-colored clothing so that ticks crawling on clothing are visible.
- Tuck pants legs into socks so that ticks cannot crawl inside clothing.
- Apply repellent to discourage tick attachment. Repellents containing permethrin can be sprayed on boots and clothing, and will last for several days. Repellents containing DEET can be applied to the skin, but will last only a few hours before reapplication is necessary.
- Search the body for ticks frequently when spending time in potentially tick-infested areas.
- If a tick is found, it should be removed as soon as possible.
    - Using fine tweezers or a tissue to protect fingers, grasp the tick close to the skin and gently pull straight out without twisting.
    - Do not use bare fingers to crush ticks.
    - Wash your hands following tick removal.
- Control tick populations in the yard and on pets to reduce the risk of disease transmission.

Rocky Mountain Spotted Fever Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 19th ed., American Public Health Association Press, Washington, District of Columbia, 2008.

Additional Resources

Disease information is also available from the Florida Department of Health at http://www.doh.state.fl.us/Environment/medicine/arboviral/Tick_Borne_Diseases/Tick_Index.htm

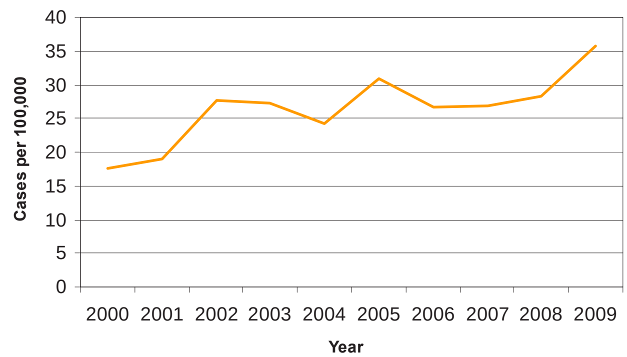
Disease information is available from the CDC at http://www.cdc.gov/ncidod/dvrd/rmsf/index.htm

Paddock CD, Sumner JW, Comer JA, et. al. *Rickettsia parkeri*: a newly recognized cause of spotted fever rickettsiosis in the United States. *Clin Infect Dis*. 2004:38:805-11.

Salmonellosis

Salmonellosis: Crude Data	
Number of Cases	6,741
2009 incidence rate per 100,000	35.82
% change from average 5-year (2004-2008) incidence rate	30.80
Age (yrs)	
Mean	22.79
Median	7
Min-Max	<1 - 108

Figure 1. Salmonellosis Incidence Rate by Year Reported, Florida, 2000-2009

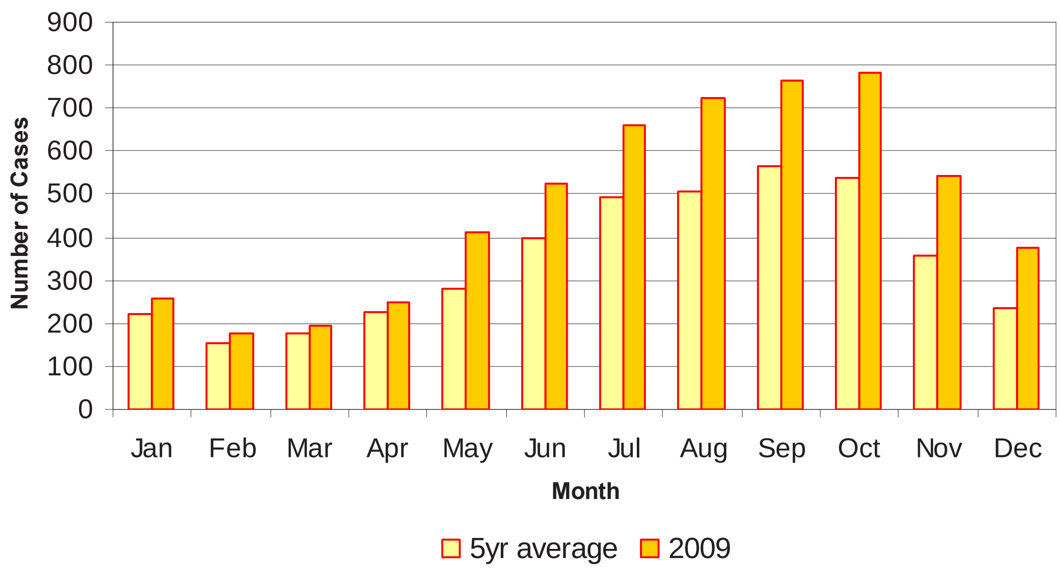


Disease Abstract

Salmonellosis is a diarrheal disease caused by infection with bacteria of the genus *Salmonella*. This category does not include typhoid fever.

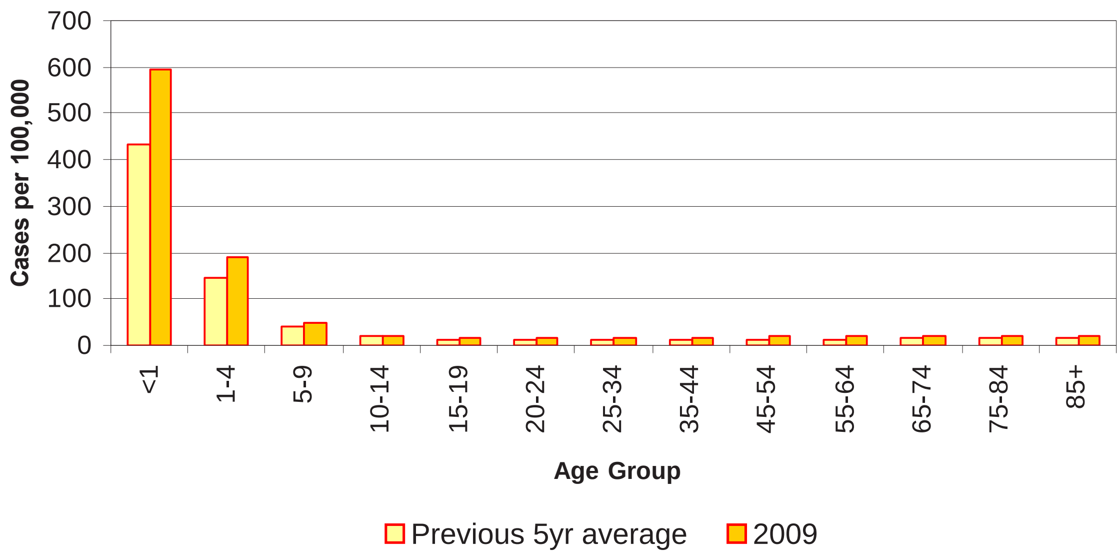
The incidence rate for salmonellosis has increased over the last ten years (Figure 1). In 2009, the incidence was 35.8 cases/100,000, an increase from the previous peak in 2005 of 30.8 cases per 100,000 population. In 2009, 6,741 cases were reported, with 95.7% confirmed. The number of cases reported increases every year in the summer and early fall. In 2009, the number of cases exceeded the previous five-year average in all months (Figure 2). Data published in the MMWR indicate that Florida reported more cases of salmonellosis in 2009 than any other state. Overall, 8.8% of salmonellosis cases were classified as outbreak-related in 2009.

Figure 2. Salmonellosis Cases by Month of Onset, Florida, 2009



The highest incidence rates continue to occur among infants under one year old and children one to four years old. In 2009, the incidence rates were slightly higher than the previous five-year average in all age groups, but the increase was most pronounced in those under one year old (Figure 3). Males and females have similar incidence rates (36.6 and 34.9 per 100,000, respectively). The incidence rate among whites (33.9 per 100,000) is slightly higher than that among blacks (26.9 per 100,000).

Figure 3. Salmonellosis Incidence Rate by Age Group, Florida, 2009

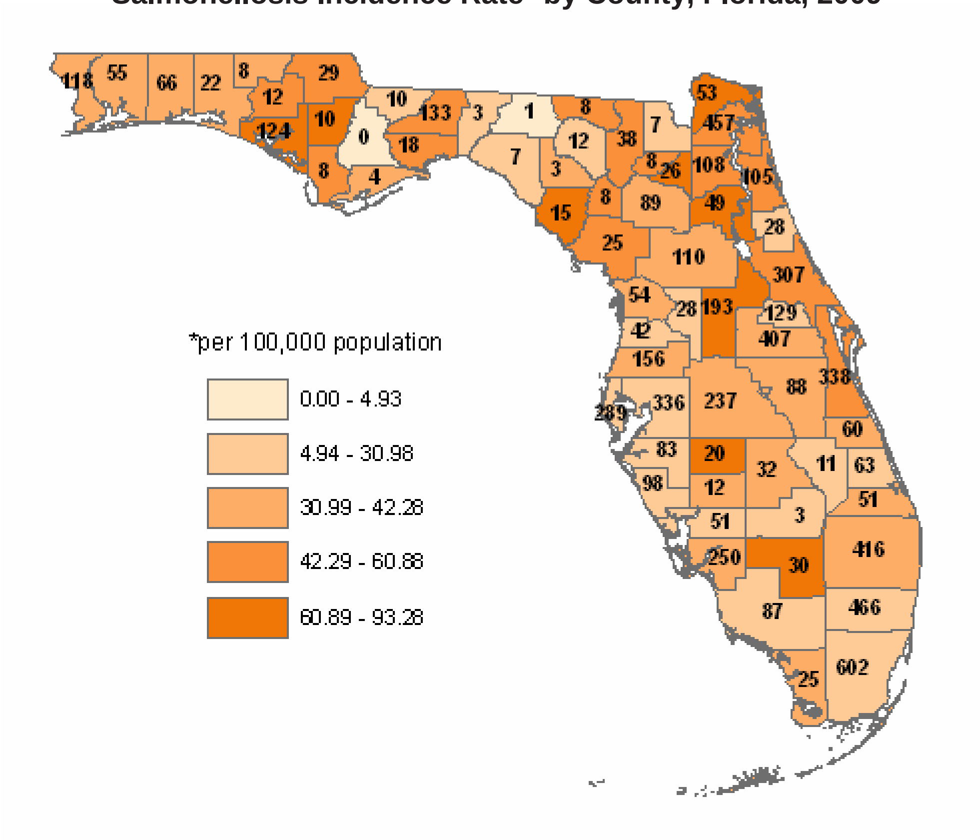


Salmonellosis was reported in 66 of 67 counties in Florida. Rates vary across the state, but appear to be higher in the eastern panhandle, northeastern, and central portions of the state.

Prevention
Reduce the likelihood of contracting salmonellosis by using these preventive measures.

- Cook all meat products and eggs thoroughly, particularly poultry.
- Avoid cross-contamination by cleaning utensils, counter tops, cutting boards, and sponges and making sure they do not come in contact with raw poultry or other meat.
- Wash your hands thoroughly before, during, and after food preparation.
- Do not allow the fluids from raw poultry or meat to drip onto other foods.
- Consume only pasteurized milk, milk products, or juices.
- Wash your hands after coming into contact with any animals or their environment.
- Wash your hands, and children’s hands, after toilet use.

Salmonellosis Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

L. Pickering (ed.), *2006 Red Book: Report of the Committee on Infectious Diseases*, 27th ed., American Academy of Pediatrics, Elk Grove Village, IL, 2006, pp. 992.

Florida Department of Health, *Guidelines for Control of Outbreaks of Enteric Disease in Child Care Settings* http://www.doh.state.fl.us/disease_ctrl/epi/surv/enteric.pdf

Additional Resources

Disease information is available from the CDC at http:// www.cdc.gov/salmonella/

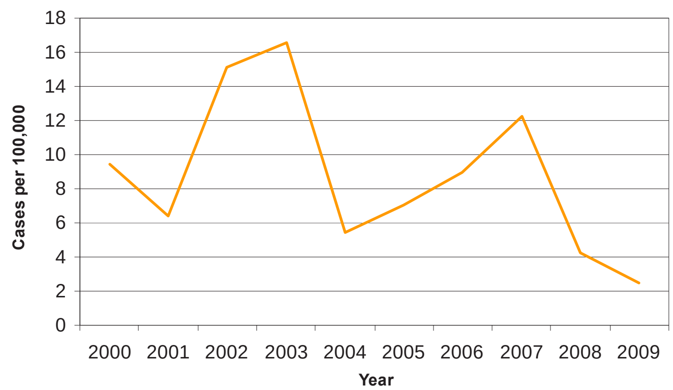
Additional information is available from the U.S Food and Drug Administration – Bad Bug book at http://www.cfsan.fda.gov/~mow/chap1.html.

R. Baker, et al., "Outbreak of *Salmonella* Serotype Javiana Infections-Orlando, Florida, June 2002," *MMWR*, Vol. 51, No. MM31, p. 683.

Shigellosis

Shigellosis: Crude Data	
Number of Cases	461
2009 incidence rate per 100,000	2.45
% change from average 5-year (2004-2008) incidence rate	-67.80
Age (yrs)	
Mean	19.8
Median	9
Min-Max	<1 - 95

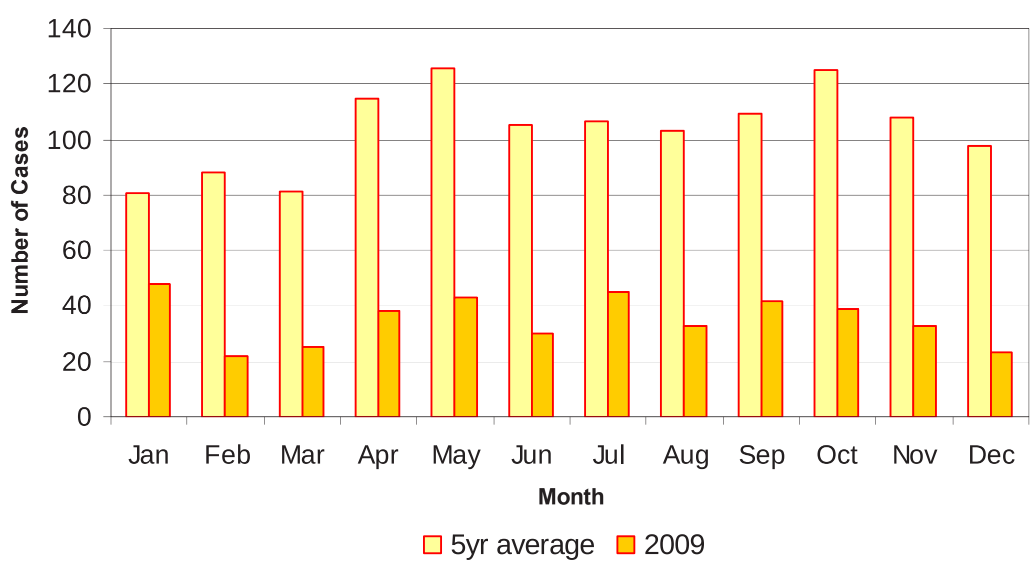
Figure 1. Shigellosis Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

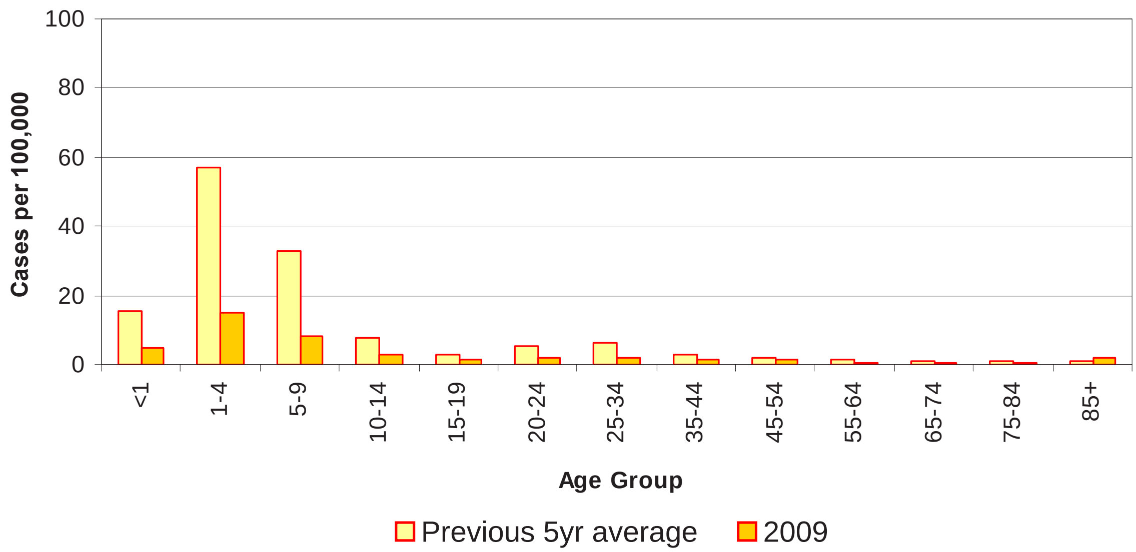
Shigellosis is a diarrheal disease caused by infection with bacteria of the genus *Shigella*. The incidence rate for shigellosis has varied over the last ten years (Figure 1). Periodic community outbreaks involving childcare centers account for most of the observed variability. Almost 20% of the cases reported in 2008 were children who attend daycare or staff who work at affected daycares. This number does not take into account the cases who were infected by an initial daycare-associated case. In 2009, there was a 67.8% decrease in comparison to the average incidence from 2004 to 2008. In 2009, 461 cases were reported (down from 801 in 2008 and 2,288 in 2007), with 92.2% confirmed. Historically, the number of cases reported tends to increase in late summer and the fall months. However, in 2009, the number of cases was highest at the beginning of the year in January and steadily decreased, then hit a second peak over the summer (Figure 2). Overall, 21.3% of shigellosis cases were classified as outbreak related and 17.9% of shigellosis cases were daycare attendees.

Figure 2. Shigellosis Cases by Month of Onset, Florida, 2009



The highest incidence rates continue to occur among children aged one- to four-years-old. In 2009, the pattern of incidence rates by age was similar to the five-year average but overall levels were much lower (Figure 3). Incidence rates were similar among females and males (2.5 and 2.4 per 100,000 respectively) and higher in blacks than whites.

Figure 3. Shigellosis Incidence Rate by Age Group, Florida, 2009

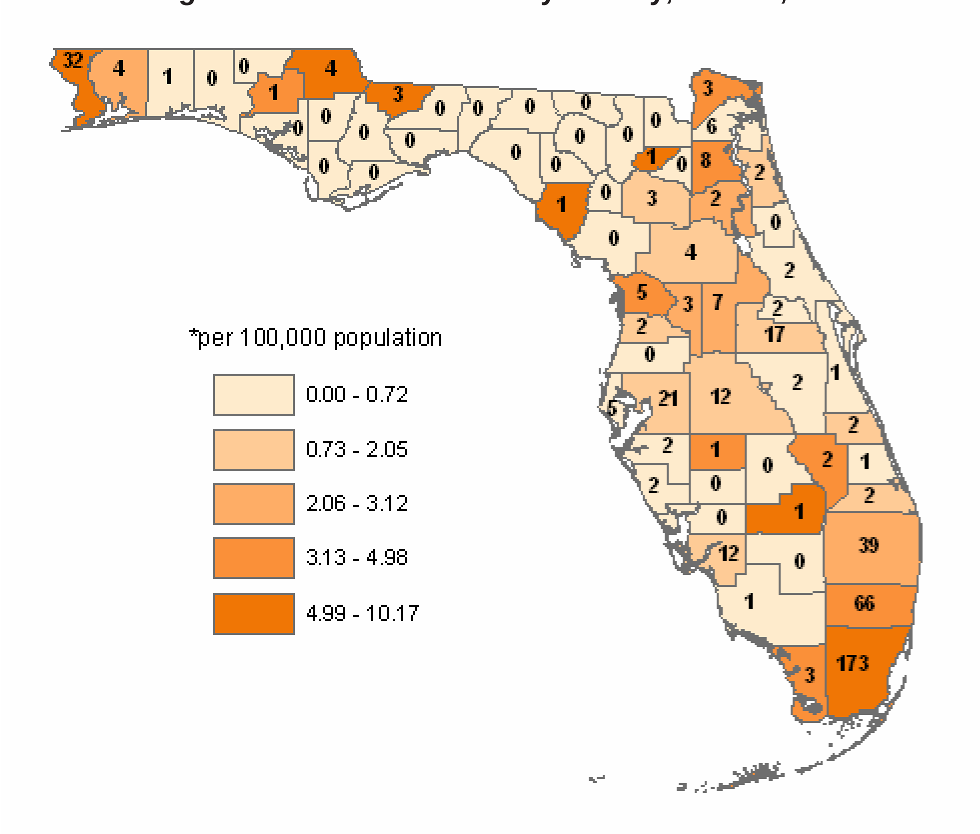


Shigellosis was reported in 41 of 67 counties in Florida. There were no distinct geographic patterns in the distribution of shigellosis cases throughout the state.

Prevention

To reduce the likelihood of contracting and spreading shigellosis, it is important to practice good hand hygiene, especially hand washing by children and adults after toilet use and before preparing food. Outbreaks in daycare centers are common and control may be difficult. The Florida Department of Health has published outbreak control measures for childcare settings (see references).

Shigellosis Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

L. Pickering (ed.), *2006 Red Book: Report of the Committee on Infectious Diseases*, 27th ed., American Academy of Pediatrics, Elk Grove Village, IL, 2006, pp. 992.

Florida Department of Health -*Guidelines for Control of Outbreaks of Enteric Disease in Child Care Settings* http://www.doh.state.fl.us/disease_ctrl/epi/surv/enteric.pdf.

Additional Resources

Disease information is available from the CDC at http://www.cdc.gov/ncidod/dbmd/diseaseinfo/shigellosis_g.htm.

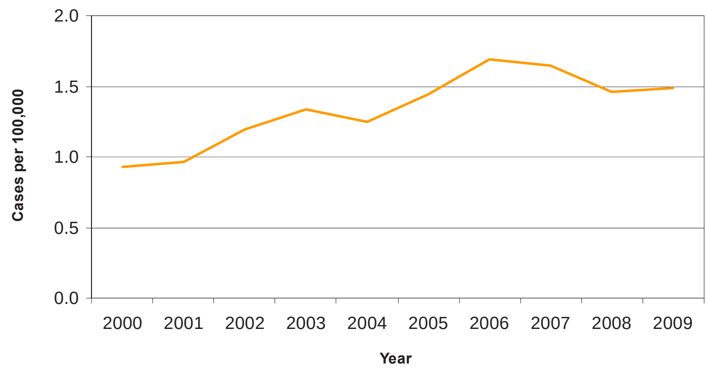
Additional information is available from the U.S Food and Drug Administration – Bad Bug book at http://www.cfsan.fda.gov/~mow/chap19.html.

CDC, "Outbreak of Gastroenteritis Associated With an Interactive Water Fountain at a Beachside Park - Florida, 1999," *MMWR*, Vol. 49, No. 25, 2000, pp. 565-8.

Streptococcal Disease, Invasive, Group A

Streptococcal Disease, Invasive Group A: Crude Data	
Number of Cases	279
2009 incidence rate per 100,000	1.48
% change from average 5-year (2004-2008) incidence rate	-1.22
Age (yrs)	
Mean	54.92
Median	59
Min-Max	<1 - 99

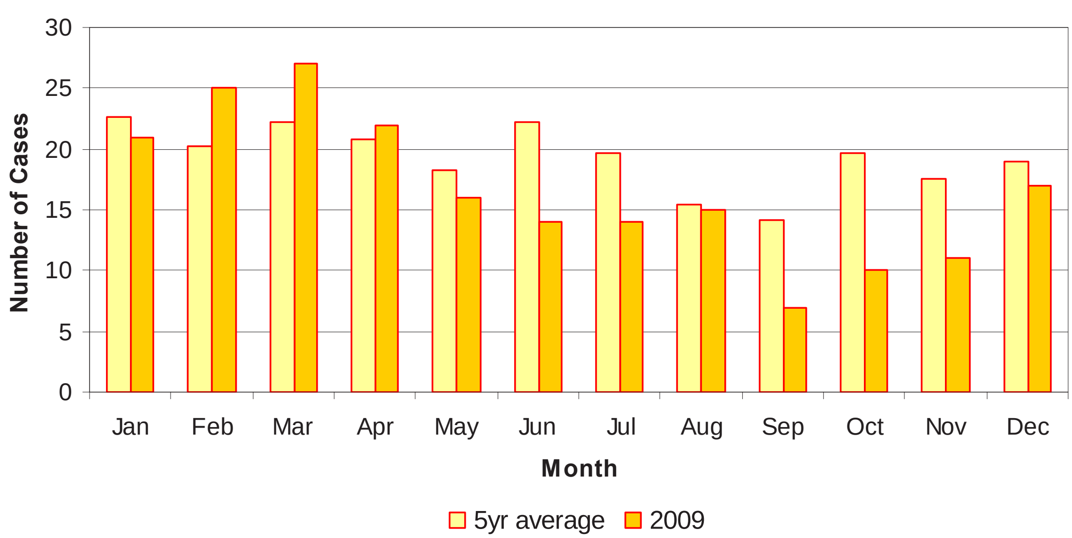
Figure 1. Streptococcal Disease Invasive Group A Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

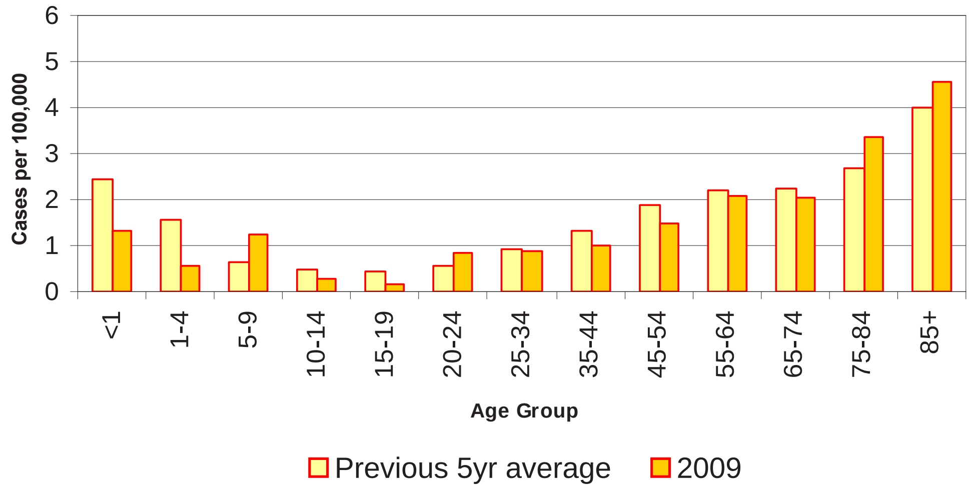
The incidence rate for reported invasive group A streptococcal disease in Florida has gradually increased over the past 10 years, with a more than four-fold cumulative increase since 1997 (Figure 1). However, in 2009, there was a 1.22% decrease compared to the average incidence for 2004 to 2008. In 2009, 279 cases were reported, and all were confirmed. Cases occur throughout all months of the year with no clear seasonal pattern (Figure 2). No cases were reported as outbreak-associated in 2009.

Figure 2. Streptococcal Disease, Invasive Group A, Cases by Month of Onset, Florida, 2009



The highest incidence rate for 2009 occurred in those 85 and older, which is in line with historical trends (Figure 3). In 2009, incidence increased in four of the age groups, most notably those 75 and older. Males continue to have a slightly higher incidence than females (1.52 and 1.45 per 100,000).

Figure 3. Streptococcal Disease, Invasive Group A Incidence Rate by Age Group, Florida, 2009

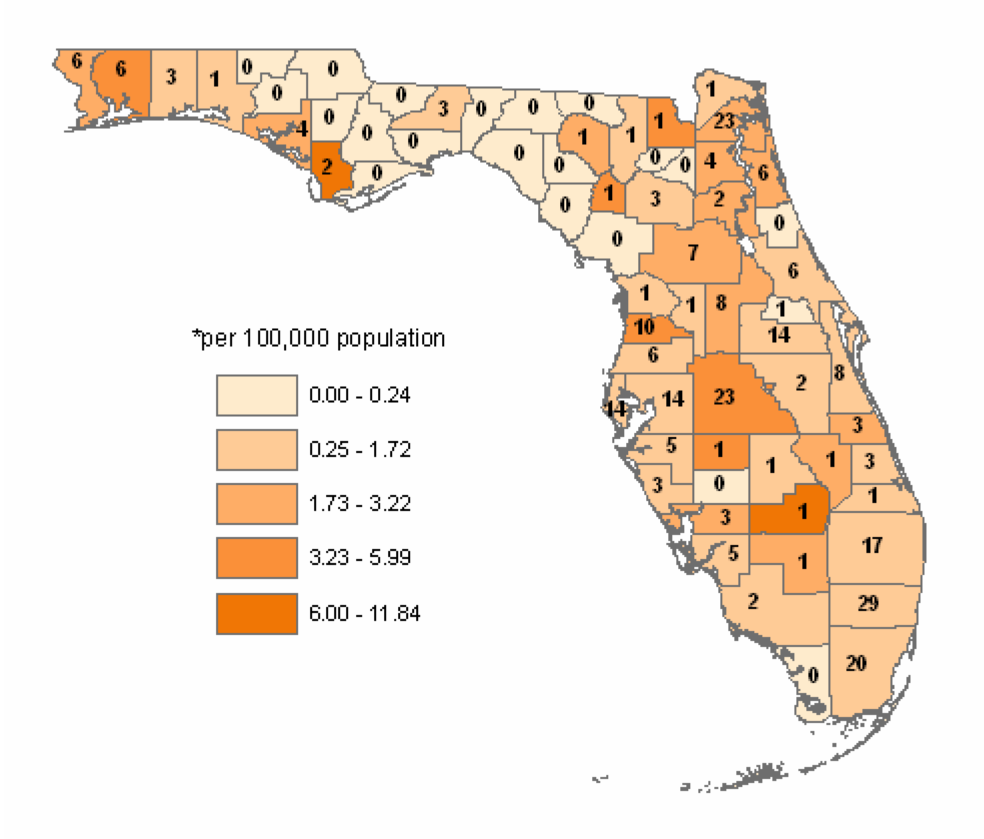


Invasive group A streptococcal disease cases were reported in 41 of 67 counties in Florida. The five counties reporting the highest number of cases were primarily in the central and southern part of the state with relatively few cases occurring in the panhandle region. However, the counties with the highest rates of disease were in the northern part of the state.

Prevention

Prevention is provided through education about modes of transmission, prompt and effective treatment of infections, and appropriate drainage and secretion precautions for infection sites and wound care.

Streptococcal Disease, Invasive Group A Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

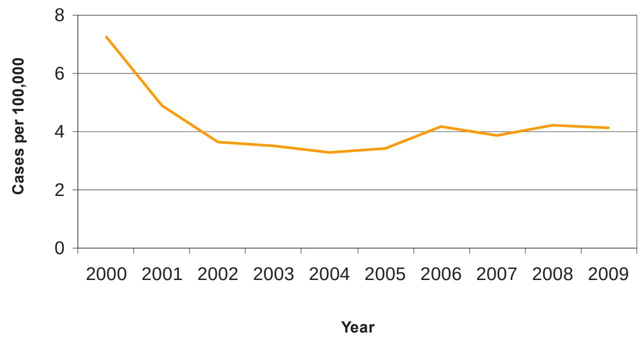
Additional Resources

Disease information is available from the CDC at
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/groupastreptococcal_g.htm.

Streptococcus pneumoniae, Invasive Disease, Drug-Resistant

Streptococcus pneumoniae, Invasive Disease, Drug-Resistant: Crude Data	
Number of Cases	779
2009 incidence rate per 100,000	4.14
% change from average 5-year (2004-2008) incidence rate	8.79
Age (yrs)	
Mean	45.93
Median	51
Min-Max	<1 - 109

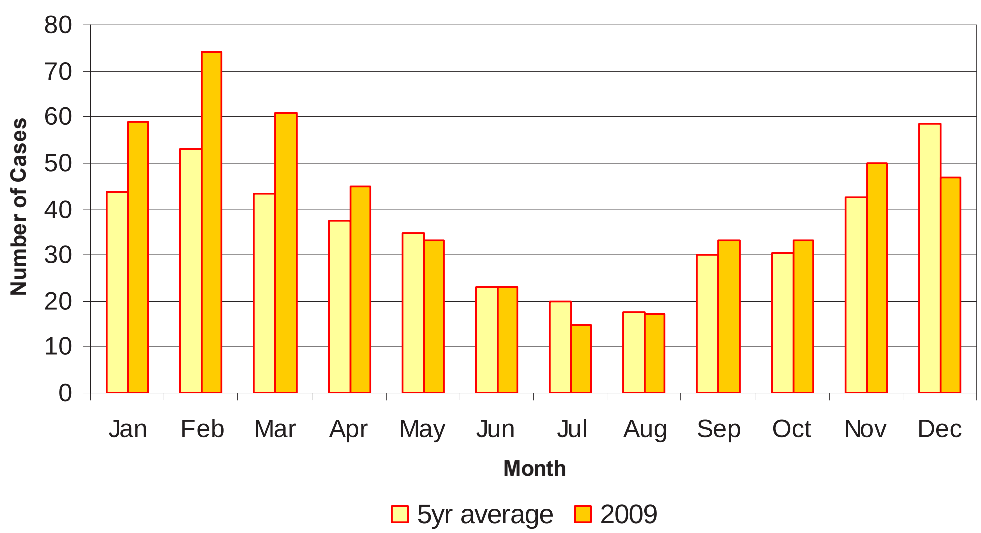
Figure 1. *Streptococcus pneumoniae* Invasive Disease, Drug-Resistant Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

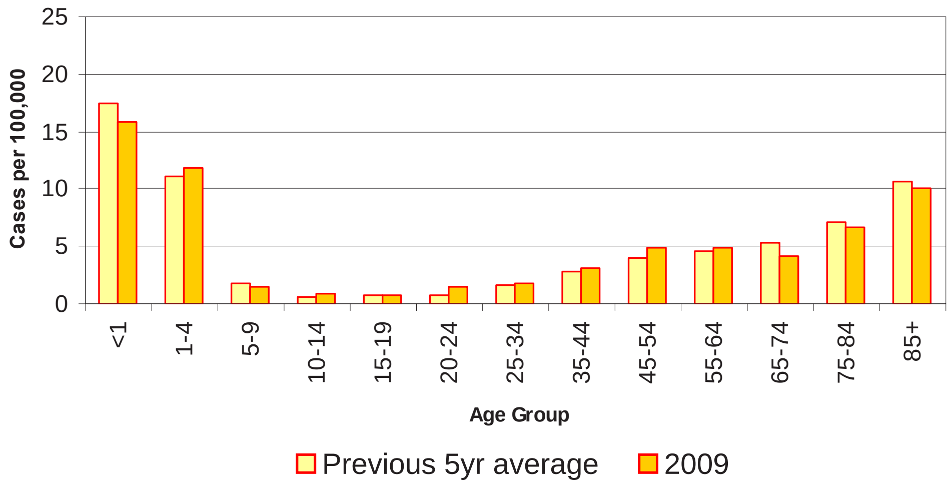
Drug-resistant *S. pneumoniae* (DRSP) invasive disease, for reporting purposes, includes cultures obtained from a normally sterile site, such as blood or cerebrospinal fluid, which are either intermediate resistant or fully resistant to one or more commonly used antibiotics. The incidence rate for DRSP peaked in 2000 and gradually declined until 2005 when it started to increase again and is now relatively consistent at around four cases per 100,000 population per year (Figure 1).

Figure 2. *Streptococcus pneumoniae*, Invasive Disease, Drug-Resistant Cases by Month of Onset, Florida, 2009



The majority of cases occur during the winter months (Figure 2). The highest incidence rates occur among infants less than one year old, children one to four years, and those aged 85 and over. In 2009, the incidence rates were lower than the previous five-year average in two of those three age groups (Figure 3). Males have a slightly lower annual incidence than females (4.1 and 4.2 per 100,000, respectively). The incidence among blacks (7.1 per 100,000) was almost twice that among whites (3.4 per 100,000).

Figure 3. *Streptococcus pneumoniae* , Invasive Disease, Drug-Resistant Incidence Rate by Age Group, Florida, 2009



The data from both the drug-resistant and drug-sensitive *S. pneumoniae* isolates reported were used to calculate resistance rates of common antibiotics for 2009 (Figure 4 and Table 1). A total of 1,468 cases had one or more antibiograms, and the earliest pattern for each case was used in these calculations. The sensitivity rate varies by the class of antibiotic. Erythromycin and clarithromycin had the greatest percentage of intermediate and resistant isolates (48.3% and 44.7%, respectively).

Please see “Section 4: Summary of Antimicrobial Resistance Surveillance” for additional information on antimicrobial resistance surveillance in Florida including additional data on *Streptococcus pneumoniae*.

Figure 4. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, Florida 2009

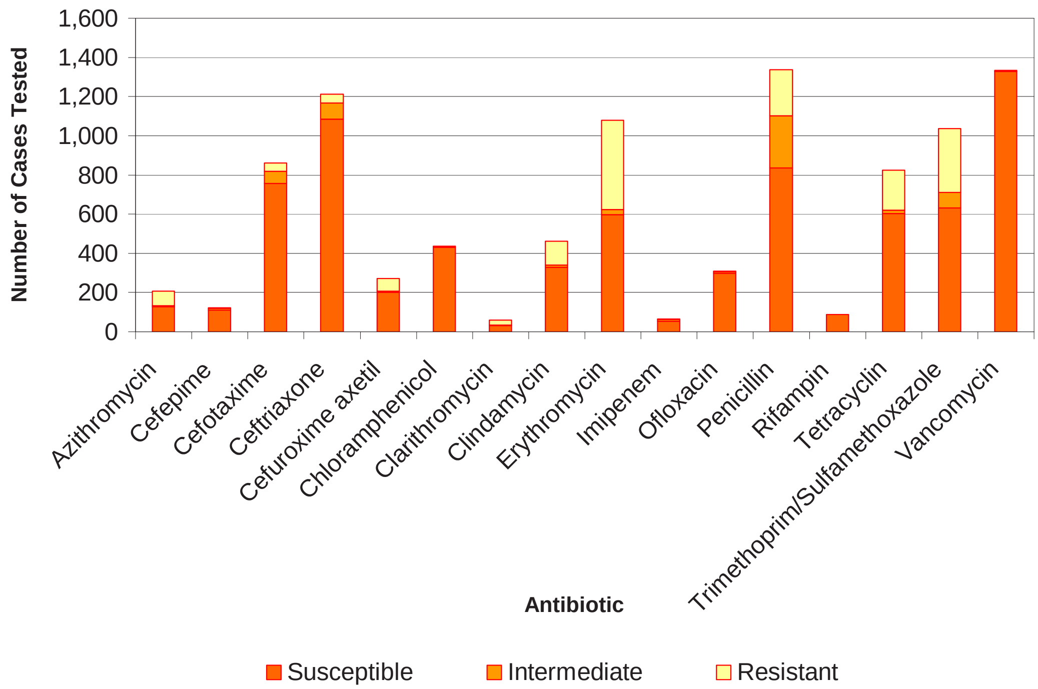
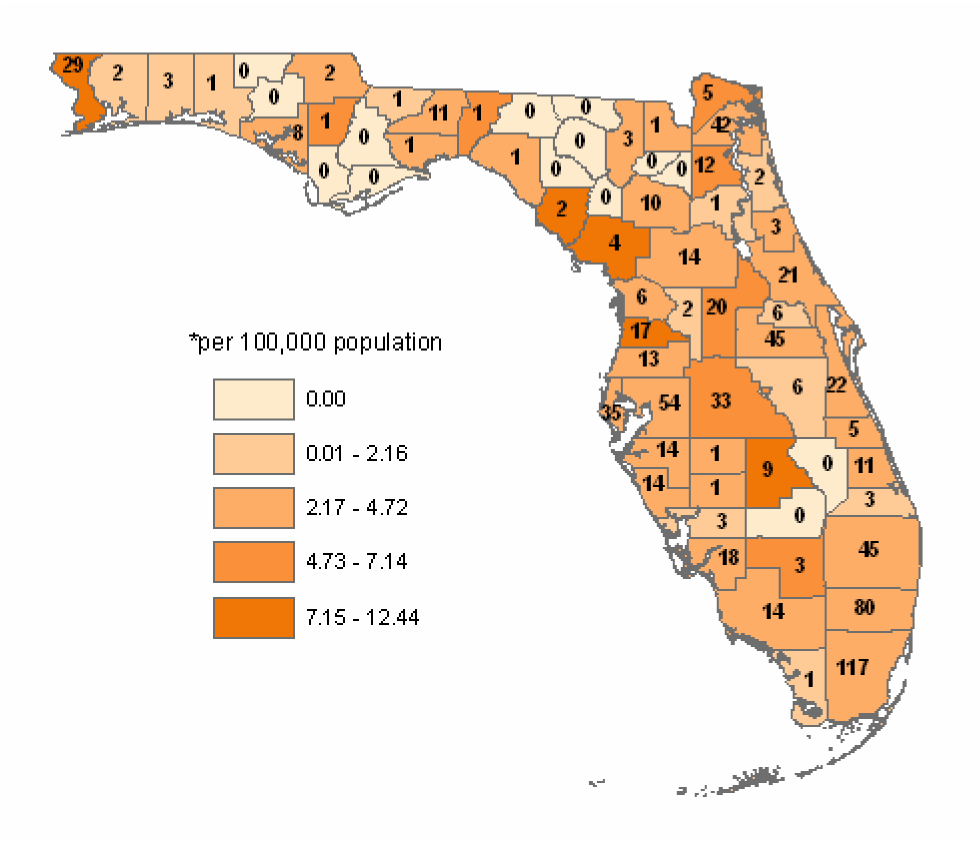


Table1. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, Florida 2009

Antibiotic name	Number of Cases Tested	Susceptible	Intermediate	Resistant
Azithromycin	207	61.8%	1.9%	36.2%
Cefepime	121	91.7%	5.8%	2.5%
Cefotaxime	860	88.0%	7.0%	5.0%
Ceftriaxone	1,211	89.5%	6.8%	3.7%
Cefuroxime axetil	273	73.3%	2.6%	24.2%
Chloramphenicol	435	98.9%	0.0%	1.1%
Clarithromycin	60	51.7%	3.3%	45.0%
Clindamycin	463	71.1%	2.6%	26.3%
Erythromycin	1,080	55.3%	2.4%	42.3%
Imipenem	66	83.3%	10.6%	6.1%
Ofloxacin	309	96.1%	3.2%	0.6%
Penicillin	1,337	62.5%	19.8%	17.7%
Rifampin	89	97.8%	0.0%	2.2%
Tetracycline	825	73.0%	2.2%	24.8%
Trimethoprim/Sulfamethoxazole	1,037	60.9%	7.7%	31.3%
Vancomycin	1,333	99.5%	0.0%	0.5%

Drug-resistant *S. pneumoniae* was reported in 53 of 67 counties in Florida.

***Streptococcus pneumoniae*, Invasive Disease, Drug-Resistant**
Incidence Rate* by County, Florida, 2009



Prevention

The most effective way of preventing pneumococcal infections, including DRSP infections, is through vaccination. Currently, there are two vaccines available. A conjugate vaccine is recommended for all children through age five, with vaccination beginning in the first year of life. The older pneumococcal polysaccharide vaccine should be administered routinely to all adults over 65 years old. The vaccine is also indicated for children six through eighteen years of age with certain underlying medical conditions. Additionally, it is important to practice good hand hygiene, to take antibiotics only when necessary, and to finish the entire course of any prescribed treatment.

References

David L. Heymann, *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

American Academy of Pediatrics, *Red Book 2003: Report of the Committee on Infectious Diseases*, 26th ed., American Academy of Pediatrics Press, Elk Grove Village, Illinois, 2003.

William Atkinson (ed.) et al., *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 10th ed., Public Health Foundation, Washington, District of Columbia, 2007.

Michael T. Drennon, “Drug Resistant Patterns of Invasive *Streptococcus pneumoniae* Infections in the State of Florida in 2003,” *Master’s Thesis*, University of South Florida, Tampa, 2006.

The following reports are available on the Department of Health web site: 1999 *Streptococcus pneumoniae* Surveillance Report, 2000 *Streptococcus pneumoniae* Surveillance Report, and 1997-1999, Surveillance of *SP* in Central FL, at http://www.doh.state.fl.us/disease_ctrl/epi/topics/popups/anti_res.htm.

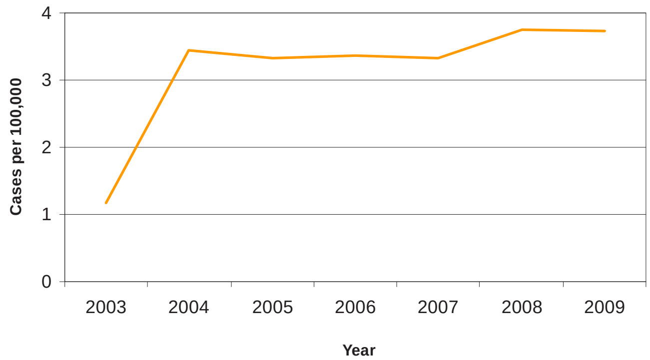
Additional Resources
Disease information is available from the Centers for Disease Control and Prevention (CDC) at: http://www.cdc.gov//ncidod/dbmd/diseaseinfo/drugresisstreppneum_t.htm.

Centers for Disease Control and Prevention, “Preventing pneumococcal disease among infantsand young children: recommendations of the Advisory Committee on Immunization Practices (ACIP),” *MMWR*, Vol. 49, No. RR-9, 2000, pp. 1-35.

Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible

Streptococcus pneumoniae, Invasive Disease, Drug-Susceptible: Crude Data	
Number of Cases	701
2009 incidence rate per 100,000	3.72
% change from average 5 year (2004-2008) incidence rate	8.34
Age (yrs)	
Mean	51.83
Median	55
Min-Max	<1 - 99

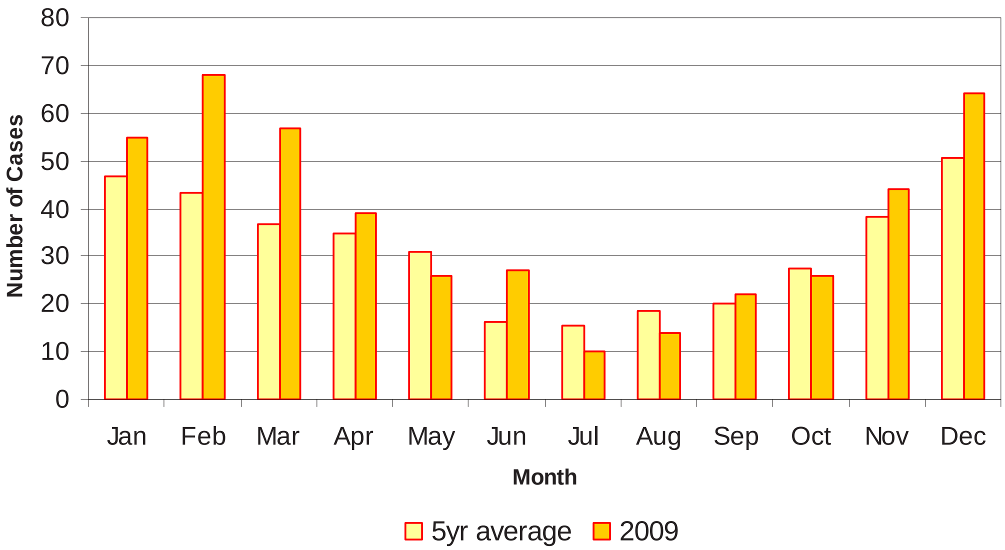
Figure 1. *Streptococcus pneumoniae* , Invasive Disease, Drug Susceptible Incidence Rate by Year Reported, Florida, 2003-2009



Disease Abstract

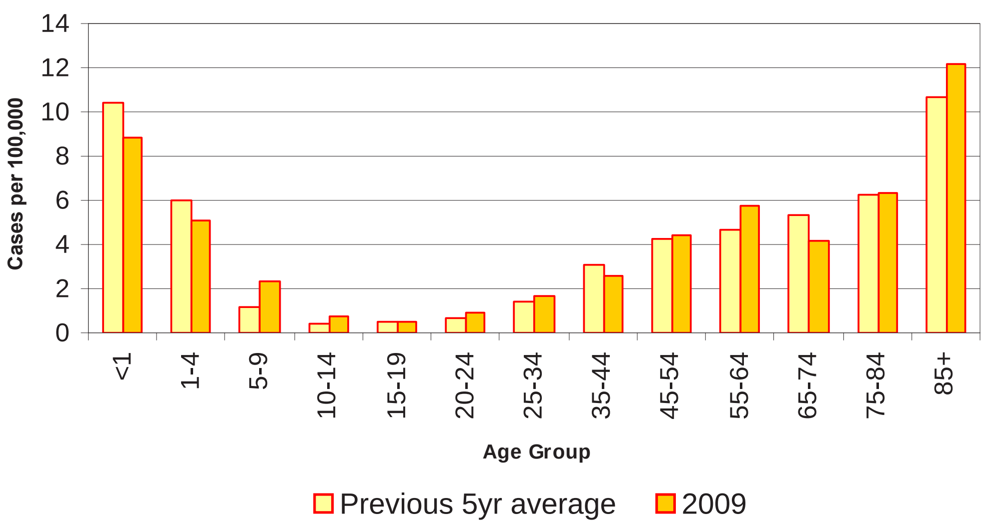
Drug-susceptible *Streptococcus pneumoniae* (DSSP) invasive disease, for reporting purposes, includes cultures obtained from a normally sterile site, such as blood or cerebrospinal fluid, that are sensitive to all of the commonly used antibiotics. Data on drug-susceptible *S. pneumoniae* has been available for the last seven years. Since the second year of reporting, in 2004, the incidence of DSSP has consistently been about three to four cases per 100,000 population. A total of 701 cases were reported in 2009. This is the highest reported incidence in the seven years that the disease has been reportable. The number of cases reported tends to increase in the winter months. In 2009, the number of cases exceeded the previous five-year average in all months except four (Figure 2).

Figure 2. *Streptococcus pneumoniae* , Invasive Disease, Drug-Susceptible Cases by Month of Onset, Florida, 2009



The highest incidence rates continue to occur among infants under one year, children aged one to four years, and those aged 85 and over. In 2009, the incidence rates were lower than the previous five-year average in two of those age groups (Figure 3). Males continue to have a slightly higher incidence than females (3.90 and 3.55 per 100,000 population, respectively). The incidence among whites (3.27 per 100,000 population) is lower than that among blacks (5.29 per 100,000 population).

Figure 3. *Streptococcus pneumoniae*, Invasive Disease, Drug-Susceptible Incidence Rate by Age Group, Florida, 2009

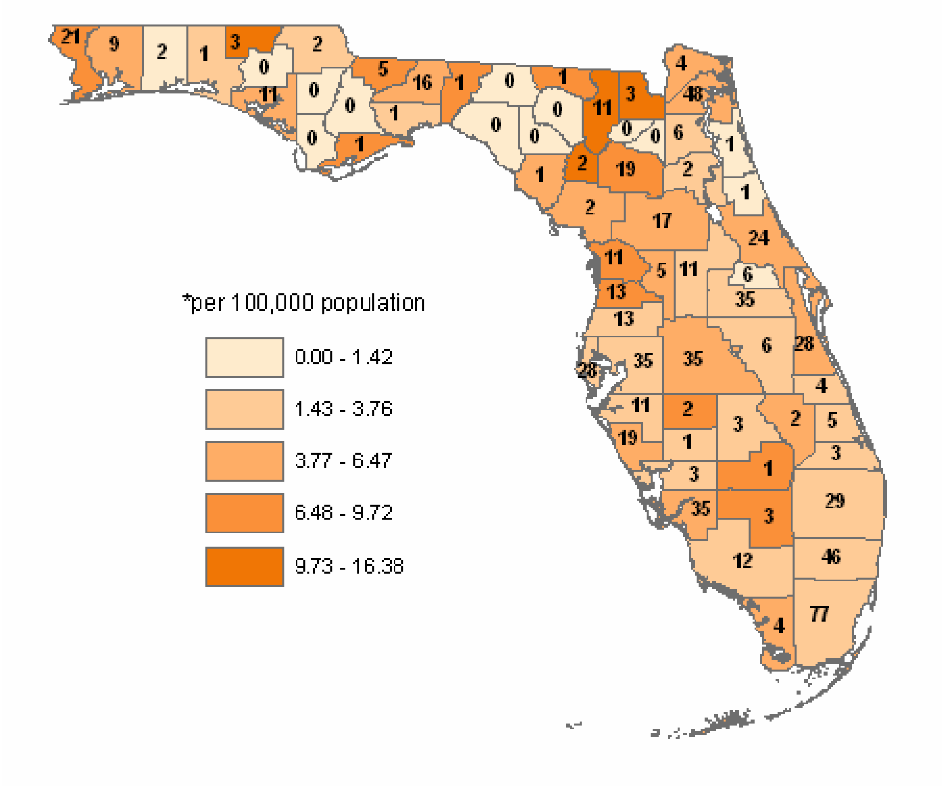


DSSP was reported in 57 of 67 counties in Florida.

Prevention

The most effective way of preventing pneumococcal infections, including drug resistant and drug sensitive *Streptococcus pneumoniae* infections, is through vaccination. Currently, there are two vaccines available. A conjugate vaccine is recommended for all children through age five, with vaccination beginning in the first year of life. The older pneumococcal polysaccharide vaccine should be administered routinely to all adults over 65 years old. The vaccine is also indicated for children six through eighteen years of age with certain underlying medical conditions. Additionally, it is important to practice good hand hygiene, to take antibiotics only when necessary, and to finish the entire course of any prescribed treatment.

***Streptococcus pneumoniae*, Invasive Disease, Drug-Susceptible**
Incidence Rate* by County, Florida, 2009



References

David L. Heymann, *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

American Academy of Pediatrics, *Red Book 2003: Report of the Committee on Infectious Diseases*, 26th ed., American Academy of Pediatrics Press, Elk Grove Village, Illinois, 2003.

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Michael T. Drennon, “Drug Resistant Patterns of Invasive *Streptococcus pneumoniae* Infections in the State of Florida in 2003,” *Master’s Thesis*, University of South Florida, Tampa, 2006.

The following reports are available on the Department of Health web site: 1999 *Streptococcus pneumoniae* Surveillance Report, 2000 *Streptococcus pneumoniae* Surveillance Report, 1997-1999 Surveillance of *SP* in Central FL, at http://www.doh.state.fl.us/disease_ctrl/epi/topics/popups/anti_res.htm

Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at: http://www.cdc.gov//ncidod/dbmd/diseaseinfo/drugresisstreppneum_t.htm.

Centers for Disease Control and Prevention, “Preventing pneumococcal disease among infants and young children: recommendations of the Advisory Committee on Immunization Practices (ACIP),” *MMWR*, Vol. 49, No. RR-9, 2000, pp. 1-35.

Syphilis

Description

Syphilis, caused by the bacterium *Treponema pallidum*, is transmitted from person to person through direct contact with an infectious sore, or with infectious mucous patches and syphilitic warts (condylomata lata). Syphilis infection, when left untreated, may progress through several stages over time: primary, secondary, early latent, late latent, and, potentially, to neurosyphilis. Total early syphilis, which includes primary, secondary, and early latent syphilis, includes all cases where initial infection has occurred within the previous 12 months. One important subset of total early syphilis is infectious syphilis, in the primary or secondary stage. Transmission of syphilis can occur during vaginal, anal, and/or oral sex. During pregnancy, the organism can infect a fetus in utero or at delivery. In 2009, 3,864 syphilis cases were reported in Florida; of those cases, 19 were reported as congenital cases.

Disease Abstract

Of the cases reported in 2009 (N=3,864), 59% (N=2,296) were diagnosed as primary, secondary, or early latent infection, which is a case rate of 12.2 per 100,000 population. The 2,296 early syphilis cases reported in 2009 was a slight increase of six cases over 2008 (2,290). Of the early syphilis cases reported in 2009, 80% were reported from seven counties (Table 1).

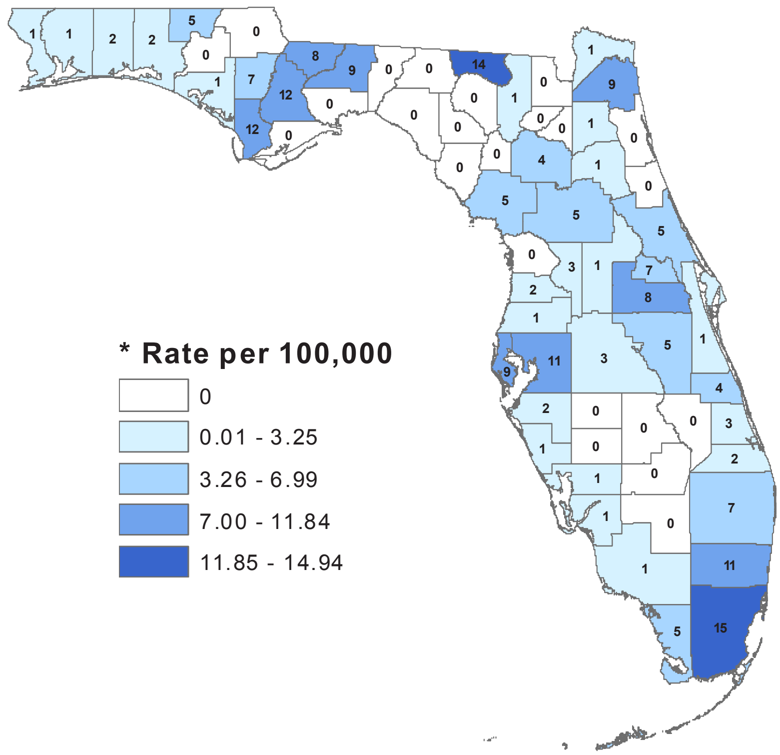
Table 1. Counties with the Largest Number of Reported Early Syphilis, Florida 2009

	Cases (#)	% of Morbidity	Rate/100,000 population
Miami-Dade	683	29.7	27.5
Broward	357	15.5	20.4
Hillsborough	236	10.3	19.6
Orange	166	7.2	14.9
Pinellas	148	6.4	15.9
Duval	131	5.7	14.4
Palm Beach	122	6.4	9.5

More than for cases of other reportable sexually transmitted diseases (STDs), syphilis cases are highly concentrated in several southern counties and large urban areas throughout Florida. Nineteen counties reported no cases of early syphilis (Figure 1).

In 2009, infectious syphilis cases accounted for 1,041 or 45% of total early syphilis. Of these cases, 86% were male and 67% of those were among men who have sex with men (MSM). Despite elimination efforts, syphilis in recent years has been persistent in these segments of the population. In addition to identified risk behaviors, the differences in age and race/ethnicity between MSM and heterosexual populations might also account for some of the difference.

Figure 1. Early Total Syphilis Rates* By County, Florida, 2009



The largest number of reported early syphilis cases in women was in the 15 to 24 age group and the numbers in each age group gradually decreased as age group increased (Table 2). Non-MSM male cases peaked in the 20 to 24 and 25 to 29 age groups, which is similar to trends in cases reported in women. However, unlike the pattern in women, the number of non-MSM male cases in each age group did not fall with age in those over 35 years of age. Sixty percent of female cases were reported in women younger than 30 years of age, while only 32% of cases in men were younger than 30. The majority of syphilis cases in Florida are MSM. For those cases, the peak age group was 40 to 44 years old.

The ratio of male to female early syphilis cases was four to one overall, but differed significantly among racial/ethnic groups. The rate ratio of males to females among non-Hispanic blacks was 2:1; non-Hispanic whites, 8:1; and Hispanics, 8:1.

Table 2. Reported Early Syphilis by Age, Gender, and MSM* Status, Florida, 2009

	MSM*		Non-MSM* Male		Female	
Age	#	%	#	%	#	%
10 – 14			1	0.2	4	0.9
15 – 19	75	5.4	36	7.8	104	22.8
20 – 24	199	14.5	91	19.7	104	22.8
25 – 29	164	11.9	64	13.9	67	14.7
30 – 34	161	11.7	52	11.3	45	9.8
35 – 39	203	14.7	42	9.1	35	7.7
40 – 44	240	17.4	38	8.2	39	8.5
45 – 49	182	13.2	45	9.7	24	5.3
50 – 54	91	6.6	41	8.9	18	3.9
55 -59	31	2.3	19	4.1	12	2.6
60+	31	2.3	33	7.1	5	1.1
Total	1,377	100.0	462	100.0	457	100.0

* MSM- men who have sex with men

In 2009, early syphilis affected non-Hispanic blacks more than other groups. People who self reported as non-Hispanic black accounted for 41.8% of the syphilis cases in 2009, while this group only accounted for about 16% of the state's population. People who self reported as non-Hispanic white accounted for 27.5% of the cases. People who self reported as Hispanic (white, black, or other) accounted for 20.2% of the cases. People who self reported in other or unidentified racial and ethnic groups accounted for 10.4% of the cases. The annual rate per 100,000 for non-Hispanic blacks was 32.8 per 100,000 population. This rate was six times greater than the second highest rate, in non-Hispanic whites (5.5 cases per 100,000 population).

Table 3. Reported Early Syphilis Cases by Race/Ethnicity and MSM* Status, Florida 2009

	Female	Non-MSM* Male	MSM*	Total
Black/African American (Non-Hispanic)	287	270	402	959
White (Non-Hispanic)	67	67	498	632
Hispanic	51	64	349	464
Other	2	1	7	10
Unknown	50	60	121	231
Total	457	462	1,377	2,296

*MSM- men who have sex with men

Prevention

Community prevalence and higher risk-taking behaviors associated with certain populations continue to contribute to morbidity. In terms of gender and racial/ethnic distribution, the trends for early syphilis indicate the need for tailored programs and resources targeted at identified high-risk groups.

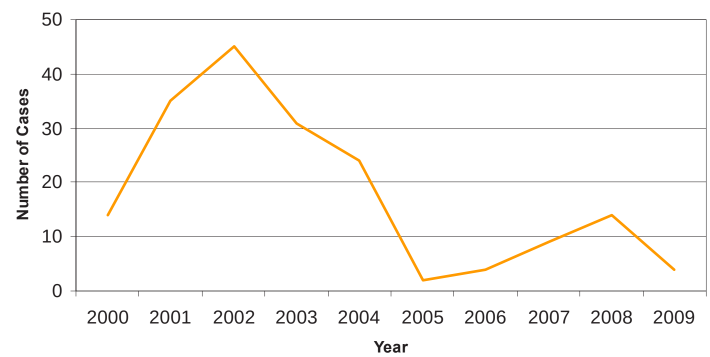
References

CDC. Syphilis - CDC Fact Sheet. Atlanta, GA: U.S. Department of Health and Human Services, May 2004.

Toxoplasmosis

Toxoplasmosis: Crude Data	
Number of Cases	4
2009 incidence rate per 100,000	0.02
% change from average 5-year (2004-2008) reported cases	-62.26
Age (yrs)	
Mean	36.75
Median	36.5
Min-Max	30 - 44

Figure 1. Toxoplasmosis Cases by Year Reported, Florida, 2000-2009

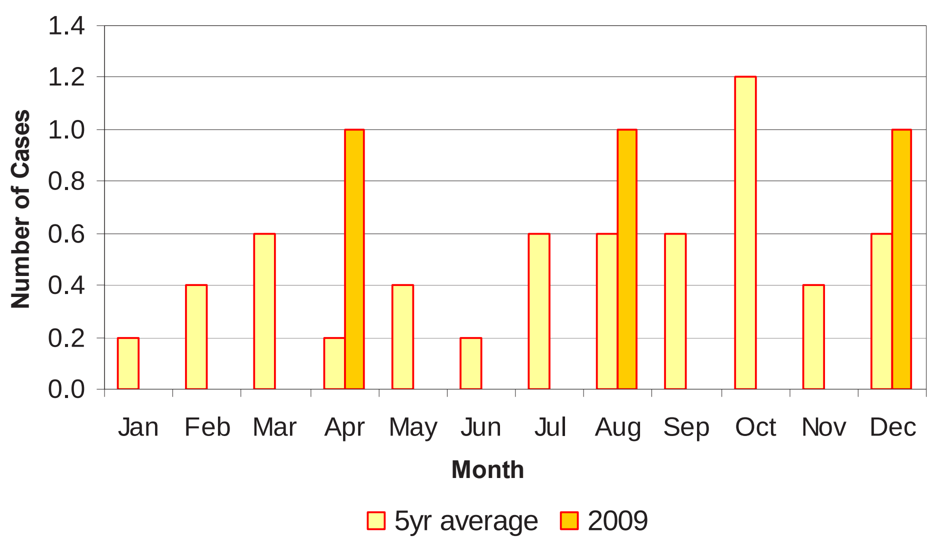


Disease Abstract

The number of cases of toxoplasmosis increased between 2000 (14) and 2002 (45), declined to two cases in 2005, and had been steadily increasing until a decline in 2009 to four cases (Figure 1). Of the cases reported in 2009, all four were confirmed. No outbreaks of toxoplasmosis have been reported in the past 10 years. Most cases of toxoplasmosis occur in immunocompromised individuals without a recent or specific exposure history. This is true for all the cases of toxoplasmosis confirmed in Florida during 2009.

During the past five years, the cases reported were distributed throughout all the months of the year; in 2009, cases occurred in January, April, August, and December (Figure 2). The cases came from three counties – Alachua (1), Collier (1), and Dade (2).

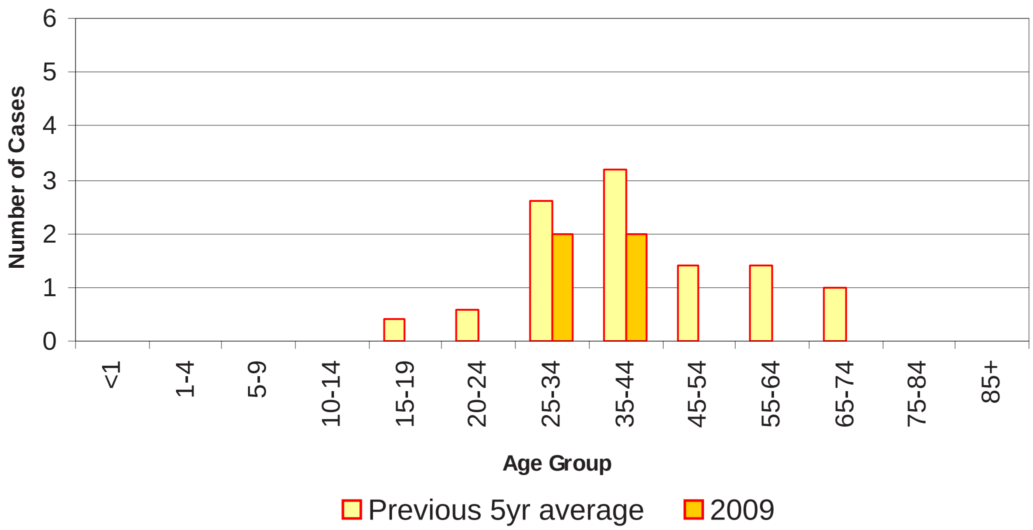
Figure 2. Toxoplasmosis Cases by Month of Onset, Florida, 2009



* This graph is by month of onset and so does not reflect one 2009 case with an onset date in December, 2008.

The average number of cases for the past five years was highest in those aged 35-44 years with a bell-shaped distribution surrounding this group. The 2009 data show a very similar pattern with cases occurring in those 30 to 44 years old (Figure 3). Between 2002 and 2006, and again in 2009, women had a higher incidence rate than men.

Figure 3. Toxoplasmosis Cases by Age Group, Florida, 2009



Prevention

Prevention measures should include informing immuno-compromised people and pregnant women use the strategies that follow:

- Wash your hands.
- Freeze or cook meats thoroughly.
- Avoid cleaning cat litter pans.
- Wear gloves when gardening.
- Keep cats indoors.
- Dispose of cat feces and litter daily.
- Cover sandboxes to prevent access from stray cats.

References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

Additional Resources

Disease information is available from the CDC at http://www.cdc.gov/ncidod/dpd/parasites/toxoplasmosis/default.htm and http://www.cdc.gov/ncidod/dpd/parasites/toxoplasmosis/moreinfo_toxoplasmosis.htm.

Tuberculosis

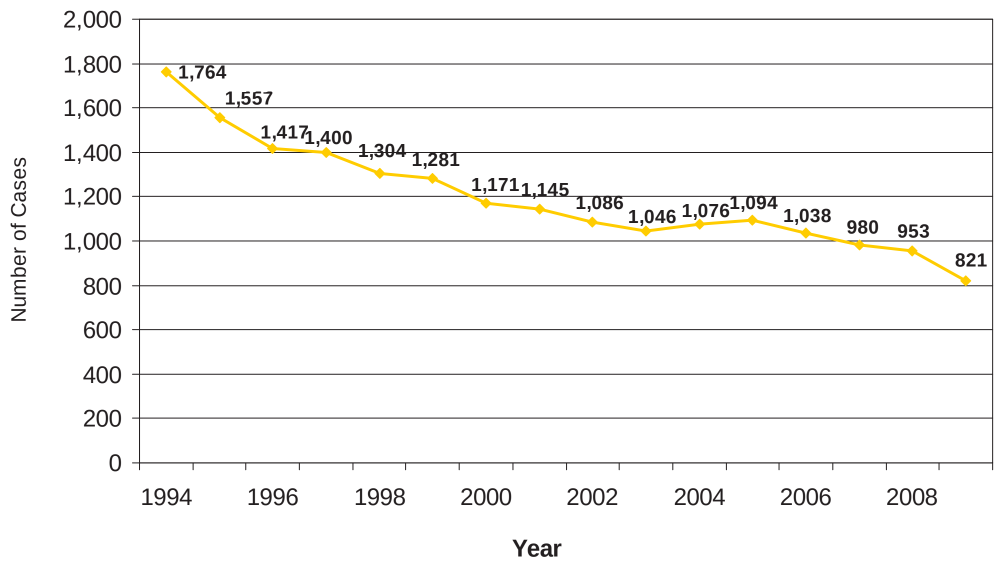
Description

Tuberculosis (TB) is an infectious respiratory disease caused by the bacteria *Mycobacterium tuberculosis*. Aerosolized droplets from individuals with active TB spread this disease when they cough, sing, speak, or laugh. Each year there are over nine million infections and 1.7 million deaths caused by the disease worldwide. Over 90% of healthy individuals infected with TB bacteria will never get the active form of the disease. However, the risk of active disease increases dramatically with specific risk factors and co-morbid conditions.

Disease Abstract

In 2009, 821 tuberculosis cases were reported in Florida. This represents over a thirteen percent (13.6%) decrease in cases from the previous year (N=953). The TB case rate declined from 5.0 cases per 100,000 population in 2008 to 4.4 cases per 100,000 population in 2009.

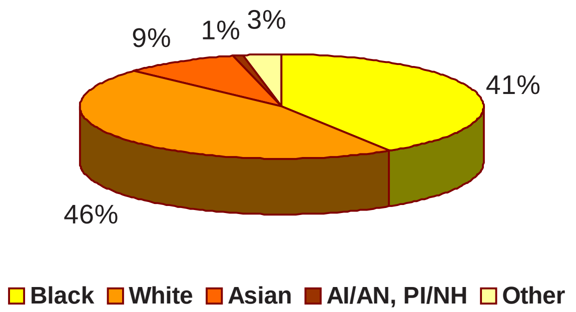
Figure 1. Tuberculosis Cases by Year Florida, 1994-2009



Race and Ethnicity

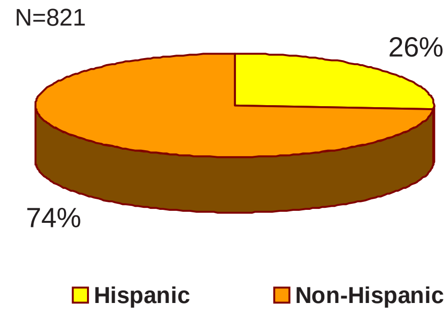
Medically underserved and low-income populations, including high risk racial and ethnic minorities, such as blacks, Hispanics, and Asians, have high rates of TB exposure and infection. These populations are disproportionately represented among reported cases of TB in Florida. Out of 821 cases reported for 2009, 48% were white, 42% were black or African-American, and 9% were Asian. American Indian/Alaskan Native and Pacific Islander/Native Hawaiian combined were 1.0%, and the Other category composed the remaining 1% (Figure 2). Twenty-six percent of reported cases were Hispanic and 74% were non-Hispanic (Figure 3).

Figure 2. TB Cases by Race, Florida, 2009



Source: HMS
Persons reporting to be American Indian (AI)/Alaska Native (AN), Pacific Islander/Native Hawaiian (PI/NH), and Other categories comprised 1% of TB cases.

Figure 3. TB Cases by Ethnicity, Florida, 2009



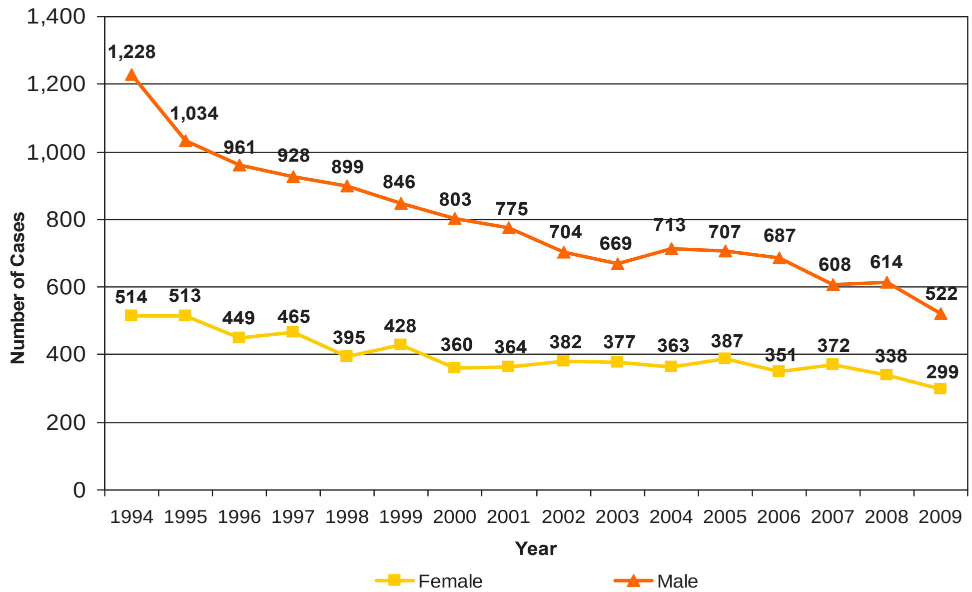
Source: HMS
Persons self reporting to be either Hispanic or Non-Hispanic.

Gender and Age

The number of TB cases in both genders has steadily decreased since 1994 with males having a greater decrease over time. In 2009, there were 522 cases in males and 299 cases in females (Figure 4). When grouping the TB cases by age categories, 2% of the cases fall in the zero to four-year-old age group and 2% in the five- to fourteen-year-old group. The 15 to 24 age group accounts for 7% of the overall TB cases. Thirty-three percent fall in the 25 to 44 year old group, 37% fall into the 45 to 64 year old group, and 20% of the cases were 65 and over (Figure 5).

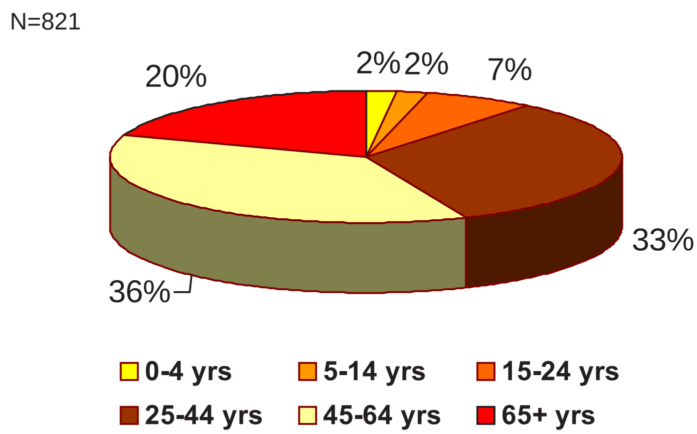
Males have a higher case rate than females for all age groups. In the zero to four year old age group, males had a case rate of 1.7 cases per 100,000 population as compared to females with a case rate of 1.1 cases per 100,000 population. In the five to fourteen year old age group, the case rate between males and females was much closer (0.8 cases and 0.3 cases per 100,000 population, respectively). The 15 to 24 year old age group was the closest in terms of case rate in males and females, with males having a case rate of 2.4 cases per 100,000 population and females had a case rate of 2.3 cases per 100,000 population. The difference between case rates increased as age increased, with the greatest difference between genders in people 65 and over, in which the rate in males was 2.5 times higher than the rate in females (Figure 6).

Figure 4. Tuberculosis and Gender Florida, 1994-2009



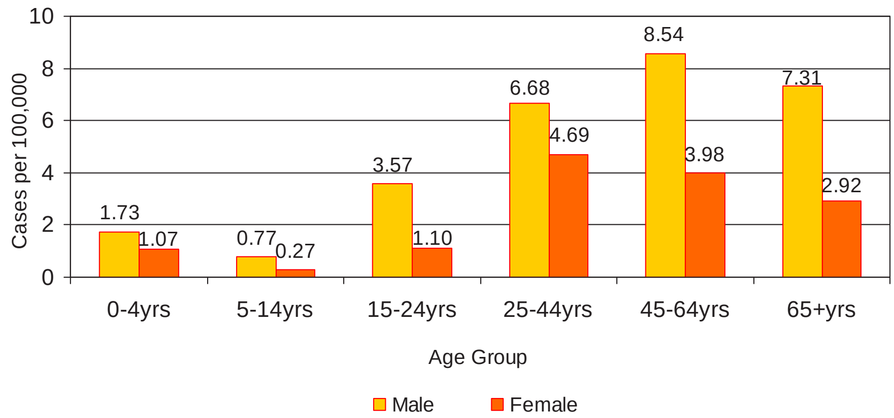
Source: TIMS and HMS (2009)

Figure 5. TB Cases by Age Group, Florida, 2009



Source: HMS
Percentages have been rounded and may not equal 100%.

Figure 6. Tuberculosis Case Rates by Age Group and Gender Florida, 2009



Rates are per 100,000 population.
Population estimates from Florida CHARTS.

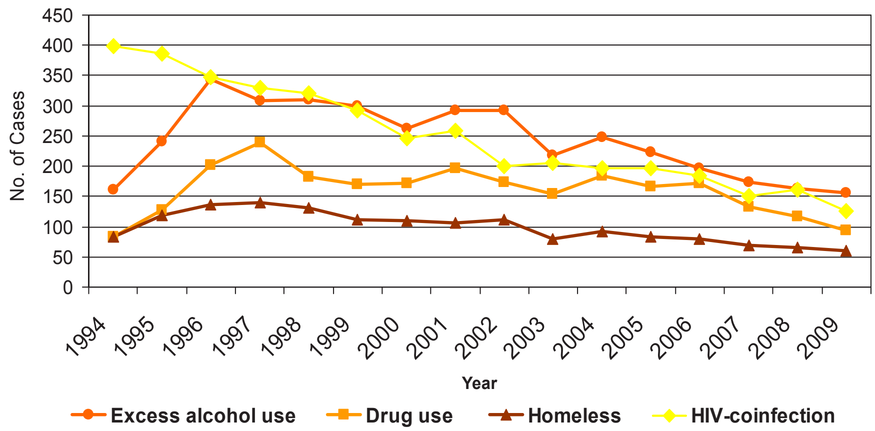
Risk Factors

The risk factors associated with TB disease from 1994 to 2009 were:

- excessive alcohol use (within a year of TB diagnosis),
- drug use (within a year of TB diagnosis),
- homelessness (within a year of TB diagnosis), and
- HIV co-infection.

In 2009, there were 156 cases in which excessive alcohol use was a risk factor. Drug use was reported in 94 cases, homelessness in 61 cases and HIV co-infection was reported in 125 cases. Please note: multiple risk factors can be reported for a case and not all cases will have these select risk factors (Figure 7).

Figure 7. Tuberculosis Disease and Risk Factors, Florida, 1994-2009



Source: TIMS and HMS (2009)

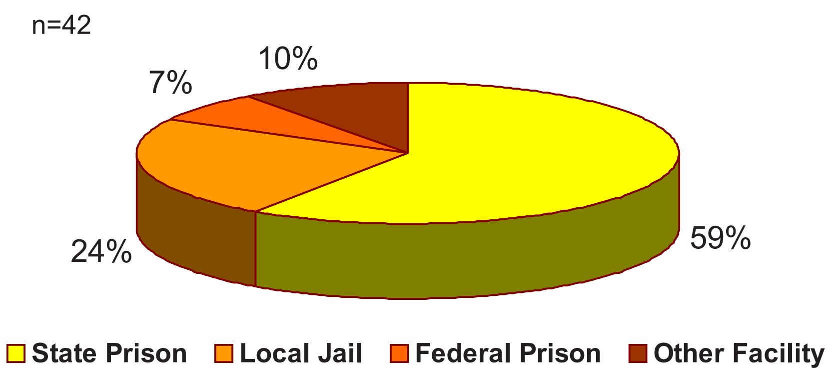
Patient reported condition of substance abuse and/or homelessness within 1 year of TB diagnosis.

Incarceration

Effective TB prevention and control within correctional settings are essential elements to protecting the health of inmates, staff, and the community. Continuity of care at the county health department must be ensured in order to increase adherence to treatment once inmates with active TB disease or infection are released back into the community. Failure to complete treatment could lead to acquiring drug resistance to one or more TB medications, progressing to active TB disease, or exposing the general community to possible TB infection.

There were 42 TB cases in 2009 reported from correctional facilities. Fifty-nine percent of the cases were from state prisons, 24% were from local jails, 7% were from federal prisons, and the remaining 10% came from other detainment facilities (Figure 8).

Figure 8. TB in Correctional Facilities, Florida, 2009

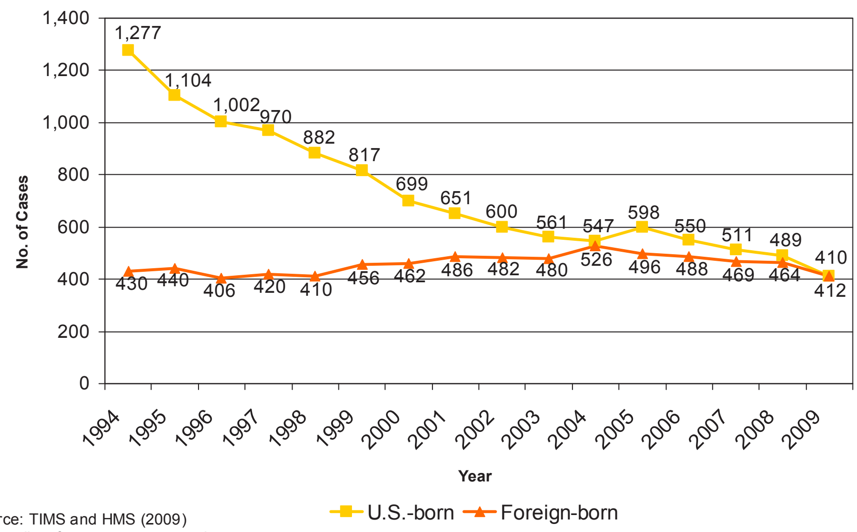


Source: TIMS and HMS (2009)
TB diagnosed during incarceration.
Percentages have been rounded and may not equal 100%.

Country of Origin

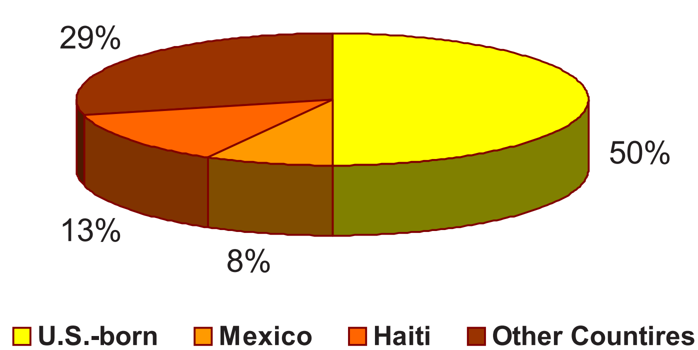
TB cases occurring in U.S.-born people in Florida have decreased significantly from a high of 1,277 cases in 1994 to 409 cases in 2009 (Figure 9). Out of the 821 TB cases reported in Florida for 2009, 50% were U.S.-born and 50% were foreign-born. Out of the 412 of cases that were foreign-born, Haiti accounted for 107 cases or 26%, and Mexico accounted for 66 cases or 16%. Overall, Haiti and Mexico were listed as the country of birth for 21% of the total number of TB cases (Figure 10).

Figure 9. Trends in TB Cases in U.S.-born vs. Foreign-born Persons, Florida, 1994-2009



Source: TIMS and HMS (2009)
Nationality of some cases was unknown.

Figure 10. Reported TB Cases by Origin, Florida, 2009

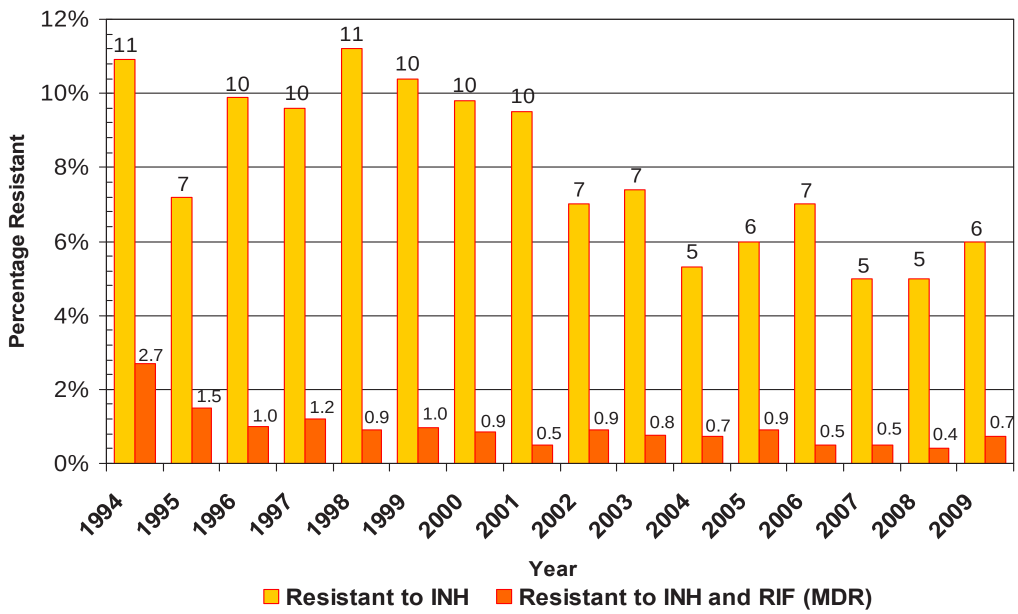


Source: HMS
*Haiti and Mexico represent top two foreign born countries.

Drug Resistance

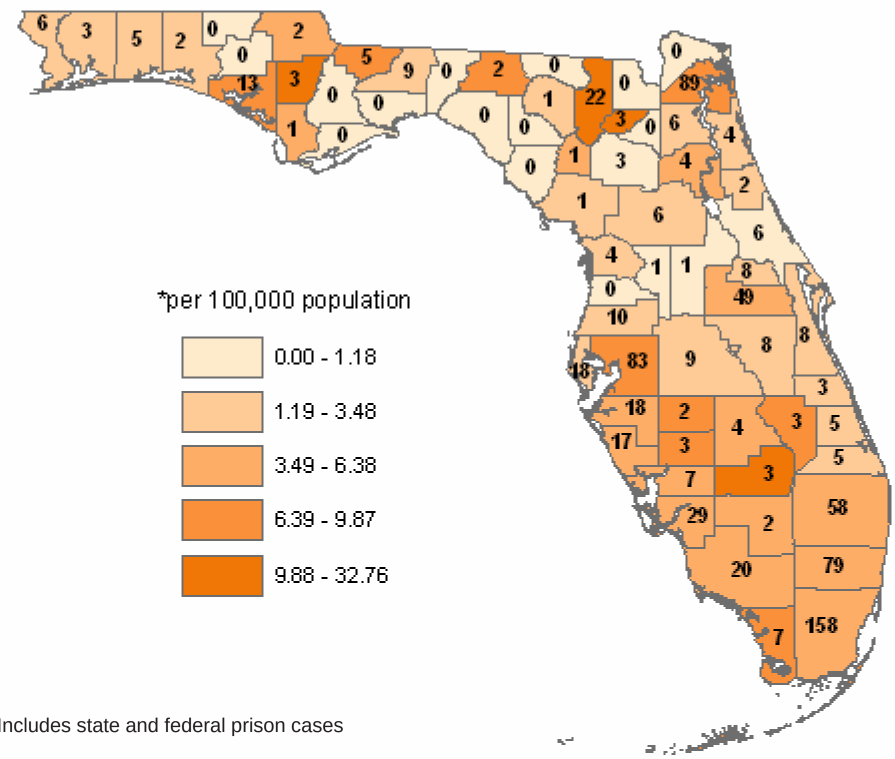
The development of drug resistance is an important issue in TB control. Multi-drug-resistant TB and extensively-drug-resistant TB have become more prevalent over the past decade. Development of resistance to certain antimicrobials has important implications for the types of drugs that are used for TB treatment and control. Figure 11 displays the percentage of TB cases in Florida that are resistant to isoniazid (INH) alone and the cases resistant to both INH and rifampin (RIF) from 1994 to 2009. The percentage of INH resistance in 2009 was 6.0%. The percentage of INH and RIF, also known as Multi-drug resistance (MDR), was 0.7%.

Figure 11. Anti-TB Drug Resistance* Florida, 1994-2009



Source: TIMS and HMS (2009)
*Based on Initial Drug Susceptibility Testing.

Tuberculosis Incidence Rate* by County, Florida, 2009†



†Includes state and federal prison cases

References

David L. Heymann (ed.) Control of Communicable Diseases Manual, 18th ed., American Public Health Association Press, Washington, DC, 2004.

Centers for Disease Control and Prevention (CDC) http://www.cdc.gov/tb/

National Institute of Allergies and Infectious Diseases
http://www.niaid.nih.gov/topics/tuberculosis/understanding/Pages/Default.aspx

American Thoracic Society http://www.thoracic.org/

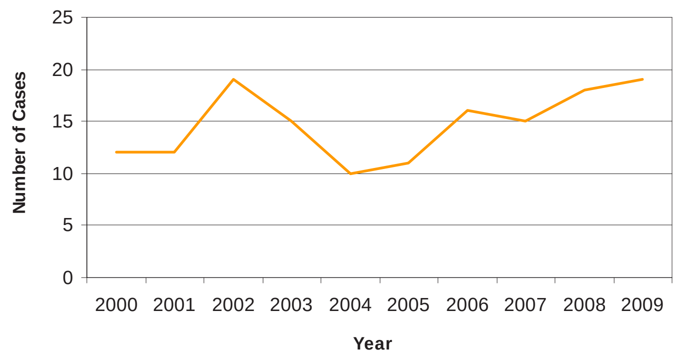
Additional Resource

Florida Department of Health - Bureau of TB and Refugee Health website
http://www.doh.state.fl.us/disease_ctrl/tb/

Typhoid Fever

Typhoid Fever: Crude Data	
Number of Cases	19
2009 incidence rate per 100,000	0.10
% change from average 5-year (2004-2008) reported cases	35.71
Age (yrs)	
Mean	24.26
Median	23
Min-Max	2 - 54

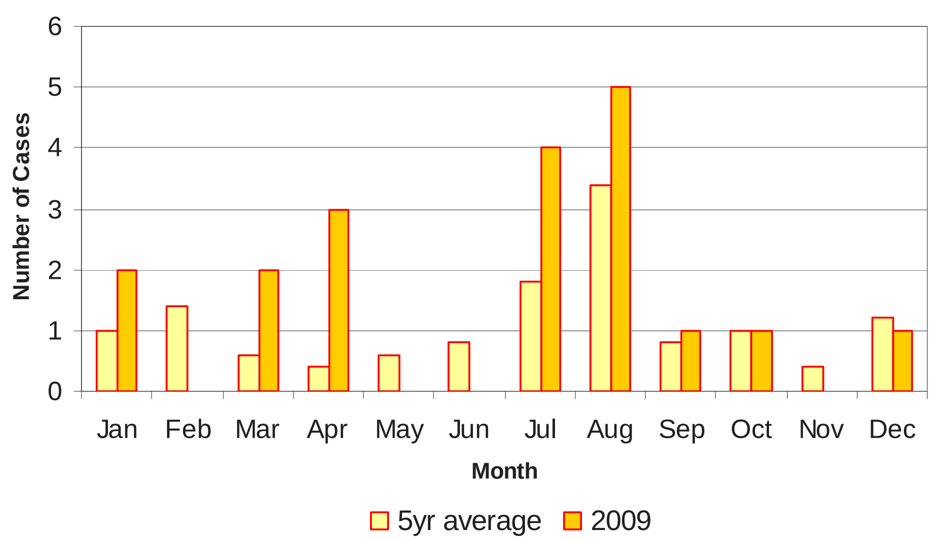
Figure 1. Typhoid Fever Cases by Year Reported, Florida, 2000-2009



Disease Abstract

Typhoid fever is a systemic illness caused by the bacterium *Salmonella* Typhi. The number of confirmed cases of typhoid fever for the last 10 years has ranged from 10 to 24 annually. In 2009 19 cases were reported, representing an annual incidence rate of 0.10 per 100,000. This was a 35.7% increase from the average number of reported cases in the previous five years (Figure 1). All of the 2009 cases were classified as confirmed, and the median age was 23. Over the past five years, and consistent with national data, the majority of the cases (66-90%) were acquired outside the U.S. The counties reporting the greatest number of cases were Broward, Miami-Dade, and Lee. Cases tend to be isolated, rather than clustered. They typically occur more frequently in the summer months. In 2009, the majority of cases occurred in July and August. Only a single outbreak of typhoid fever (18 cases, 1997) occurred in Florida in the past 12 years. This outbreak was traced to frozen shakes made with imported frozen mamey fruit.

Figure 2. Typhoid Fever Cases by Month of Onset, Florida, 2009



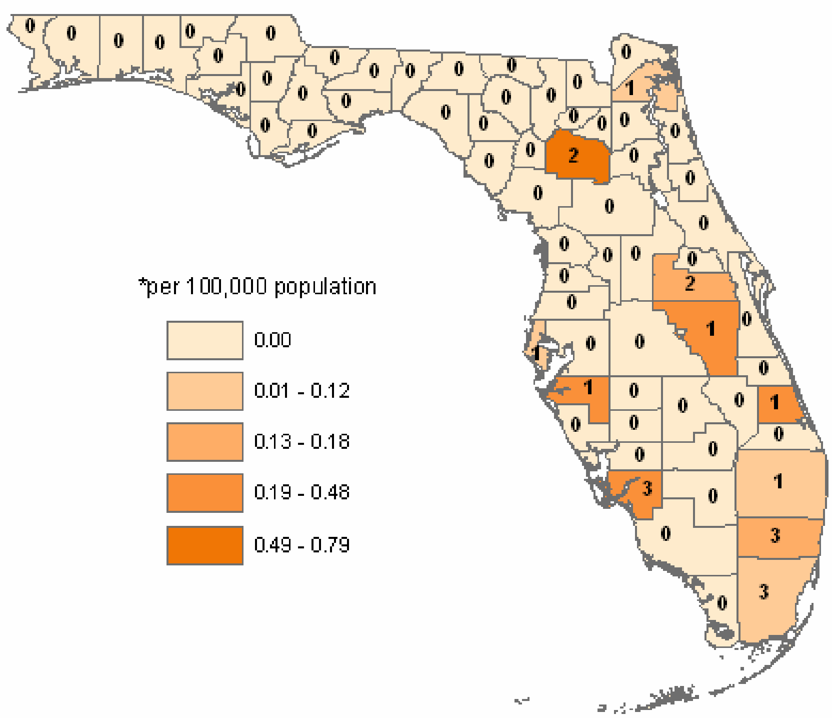
Prevention

Prevention is accomplished through proper sanitation, safe food handling practices, and appropriate case management. This includes the use of the following methods.

- Wash your hands thoroughly.
- Dispose of human waste products appropriately.
- Maintain safe and purified water supplies.
- Control insects.
- Use appropriate refrigeration.
- Maintain cleanliness when preparing food in both home and commercial settings.
- Make sure cases are treated promptly and effectively.
- Assure that people with untreated cases do not expose others, for example as food-handlers.

In endemic areas, prevention measures should include drinking bottled or carbonated water, cooking foods thoroughly, peeling raw fruits and vegetables, and in general, avoiding food or drink from street vendors. Immunization is recommended only for those with occupational exposure to enteric infections or for those traveling or living in endemic, high-risk areas.

Typhoid Fever Incidence Rate* by County, Florida, 2009



References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

Additional Resources

Disease information is available from the CDC at http://www.cdc.gov/ncidod/dbmd/diseaseinfo/typhoidfever_g.htm.

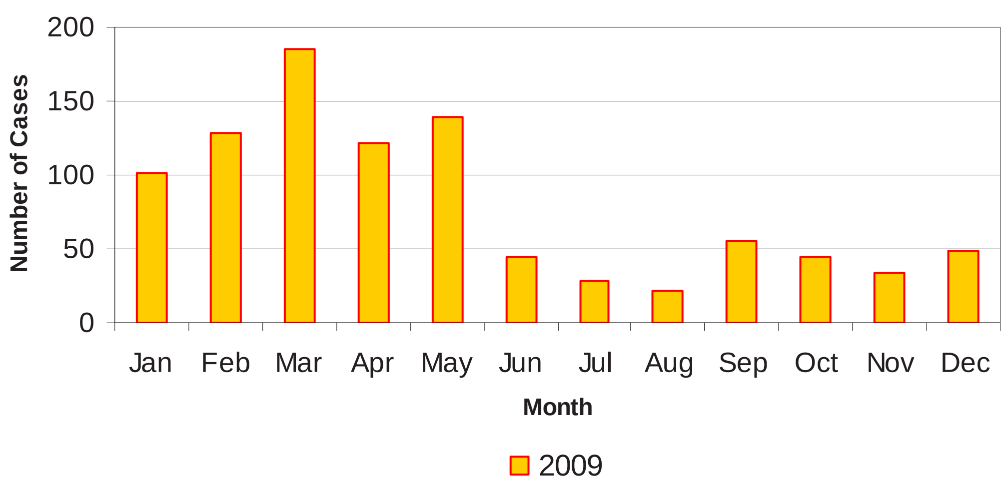
Varicella

Varicella: Crude Data	
Number of Cases	1,125
2009 incidence rate per 100,000	5.98
% change from average 5-year (2004-2008) reported cases	N/A
Age (yrs)	
Mean	14.51
Median	10
Min-Max	<1-95

Disease Abstract
In 2007, the first full year of varicella case reporting in Florida, 1,321 cases were reported. The 1,125 cases reported in 2009 include both confirmed and probable cases. Of these cases, 642 had a history of vaccination recorded. March 2009 was the peak month for cases to occur (Figure 1). The majority of cases in 2009 occurred in those under 15 years of age (Figure 2). There were 266 outbreak-associated cases in 27 counties. Childcare centers and schools are the most common sites for varicella outbreaks.

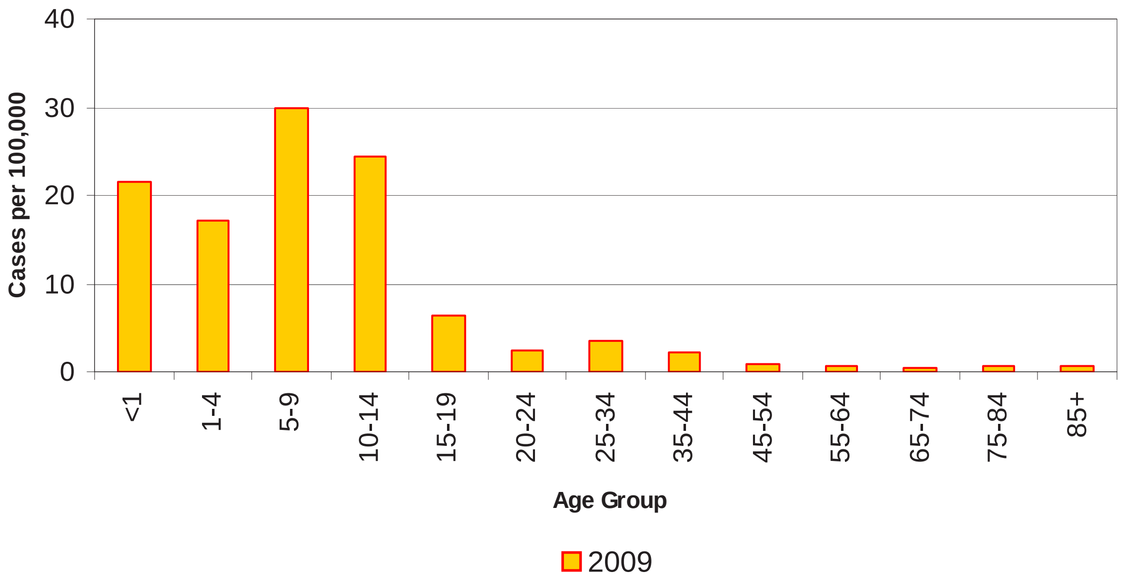
Varicella was reported in 57 of the 67 Florida counties.

Figure 1. Varicella Cases by Month of Onset, Florida, 2009



Prevention
The varicella vaccine is recommended at 12 to 15 months and at four to six years of age. Doses given prior to 13 years of age should be separated by at least three months. Doses given after 13 years of age should be separated by at least four weeks. Due to the occurrence of disease after one dose of vaccine, the current recommendation is for two doses of vaccine. Proof of varicella vaccination or healthcare provider documentation of disease is required for entry and attendance in childcare facilities, family daycare homes, and schools for certain grades.

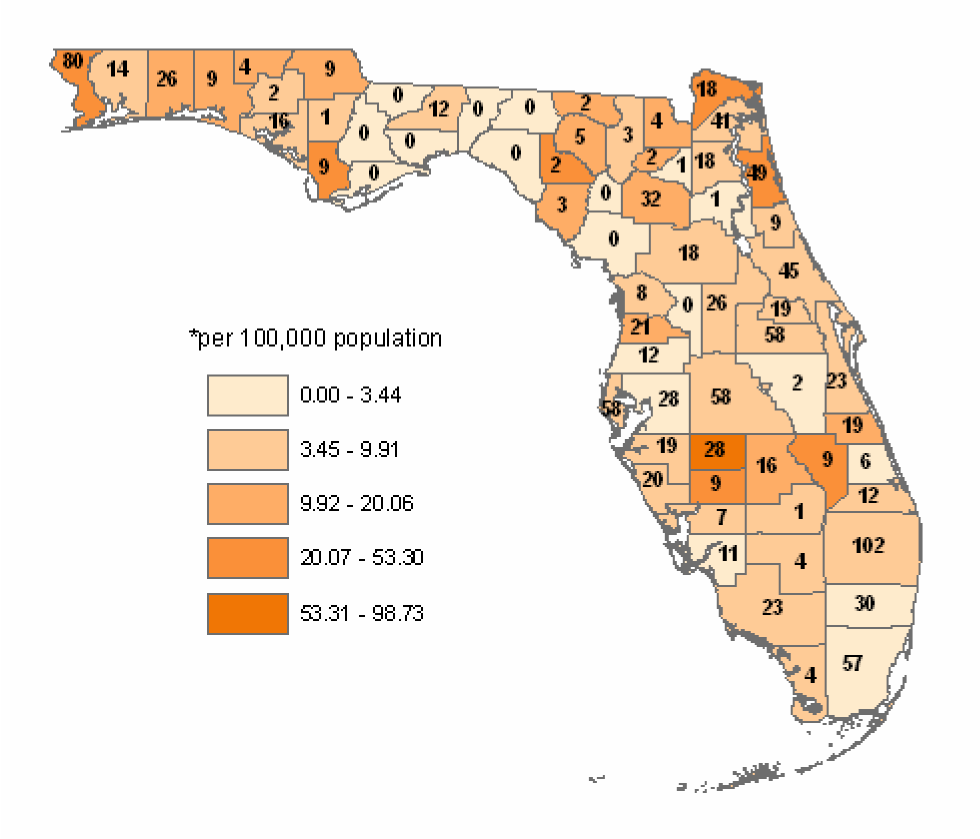
Figure 2. Varicella Incidence Rate by Age Group, Florida, 2009



The U.S. Advisory Committee on Immunization Practices (ACIP) recommends varicella vaccine for susceptible persons following exposure to a case of varicella infection. If administered within 72 hours, and possibly up to 120 hours following varicella exposure, varicella vaccine may prevent or significantly modify disease. Post-exposure vaccine use should be considered following exposures in healthcare settings, where transmission risk should be minimized at all times, and in households. If exposure to varicella does not cause infection, post-exposure vaccination with varicella vaccine should induce protection against subsequent infection. If exposure results in infection, the vaccine may reduce the severity of the disease.

Varicella zoster immune globulin (VZIG or VariZIG), if available, is recommended for post-exposure prophylaxis of susceptible persons who are at high risk for developing severe disease and when varicella vaccine is contraindicated. VZIG is most effective in preventing varicella infection when given within 96 hours of exposure. After the only U.S. licensed manufacturer of VZIG announced it had discontinued production, an investigational (not licensed) product, VariZIG, became available in February 2006 under an investigational new drug (IND) application submitted to the Food and Drug Administration. This new product can be obtained from the distributor (FFF Enterprises, Inc., Temecula, CA) by calling 800-843-7477.

Varicella Incidence Rate* by County, Florida, 2009



References

Centers for Disease Control and Prevention, *Manual for the Surveillance of Vaccine-Preventable Diseases*, 4th ed., 2008, chapter 17.

Additional Resources

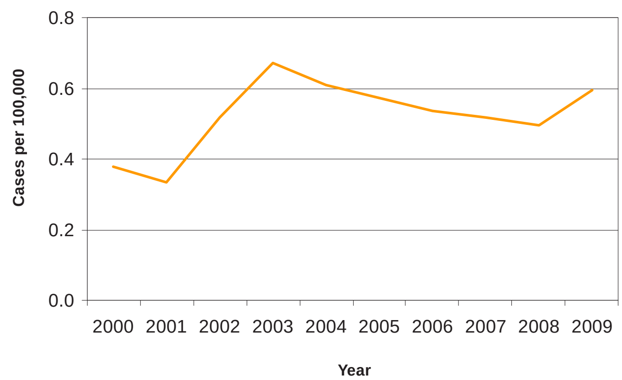
Disease information is available from the CDC at www.cdc.gov/vaccines/vpd-vac/varicella/default.htm.

Recommended immunization schedule is available at http://www.cdc.gov/vaccines/recs/schedules/default.htm.

Vibriosis

Vibrio Infections: Crude Data	
Number of Cases	112
2009 incidence rate per 100,000	0.60
% change from average 5-year (2004-2008) incidence rate	9.27
Age (yrs)	
Mean	49.15
Median	51.5
Min-Max	3 - 91

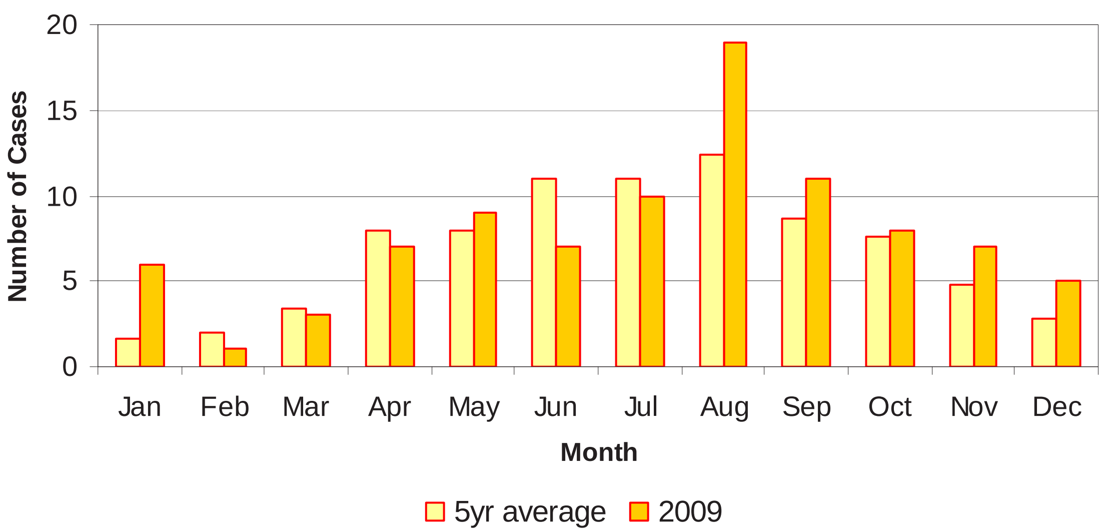
Figure 1. *Vibrio* Infections Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

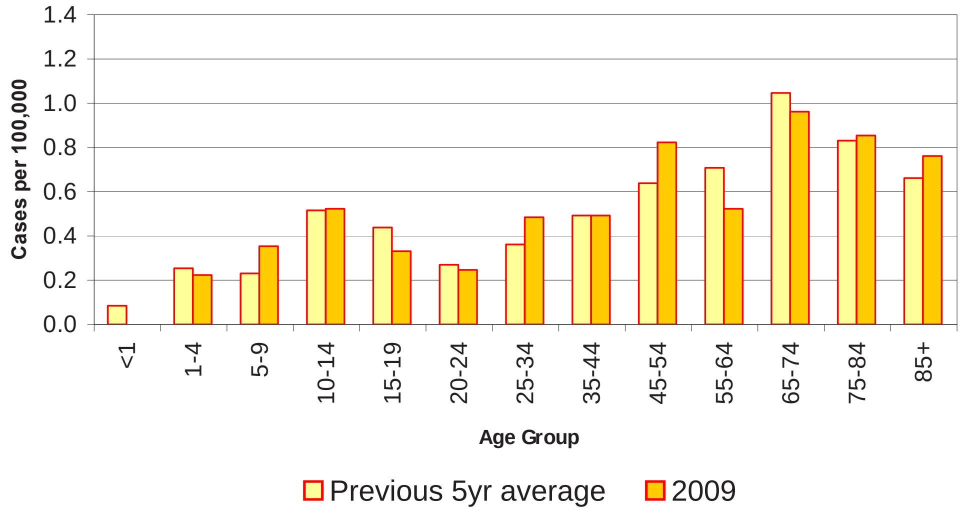
The genus *Vibrio* consists of many species of gram-negative, curved, motile rods, and contains about a dozen species known to cause human illness. Transmission occurs primarily through the foodborne route, and in Florida infection with *Vibrio* occurs principally from eating raw or undercooked shellfish. Transmission can also occur through contact of broken skin with seawater where *Vibrio* species are endemic, which includes the coastal areas of the Gulf of Mexico. The symptoms depend on the infecting *Vibrio* species. The species of greatest public health concern in Florida are *V. vulnificus* and *V. parahaemolyticus*. This report combines data on *Vibrio* infections to provide a general measure of disease burden; see Table 1 for distribution by species.

Figure 2. *Vibrio* Infections by Month of Onset, Florida, 2009



In comparison to the previous average five-year incidence, the incidence for *Vibrio* infections in 2009 increased (9.27%) (Figure 1). In 2009, 112 cases were reported and confirmed. The majority of cases were considered sporadic (95%), not outbreak-associated, and six were of unknown origin. *Vibrio* infections typically increase during the warmer months. In 2009, 63% of the cases occurred from April to October (Figure 2).

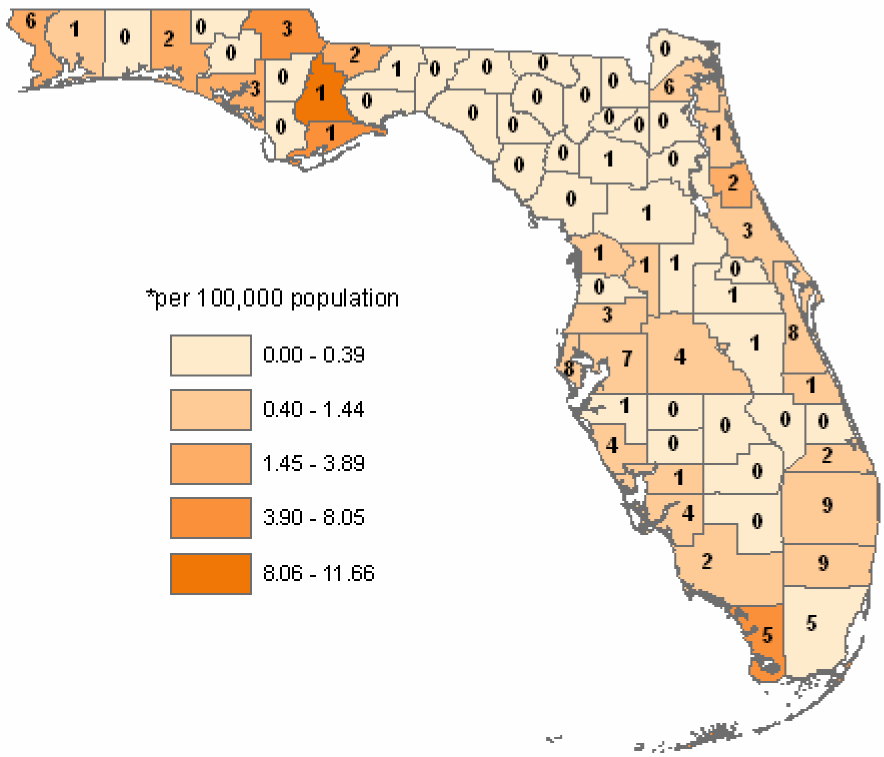
Figure 3. *Vibrio* Infections Incidence Rate by Age Group, Florida, 2009



There are consistently high incidence rates among individuals over 45 years old with a historical peak incidence occurring in the 65 to 74 age group (1.04 per 100,000 population) (Figure 3). This is a population that is likely to have chronic conditions that predispose them to these infections. However, in 2009, there was a relatively high incidence rate among those 10 to 14 years old.

Vibrio cases were reported in 36 of the 67 counties in Florida in 2009. The higher-incidence counties are found along the coasts.

Vibrio Infections Incidence Rate* by County, Florida, 2009



<u>*Vibrio vulnificus* infections</u>

Vibrio vulnificus infections typically manifest as septicemia in persons who have chronic liver disease, chronic alcoholism, or are immuno-compromised. *V. vulnificus* infections can lead to severe outcomes including death. *V. vulnificus* infections are commonly associated with the consumption of raw oysters although the bacteria can also infect wounds exposed to coastal or marine waters or raw seafood juices. Of the vibriosis cases reported in 2009, 24 were determined to be *V. vulnificus*. Of the 24 reported *V. vulnificus* cases, 13 were wound infections (one death) and seven were attributed to oyster consumption (three deaths). Exposure was unknown in four of the cases (two deaths).

<u>*Vibrio parahaemolyticus* infections</u>

Vibrio parahaemolyticus infections typically manifest as gastrointestinal disorders with symptoms of diarrhea, abdominal pain, nausea, fever, and headache. It is commonly associated with the consumption of raw oysters and is also associated with the consumption of cross-contaminated crustacean shellfish (crab, shrimp, and lobster). *V. parahaemolyticus* can also cause wound infections when broken skin is exposed to seawater where *V. parahaemolyticus* is endemic. Of the vibriosis cases reported in 2009, 23 were *V. parahaemolyticus*. Of these 23 cases, 11 were wound infections, four were attributed to oyster consumption, and one case had consumed both oysters and clams. Exposure was unknown in seven of the cases. No deaths from *V. parahaemolyticus* infection were reported.

Vibrio alginolyticus infections

Vibrio alginolyticus infections typically present as self-limited wound infections and ear infections. Septicemia and death have been reported in immunocompromised individuals and burn patients. Infection is commonly associated with exposure to seawater. Of the vibriosis cases reported in 2009, 33 were *V. alginolyticus*. Of these 33 cases, 29 were wound infections. Two deaths from *V. alginolyticus* were reported.

Table 1. *Vibrio* Infections – Confirmed Cases by Species and Exposure Type, Florida, 2009

	Exposure			
	Total Cases	Seafood*	Wound†	Unknown
Vibrio alginolyticus	33	0	29	4
V. parahaemolyticus	23	5	11	7
V. vulnificus	24	7	13	4
V. fluvialis	9	4	1	4
V. cholerae non-O1	6	1	1	4
V. hollisae	5	0	0	5
V. mimicus	3	2	0	1
Other *Vibrio spp.*	9	0	8	1
Total	112	19	63	30

*Includes shellfish (raw oysters and clams)

†Includes pre-existing and sustained wounds, ear infections, and eye infections

References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 18th ed., American Public Health Association Press, Washington, District of Columbia, 2004.

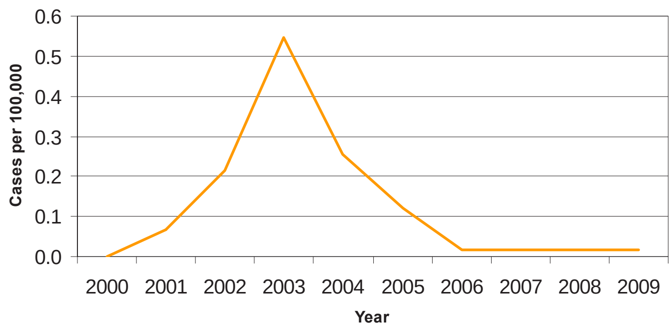
Additional Resources

Disease information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/nczved/divisions/dfbmd/.

West Nile Virus

West Nile Virus: Crude Data	
Number of Cases	3
2009 incidence rate per 100,000	0.02
% change from average 5-year (2004-2008) reported cases	-80.26
Age (yrs)	
Mean	56.67
Median	62
Min-Max	39 - 69

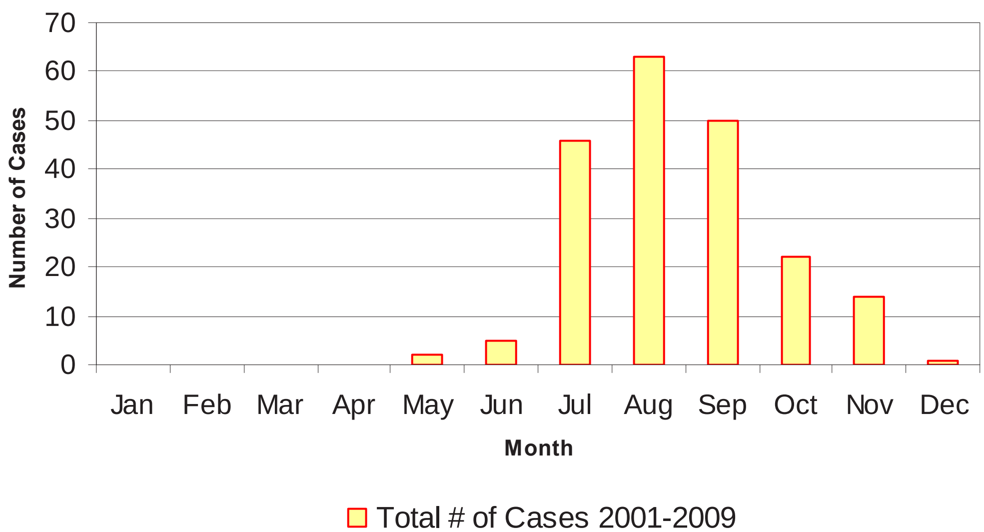
Figure 1. West Nile Virus Incidence Rate by Year Reported, Florida, 2000-2009



Disease Abstract

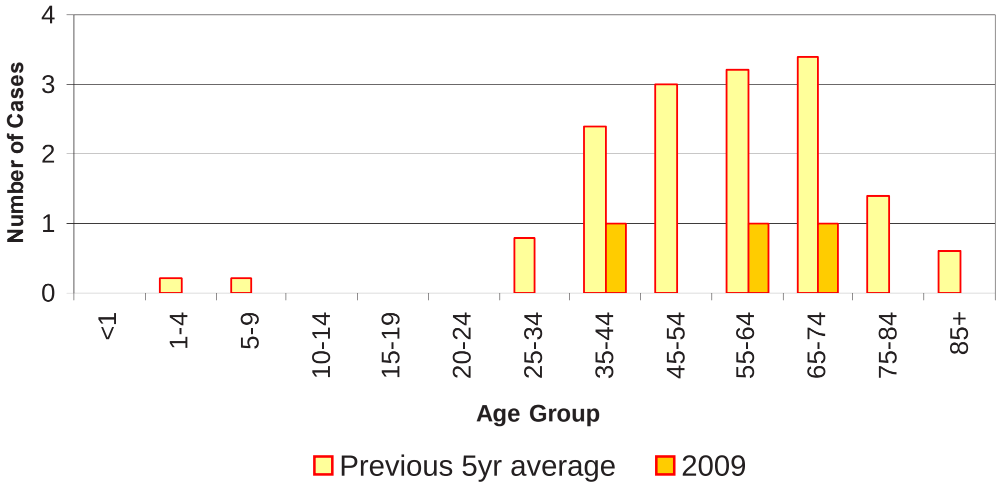
The incidence rate for West Nile virus (WNV), including the neuro-invasive and non-neuro-invasive forms, peaked in Florida in 2003 and has remained stable and near zero since 2006 (Figure 1). In 2009, there were two locally-acquired human cases, and one Floridian became ill after being exposed in another state. All were classified as neuro-invasive disease. The level of virus transmission between bird and mosquito populations is dependent on a number of environmental factors. The low levels of activity reported from 2006 to 2009 were likely a result of the dry conditions experienced by much of the state. The peak transmission period for WNV in Florida occurs July through September (Figure 2).

Figure 2. West Nile Virus by Month of Onset, Florida, 2001-2009



The greatest number of cases occur in people over the age of 35 (Figure 3), with more cases among males than females. WNV transmission tends to be localized in Florida. In 2001, the epicenter of the WNV outbreak was in the north-central part of the state. The following year, activity was most intense in the northwestern and central counties. The focus in 2003 was the panhandle, while south Florida had the most activity in 2004. In 2005, 86% of the human cases were in Pinellas County. In 2009, the locally-acquired cases were in Lee and Miami-Dade counties, both in south Florida.

Figure 3. West Nile Virus Cases by Age Group, Florida, 2009



In general, approximately 80% of those infected show no clinical symptoms. Twenty percent have mild symptoms, and less than 1% experiences the most severe neuro-invasive form of illness. People over the age of 50 seem to be at increased risk for neuro-invasive disease. The case-fatality ratio for neuro-invasive disease is approximately 7% in Florida. Interestingly, activity of a related disease, St. Louis Encephalitis (SLE), has decreased dramatically since WNV was first detected in the state in 2001. Research suggests that antibodies for WNV may protect against SLE virus infection in wild bird reservoirs.

Prevention

There is no specific treatment for WNV disease, and therapy is supportive for ill people; prevention is a necessity. Measures that should be taken to avoid being bitten by mosquitoes include the following tips.

- Drain any areas of standing water from around the home to eliminate mosquito-breeding sites.
- Use insect repellents that contain DEET or other EPA-approved ingredients, such as Picaridin, oil of lemon eucalyptus, or IR3535.
- Avoid spending time outdoors during dusk and dawn, the time when WNV disease-carrying mosquitoes are most likely to be biting.
- Dress in long sleeves and long pants to protect your skin from mosquitoes.
- Inspect screens on doors and windows for holes to make sure mosquitoes cannot enter the home.
- Vaccinate horses

References

David L. Heymann (ed.), *Control of Communicable Diseases Manual*, 19th ed., American Public Health Association Press, Washington, District of Columbia, 2009.

Fang Y, Reisen WK. Previous infection with West Nile or St. Louis encephalitis viruses provides cross protection during reinfection in house finches. *Am J Trop Med Hyg*. 2006;75(3): 480-5.

Ottendorfer CL, Ambrose JL, White GS. Isolation of genotype V St. Louis encephalitis virus in Florida. *Emerg Infect Dis*. 2009;15(4):604-06.

Additional Resources

Additional information on WNV and other mosquito-borne diseases can be found in the *Surveillance and Control of Mosquito-borne Diseases in Florida Guidebook*, online at http://www.doh.state.fl.us/Environment/medicine/arboviral/2009MosquitoGuide.pdf.

Disease information is also available from the Centers for Disease Control and Prevention at http://www.cdc.gov/ncidod/dvbid/westnile/index.htm

Section 3

Summary of Foodborne Disease Outbreaks

Description

Foodborne disease investigation and surveillance are essential public health activities. Globalization of the food supply, changes in individual's eating habits and behaviors, and newly emerging pathogens have increased the risk of contracting foodborne diseases. The Centers for Disease Control and Prevention (CDC) estimates foodborne diseases account for approximately 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths per year in the U.S. However, only an estimated 14 million illnesses, 60,000 hospitalizations, and 1,800 deaths are accounted for by confirmed pathogens. Florida has had a program since 1994 to oversee food and waterborne disease surveillance and investigation. The purpose of the program is to better capture data and investigate food and waterborne diseases, complaints, and outbreaks as well as to increase knowledge and prevent illness.

Foodborne disease outbreaks as defined by the Florida Department of Health, Food and Waterborne Disease Program are incidents in which two or more people have the same disease, have similar symptoms, or excrete the same pathogens; and there is a person, place, and/or time association between these people along with ingestion of a common food. A single case of suspected botulism, mushroom poisoning, ciguatera, paralytic shellfish poisoning, other rare disease, or a case of a disease that can be definitively related to ingestion of a food, is considered an incident of foodborne illness and warrants further investigation.

Overview

In 2009, Florida reported 65 foodborne disease outbreaks with a total of 725 associated cases. (Table 1).

Table 1. Summary of Foodborne Disease Outbreaks, Florida, 2000-2009

Year	Number of Outbreaks	Number of Cases	Proportion of Outbreaks per 100,000 Population	Proportion of Cases per 100,000 Population	Average Cases per Outbreak
2000	269	1,569	1.67	9.76	5.83
2001	288	1,922	1.75	11.71	6.67
2002	240	1,450	1.43	8.65	6.04
2003	185	1,563	1.08	9.11	8.45
2004	174	1,937	0.99	11.00	11.13
2005	128	1,944	0.71	10.79	15.19
2006	143	1,142	0.78	6.19	7.99
2007	117	827	0.62	4.42	7.07
2008	97	1,190	0.51	6.30	12.27
2009	65	725	0.35	3.85	11.15

Trends

Over the last 10 years in Florida there has been a general decreasing trend in the total number of reported foodborne disease outbreaks and number of reported foodborne disease outbreaks per 100,000 population (Figures 1 and 2)

Figure 1. Total Number of Reported Foodborne Disease Outbreaks Florida, 1999-2009

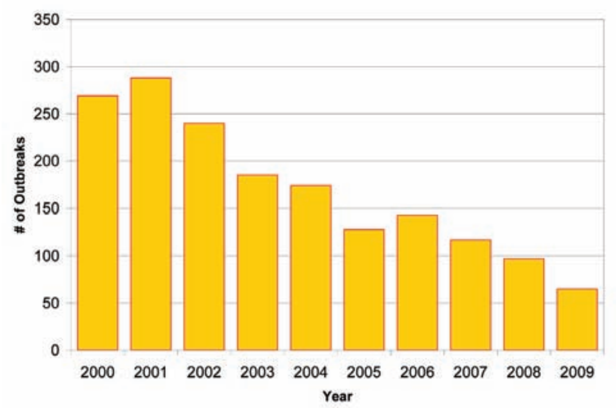
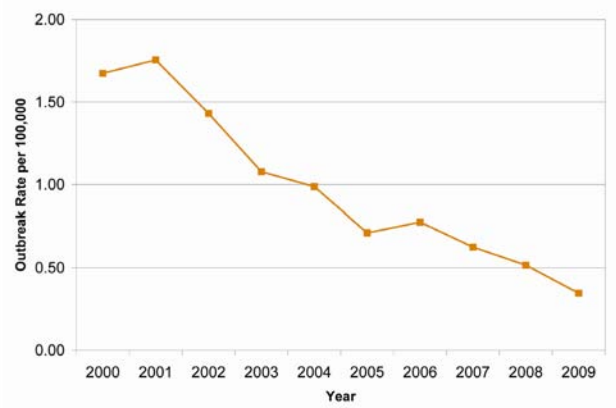


Figure 2. Number of Reported Foodborne Disease Outbreaks per 100,000 Population Florida, 1999-2009



Over the last 10 years, the total number of reported foodborne illness cases (Figure 3) and the number of reported foodborne illness cases per 100,000 population (Figure 4) in Florida has generally declined but not as consistently as for outbreaks.

Figure 3. Total Number of Reported Foodborne Disease Outbreak Cases Florida, 1999-2009

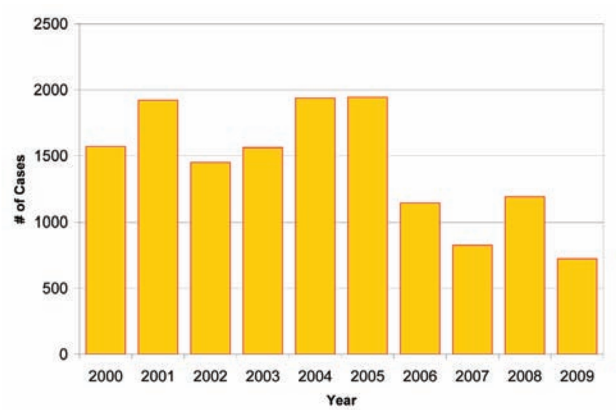
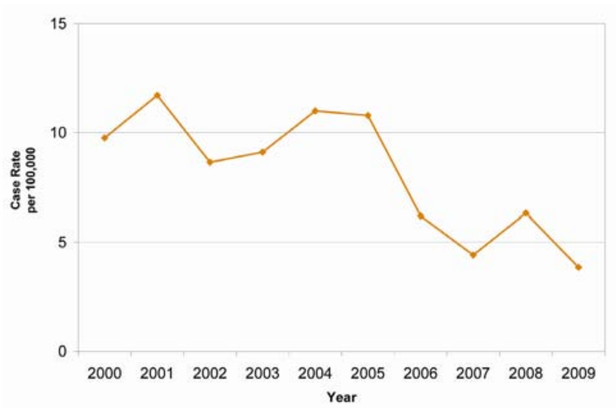


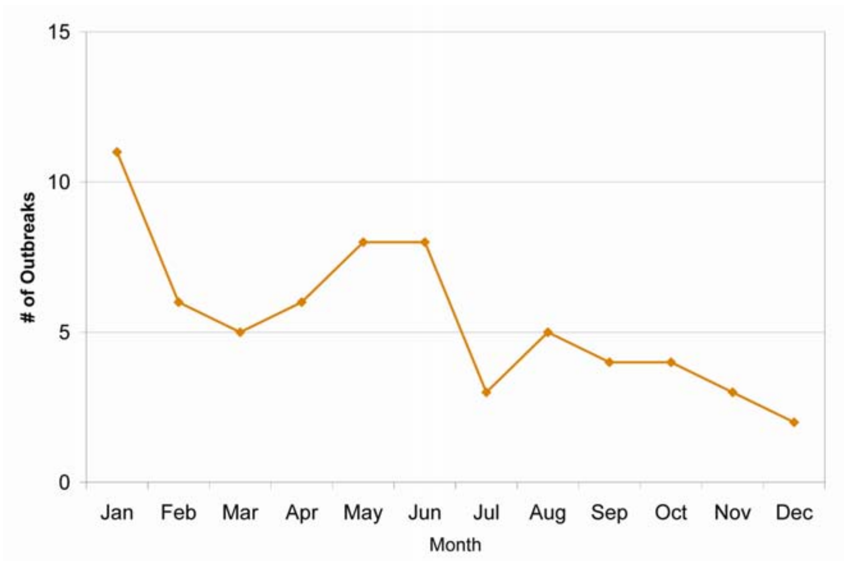
Figure 4. Number of Reported Foodborne Disease Outbreak Cases per 100,000 Florida, 1999-2009



Seasonality

Occurrence of reported foodborne disease outbreaks in Florida for 2009 peaked in January (Figure 5).

Figure 5. Total Number of Reported Foodborne Disease Outbreaks by Month, Florida, 2009



Agent

Foodborne disease outbreaks caused by bacterial (38.5%) and viral (32.3%) pathogens accounted for most of the total reported foodborne disease outbreaks with a known etiology (Figure 6). Foodborne disease outbreaks caused by viral pathogens accounted for the most reported cases (45.7%) with a known etiology (Figure 7). Pathogen type was unknown for 13.8% of the reported foodborne disease outbreaks and 24.1% of the outbreak-associated cases.

Figure 6. Percentage of Reported Foodborne Disease Outbreaks by Pathogen Type, Florida, 2009

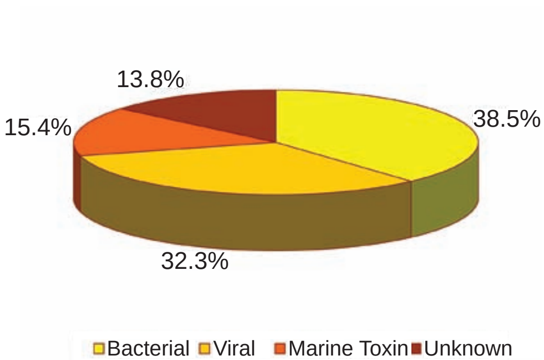
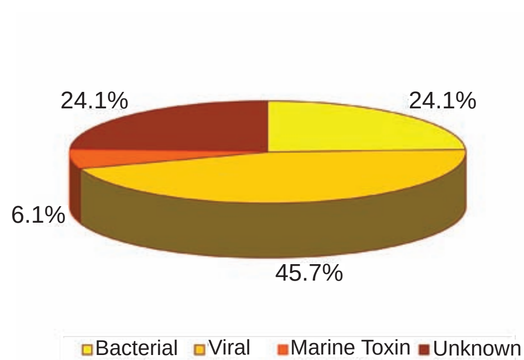


Figure 7. Percentage of Reported Foodborne Disease Outbreak Cases by Pathogen Type, Florida, 2009



The number and percentage of foodborne disease outbreaks and cases by etiology for 2009 is summarized in Table 2. Norovirus was the most frequently reported etiology for outbreaks in Florida for 2009 accounting for 21 outbreaks (32.3%) followed by ciguatera toxin which accounted for nine outbreaks (13.9%). Norovirus accounted for the highest number of cases associated with reported foodborne disease outbreaks with 331 cases (45.7%) followed by *Clostridium perfringens*, which accounted for 60 cases (6.9%)

Table 2. Number and Frequency of Foodborne Outbreaks and Cases by Etiology, Florida, 2009

Pathogen	Outbreaks		Cases	
	Number	Percent	Number	Percent
Unknown	**9**	**13.85%**	**175**	**24.14%**
Bacterial				
V. vulnificus	7	10.77%	7	0.97%
Salmonella	7	10.77%	49	6.76%
B. cereus	4	6.15%	12	1.66%
C. perfringens	4	6.15%	50	6.90%
Staphylococcus	1	1.54%	2	0.28%
Shigella	1	1.54%	13	1.79%
E. coli O157:H7	1	1.54%	42	5.79%
Total Bacterial	**25**	**38.46%**	**175**	**24.14%**
Viral				
Norovirus	21	32.31%	331	45.66%
Total Viral	**21**	**32.31%**	**331**	**45.66%**
Marine Toxin				
Ciguatera	9	13.85%	37	5.10%
Scombroid	1	1.54%	7	0.97%
Total Marine Toxin	**10**	**15.38%**	**44**	**6.07%**
Total	**65**	**100.00%**	**725**	**100.00%**

Implicated Food Vehicles

Multiple items, fish, and multiple ingredients were the most frequently reported general vehicles contributing to foodborne disease outbreaks in Florida for 2009 (Table 3).

Table 3. Foodborne Illness Outbreaks and Cases by General Vehicle, Florida, 2009

General Vehicle	Outbreaks		Cases	
	Number	Percent	Number	Percent
Multiple Items*	18	27.69%	281	38.76%
Fish	11	16.92%	51	7.03%
Multiple Ingredients**	8	12.31%	137	18.90%
Produce-Vegetable	6	9.23%	83	11.45%
Shellfish-Molluscan	6	9.23%	6	0.83%
Poultry	5	7.69%	53	7.31%
Unknown	4	6.15%	45	6.21%
Beef	2	3.08%	53	7.31%
Rice	2	3.08%	8	1.10%
Beverage	1	1.54%	3	0.41%
Pork	1	1.54%	4	0.55%
Shellfish-Crustacean	1	1.54%	1	0.14%
Total	65	100.00%	725	100.00%

*Multiple Items are food vehicles in which several foods are individually prepared or cooked and more than one food is suspected or confirmed to be contaminated (e.g., buffet, salad bar, baked chicken and grilled shrimp, etc.).

**Multiple Ingredients are food vehicles in which several foods are combined during preparation or cooking and the entire food product is suspected or confirmed to be contaminated (e.g., casseroles, soups, sandwiches, salads, etc.).

Outbreak Location

Most of the reported foodborne disease outbreaks (64.6%) and cases (49.5%) were associated with restaurants (Table 4).

Table 4. Foodborne Illness Outbreaks and Cases by Site, Florida, 2009

Location	Outbreaks		Cases	
	Number	Percent	Number	Percent
Restaurant	42	64.62%	359	49.52%
Home	9	13.85%	45	6.21%
Caterer	4	6.15%	113	15.59%
Correctional Facility	2	3.08%	55	7.59%
School	2	3.08%	65	8.97%
Assisted Living Facility	1	1.54%	13	1.79%
Church	1	1.54%	12	1.66%
Day Care	1	1.54%	30	4.14%
Grocery	1	1.54%	9	1.24%
Hospital	1	1.54%	17	2.34%
Picnic	1	1.54%	7	0.97%
Total	**65**	**100.00%**	**725**	**100.00%**

Contributing Factors

The top contributing factors associated with reported foodborne disease outbreaks in Florida for 2009 are displayed in Table 5. There are three categories of contributing factors (contamination factor, proliferation factor, survival factor) and up to three contributing factors per category can be identified for an outbreak; therefore, the reported numbers may not match the actual number of reported outbreaks and cases.

Table 5. Most Commonly Reported Foodborne Contamination Factors, Florida, 2009

Contamination Factors	Number of Outbreaks	Number of Cases
C10 - Bare-handed contact by a food handler/worker/preparer who is suspected to be infectious	15	185
C7 - Contaminated raw product - food was intended to be consumed raw or undercooked and/or under-processed	9	20
C11 - Glove-hand contact by a food handler/worker/preparer who is suspected to be infectious	9	201
C1 - Toxic substance part of the tissue	9	37
C9 - Cross-contamination of ingredients (cross contamination does not include ill food workers)	6	55
C6 - Contaminated raw product - food was intended to be consumed after a kill-step	3	21
C13 - Foods contaminated by non-food handler/worker/preparer who is suspected to be infectious	3	25
C15 - Other source of contamination	2	44
C14 - Storage in contaminated environment	1	3
C12 - Other mode of contamination (excluding x-contamination) by a food worker who is suspected to be infectious	1	25
Proliferation Factors	**Number of Outbreaks**	**Number of Cases**
P8 - Improper/slow cooling	5	24
P2 - No attempt was made to control temperature of implicated food or length of time food was out of temperature	5	113
P1 - Food preparation practices that support proliferation of pathogens (during food preparation)	5	108
P7 - Improper hot holding due to improper procedure or protocol	4	50
P4 - Improper cold holding due to malfunctioning refrigeration equipment	4	13
P6 - Improper hot holding due to malfunctioning equipment	1	2
P5 - Improper cold holding due to an improper procedure or protocol	1	2
Survival Factors	**Number of Outbreaks**	**Number of Cases**
S1 - Insufficient time and/or temperature control during initial cooking/heat processing	3	76
S2 - Insufficient time and/or temperature during reheating	3	69

Note: There are 3 categories of contributing factors (contamination factor, proliferation factor, survival factor) and up to three contributing factors per category can be attributed in an outbreak; therefore, the reported numbers may not match the actual number of reported outbreaks and cases.

References: Bender, J.B., et al. (1999). Foodborne disease in the 21st century: What challenges await us? Postgraduate Medicine, 106 (2), 106-119. Mead, P.S. et al. (1999). Food-related illness and death in the United States. Emerging Infectious Diseases, 5 (5), 607-625.

Section 4

Summary of Antimicrobial Resistance Surveillance

Background

Some scientists consider antibiotics to be the single most impressive medical achievement of the 20th Century. However, the continuing emergence and spread of antimicrobial resistance jeopardizes the utility of antibiotics and threatens public health globally. These pathogens are associated with increased morbidity and mortality, which not only impacts patients but also increases the burden on healthcare services as a result of additional diagnostic testing, prolonged hospital stays, and increased intensity and duration of treatment.

The purpose of antimicrobial resistance surveillance in Florida is to maintain a statewide surveillance and information system that provides data on the incidence and spread of major invasive bacteria with clinically and epidemiologically relevant antimicrobial resistance. Describing the distribution of infection due to resistant organisms within populations, together with changes in patterns of those infections over time, provides the basic information for action both to control disease caused by resistant microorganisms and to contain the emergence of resistance. Strategies to protect the public's health can be developed and evaluated on the basis of this surveillance information.

Currently, *Streptococcus pneumoniae* is one of two diseases on Florida's list of reportable diseases for which drug susceptibilities are required as part of case reporting. Drug-resistant *S. pneumoniae* (DRSP) invasive disease was added to Florida's list of notifiable diseases in mid-1996. Drug-susceptible *S. pneumoniae* (DSSP) invasive disease was added to the list of reportable diseases mid-1999 to permit the assessment of the proportion of pneumococcal isolates that are drug-resistant. These data are currently captured and stored electronically in the Merlin database, though DSSP data weren't captured electronically until 2003. For each case, if there was more than one isolate for antimicrobial susceptibility, isolates were ranked first on date of specimen collection (earliest to latest), invasiveness of the site from which the specimen was collected (most to least), number of antibiotics tested (most to least), and date of report (latest to earliest); only the top ranking isolate was included in this analysis. The rise of antibiotic resistance among isolates of *S. pneumoniae* and the severity of disease it causes highlight the importance of monitoring trends to aid in developing effective treatment and intervention strategies.

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a major cause of both healthcare-associated and community-associated infections. Prior to 2009, the only *S. aureus* reportable condition was isolates showing intermediate or full resistance to vancomycin. Two new *S. aureus* conditions are included on the state's reportable disease list as of the end of 2008; first, community-associated MRSA deaths and second, *S. aureus* isolates from normally sterile sites for those partners participating in electronic laboratory reporting. However, the Florida Department of Health had access to antibiotic susceptibility data starting in 2005 for all *S. aureus* isolates processed by Quest Diagnostics, a commercial laboratory that primarily serves outpatient providers operating throughout Florida. Data for all Quest *S. aureus* isolates from 2003 and 2004 were retrospectively collected and, as of 2009, seven years of data are available. In accordance with National Committee for Clinical Laboratory Standards (NCCLS) guidelines, only the first isolate per person per 365 days was included in this analysis; duplicate isolates were excluded.

National surveillance has detected *Neisseria meningitidis* isolates with reduced susceptibility to commonly employed antimicrobials. Due to the identification of three fluoroquinolone-resistant *N. meningitidis* isolates in Minnesota and North Dakota in 2007, a regional health advisory was issued, recommending that ciprofloxacin chemoprophylaxis not be used. Rifampin, ceftriaxone, or azithromycin were found to be effective against that strain and were recommended in place of ciprofloxacin. Active testing of *N. meningitidis* isolates obtained between January 2007 and January 2008 in selected sites participating in a CDC-supported surveillance project identified one other fluoroquinolone-resistant isolate, this one from California. The emergence of fluoroquinolone-resistant *Neisseria meningitidis* in the U.S. has raised important questions regarding current chemoprophylaxis guidelines and highlights the expanding threat of antimicrobial resistance in bacterial pathogens. The Centers for Disease Control and Prevention (CDC) responded to this threat by forming MeningNet, an enhanced meningococcal surveillance system that will be used to monitor antimicrobial susceptibility. As part of MeningNet, Florida began forwarding all *N. meningitidis* isolates to the CDC for antibiotic susceptibility testing in late 2008.

Streptococcus pneumoniae

Data Trends

There were a total of 689 cases infected with drug sensetive S. pneumoniae and 779 cases infected with drug resistant S. pneumoniae in 2009. There were an additional 12 cases who did not have antibiotic susceptibility data reported (because the patient died and further testing was not done); they were reported with the other DSSP cases, but are excluded from this section. Of the 701 DSSP cases, 12 who did not have antibiotic susceptibility data (because the patient died and further testing was not done) are excluded from this section. Additionally, it should be noted that not every antibiotic was tested for every isolate. When calculating percentages for each antibiotic, the denominator is the number of cases with isolates that were tested for that antibiotic. Resistant and intermediate susceptibilities were grouped together as “resistant” for this summary.

With the steady rise of antimicrobial resistance among strains of *S. pneumoniae* in the past decade, it is now more important than ever for physicians to prescribe proper antimicrobial therapy. Where penicillin was previously the drug of choice for all pneumococcal infections, 37.5% of the cases tested in Florida in 2009 were infected with strains resistant to penicillin (see Figure 1 and Table 1). Resistance was most common for clarithromycin, with 48.3% of cases infected with isolates that were tested for this antibiotic showing resistance or intermediate susceptibility. Eight of the antibiotics tracked (azithromycin, cefuroxime axetil, clarithromycin, clindamycin, erythromycin, penicillin, tetracycline, and trimethoprim/sulfamethoxazole) had greater than 25% resistance. Vancomycin, chloramphenicol, and rifampin had the lowest resistance, at 0.5%, 1.3%, and 2.2%, respectively.

Figure 1. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, Florida, 2009

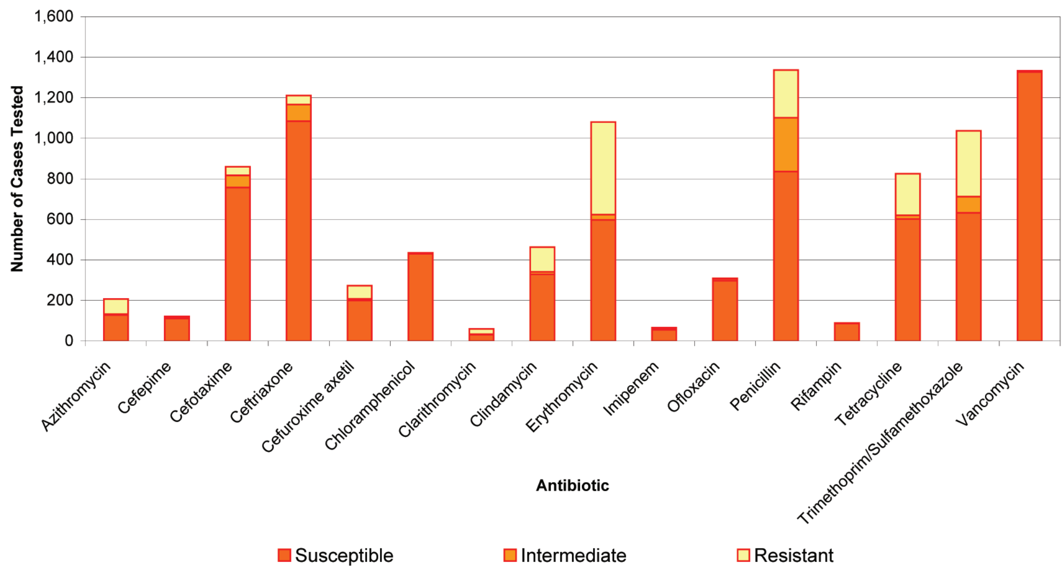


Table 1. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, Florida 2009

Antibiotic Name	Number of Isolates Tested‡	Susceptible	Intermediate	Resistant
Azithromycin	207	61.8%	1.9%	36.2%
Cefepime	121	91.7%	5.8%	2.5%
Cefotaxime	860	88.0%	7.0%	5.0%
Ceftriaxone	1,211	89.5%	6.8%	3.7%
Cefuroxime axetil	273	73.3%	2.6%	24.2%
Chloramphenicol	435	98.9%	0.0%	1.1%
Clarithromycin	60	51.7%	3.3%	45.0%
Clindamycin	463	71.1%	2.6%	26.3%
Erythromycin	1,080	55.3%	2.4%	42.3%
Imipenem	66	83.3%	10.6%	6.1%
Ofloxacin	309	96.1%	3.2%	0.6%
Penicillin	1,337	62.5%	19.8%	17.7%
Rifampin	89	97.8%	0.0%	2.2%
Tetracycline	825	73.0%	2.2%	24.8%
Trimethoprim/sulfamethoxazole	1,037	60.9%	7.7%	31.3%
Vancomycin	1,333	99.5%	0.0%	0.5%

‡Only one isolate per case was included in this analysis. Please see the methods section for a description of how isolates were selected for inclusion.

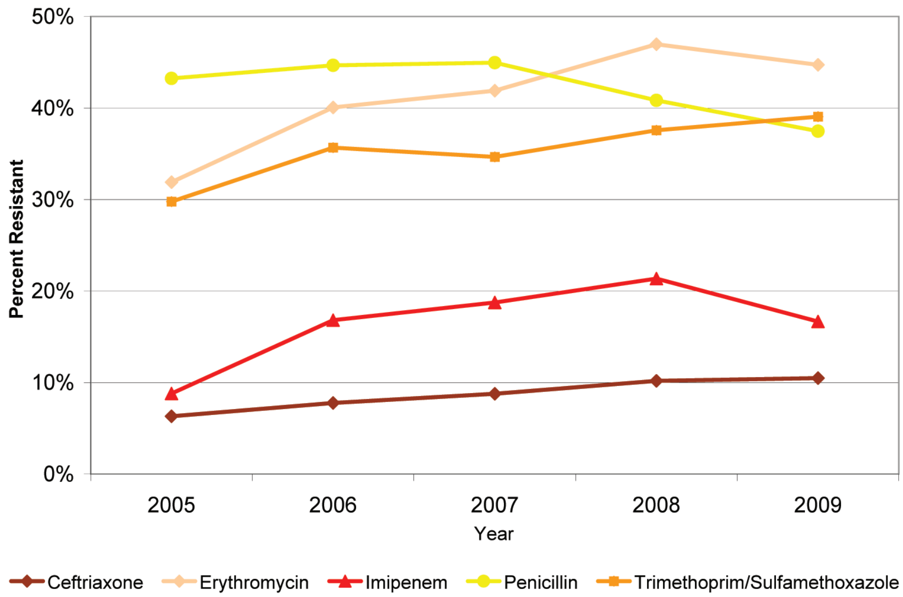
The prevalence of resistance increased for most antibiotics overall from 2005 to 2009, though it decreased for a few antibiotics (Table 2 and Figure 2). Antibiotics with steady increases include ceftriaxone, clindamycin, erythromycin, imipenem, and tetracycline. Resistance to the remaining antibiotics fluctuated over the years. Overall increases were seen for azithromycin, cefotaxime, cefuroxime axetil, clarithromycin, rifampin, and trimethoprim/sulfamethoxazole. Overall decreases were seen for cefepime, chloramphenicol, ofloxacin, and penicillin. Note that ceftriaxone, erythromycin, imipenem, penicillin, and trimethoprim/sulfamethoxazole are highlighted in Table 2 and are presented in Figure 2. These antibiotics were chosen because they represent most of the major antibiotic classes.

Table 2. *Streptococcus pneumoniae*, Invasive Disease, Percentage Resistant to Antibiotics, Florida 2005-2008

Antibiotic Name	2005	2006	2007	2008	2009*
Azithromycin	30.6%	45.4%	44.3%	38.1%	38.2%
Cefepime	9.2%	14.1%	10.2%	6.4%	8.3%
Cefotaxime	8.6%	8.0%	11.3%	11.4%	12.0%
Ceftriaxone	6.2%	7.8%	8.8%	10.3%	10.5%
Cefuroxime axetil	22.1%	29.3%	30.8%	29.7%	26.7%
Chloramphenicol	4.4%	2.8%	4.7%	3.6%	1.1%
Clarithromycin	30.9%	36.9%	51.1%	39.0%	48.3%
Clindamycin	16.2%	20.2%	23.4%	24.9%	28.9%
Erythromycin	31.8%	40.2%	42.0%	47.0%	44.7%
Imipenem	8.6%	15.0%	17.5%	21.2%	16.7%
Ofloxacin	4.4%	5.2%	2.9%	3.7%	3.9%
Penicillin	43.1%	44.7%	44.9%	40.8%	37.5%
Rifampin	0.0%	0.6%	0.0%	0.9%	2.2%
Tetracycline	16.1%	16.6%	21.2%	25.7%	27.0%
Trimethoprim/sulfamethoxazole	29.6%	35.5%	34.4%	37.6%	39.1%
Vancomycin	0.1%	0.8%	0.3%	0.1%	0.5%

* In 2009, a new algorithm was used to select which set of susceptibilities was chosen for inclusion in this report for cases when more than one set of susceptibilities was reported. Caution should be used when comparing 2009 data to data from previous years.

Figure 2. *Streptococcus pneumoniae*, Invasive Disease, Percent Resistant to Select Antibiotics, Florida 2005-2009



In general, the prevalence of resistance to antibiotics is highest in the very young (Table 3). For example, 52.1% of the cases tested for penicillin in those under one year old were infected with resistant organisms, compared to 33.2% in those 25 to 64 years old, and 32.9% in those 65 and older. Overall, the highest rate of resistance was seen against erythromycin; 65.0% of infections in cases one to four years old were resistant while only 44.6% of cases 65 and older were resistant.

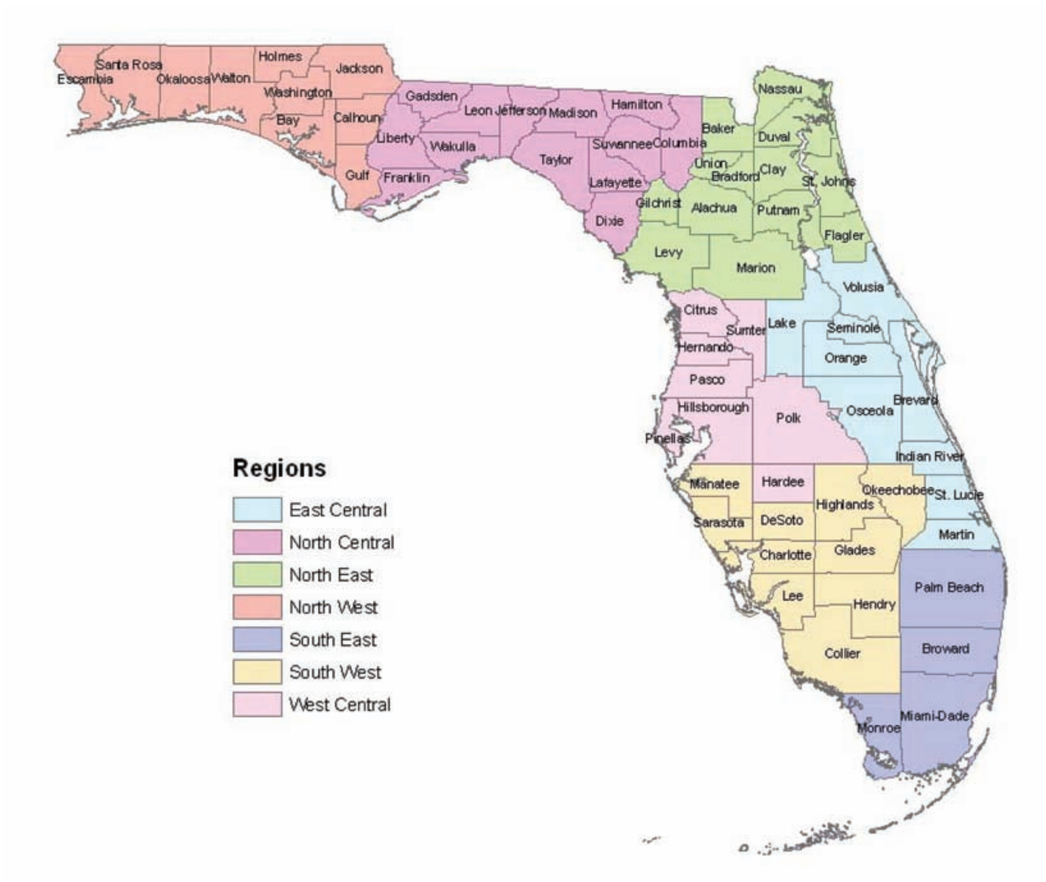
Table 3. Percentage of *Streptococcus pneumoniae* Isolates with Full or Intermediate Resistance to Antibiotics by Age, Florida 2009

Age	Number of Isolates Tested‡	Azithromycin	Cefepime	Cefotaxime	Ceftriaxone	Cefuroxime axetil	Chloramphenicol	Clarithromycin	Clindamycin	Erythromycin	Imipenem	Ofloxacin	Penicillin	Rifampin	Tetracycline	Trimethoprim/ sulfamethoxazole	Vancomycin
<1	56	50.0%	25%*	25.8%	20.0%	54.5%	6.3%	50%*	42.1%	65.0%	75%*	0.0%	52.1%	0.0%	40.0%	60.5%	0.0%
1-4	151	42.9%	25.0%	19.0%	22.0%	43.8%	2.6%	50%*	40.9%	61.5%	0.0%	0.0%	61.7%	0.0%	42.7%	54.4%	0.7%
5-14	63	66.7%	14.3%	13.6%	11.8%	35.0%	0.0%	50%*	31.8%	32.5%	42.9%	0.0%	40.4%	0.0%	34.8%	32.4%	0.0%
15-24	43	60.0%	40.0%	10.7%	14.7%	53.8%	0.0%	-	43.8%	41.9%	0%*	0.0%	52.5%	0%*	34.8%	42.4%	0.0%
25-64	698	35.1%	4.7%	10.9%	8.5%	18.5%	1.0%	43.3%	26.8%	40.9%	13.8%	3.7%	33.2%	2.4%	24.8%	36.4%	0.5%
65+	457	36.1%	3.0%	9.1%	8.2%	21.9%	0.6%	55.0%	24.4%	44.6%	5.6%	6.0%	32.9%	5.0%	23.3%	36.1%	0.5%
Total	**1,468**	**38.2%**	**8.3%**	**12.0%**	**10.5%**	**26.7%**	**1.1%**	**48.3%**	**28.9%**	**44.7%**	**16.7%**	**3.9%**	**37.5%**	**2.2%**	**27.0%**	**39.1%**	**0.5%**

*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.
‡Only one isolate per case was included in this analysis. Please see the methods section for a description of how isolates were selected for inclusion.

Resistance patterns were also summarized by region and county. The Regional Domestic Security Task Force regions were used, as depicted in Figure 3.

Figure 3. Regional Domestic Security Task Force Regions



The East Central Region of Florida had 259 (17.6%) of the 1,468 cases included in this summary (Figure 4 and Table 4). Isolates from these cases had the highest resistance percentages to azithromycin (47.8%), trimethoprim/sulfamethoxazole (42.5%), and erythromycin (42.1%). Azithromycin, cefuroxime axetil, clindamycin, erythromycin, penicillin, tetracycline, and trimethoprim/sulfamethoxazole all had resistance percentages greater than 25.0%.

The North Central Region of Florida had 56 (3.8%) of the 1,468 cases included in this summary (Figure 5 and Table 4). There were less than five cases tested for clarithromycin, imipenem, and rifampin resistance. The small denominators for these antibiotics make the resistance percentages uninterpretable and they are excluded from this report. Of the remaining antibiotics, the highest percentage of resistance was seen in azithromycin (50.0%), followed by erythromycin (37.5%). Azithromycin, erythromycin, penicillin, tetracycline, and trimethoprim/sulfamethoxazole all had resistance percentages greater than 25.0%.

The North East Region of Florida had 196 (13.4%) of the 1,468 cases included in this summary (Figure 6 and Table 4). Less than five cases had isolates tested for clarithromycin, imipenem, and rifampin, making the resistance percentages for these antibiotics uninterpretable and they are excluded from this report. Of the remaining antibiotics, erythromycin and penicillin had the highest resistance rates (38.3% for both) followed by trimethoprim/sulfamethoxazole (34.6%) and azithromycin (30.0%). The remaining antibiotics had resistance percentages that were less than 25.0%.

The North West Region of Florida had 95 (6.5%) of the 1,468 cases included in this summary (Figure 7 and Table 4). Less than five cases had isolates tested for rifampin resistance, making the resistance percentage for this antibiotic uninterpretable due to the small denominator, and it was excluded from this report. Clarithromycin had the greatest resistance rate (40.0%), followed by penicillin (36.5%), erythromycin (35.7%), trimethoprim/sulfamethoxazole (35.4%), and azithromycin (33.3%) .

The South East Region of Florida had 395 (26.9%) of the 1,468 cases included in this summary (Figure 8 and Table 4). Isolates from these cases had the greatest resistance to clarythromycin (56.5%); 23 cases had clarithromycin susceptibility results. Erythromycin and azithromycin had the next highest resistance percentages (50.1% and 50.0%, respectively). Azithromycin, cefuroxime axetil, clarithromycin, clindamycin, erythromycin, imipenem, penicillin, tetracycline, and trimethoprim/sulfamethoxazole all had resistance rates greater than 25.0%.

The South West Region of Florida had 165 (11.2%) of the 1,468 cases included in this summary (Figure 9 and Table 4). Fewer than five cases had isolates tested with susceptibility results for cefepime, imipenem, and rifampin, and antibiotic resistance information for these two drugs was excluded from this report because it was uninterpretable. Of the remaining antibiotics, the highest resistance percentages were seen in clarithromycin (80.0%), erythromycin (51.6%), and trimethorprim/sulfamethoxazole (42.8%). Azithromycin and penicillin also had resistance percentages greater than 25.0%.

The West Central Region of Florida had 302 (20.6%) of the 1,468 cases included in this summary (Figure 10 and Table 4). Isolates from these cases had the greatest resistance to azithromycin and erythromycin (44.4% and 44.1%, respectively). Cefuroxime axetil, clarithromycin, clindamycin, penicillin, tetracycline, and trimethoprim/sulfamethoxazole also had resistance percentages greater than 25.0%.

Resistance rates by county are presented in Table 5.

Figure 4. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, East Central Region, Florida 2009

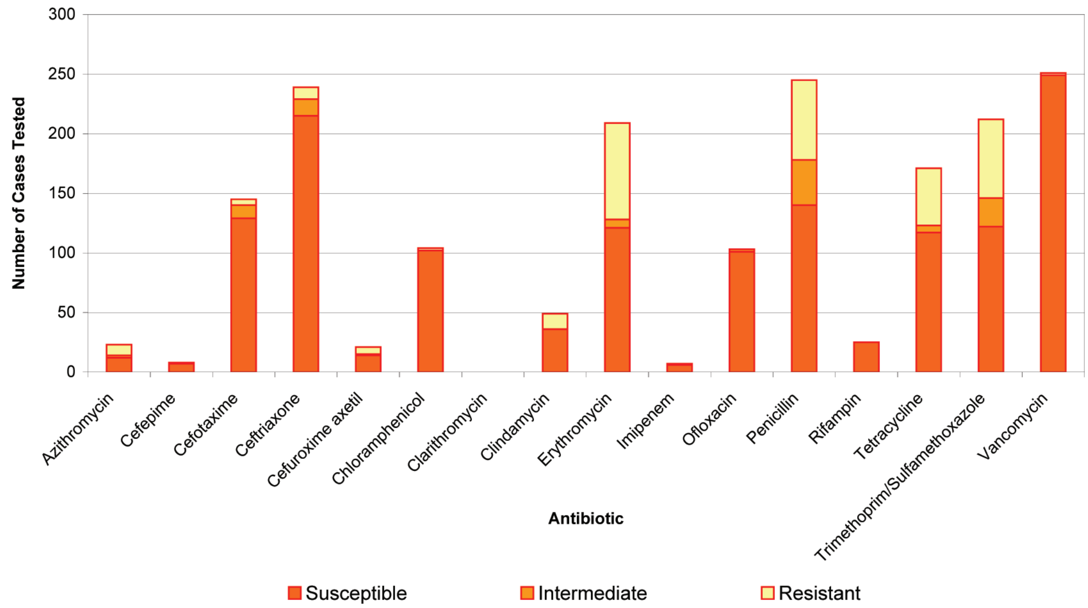


Figure 5. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, North Central Region, Florida 2009

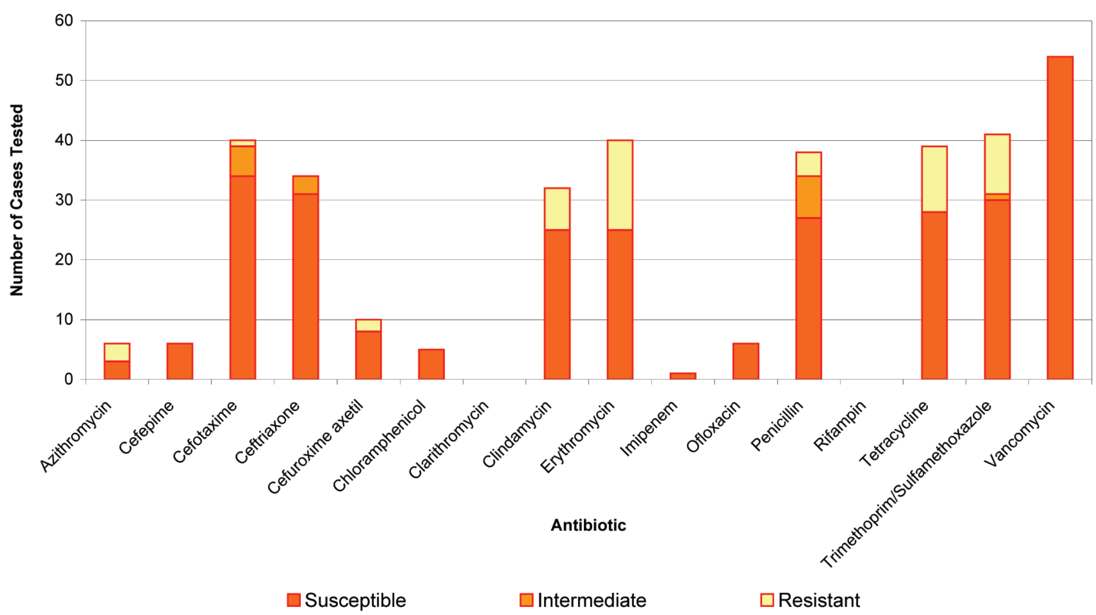


Figure 6. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, North East Region, Florida 2009

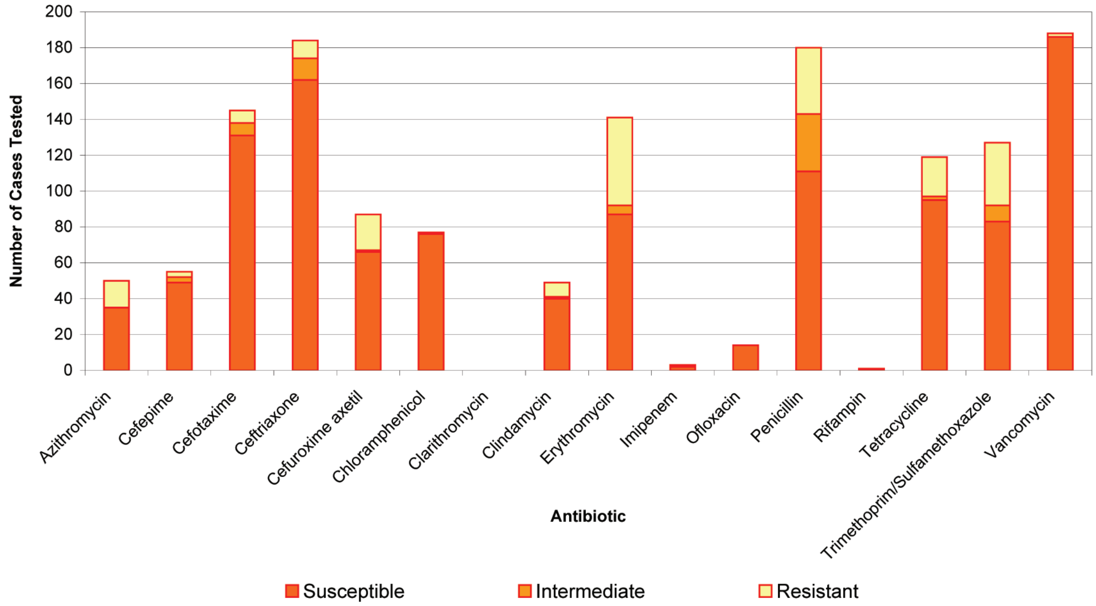


Figure 7. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, North West Region, Florida 2009

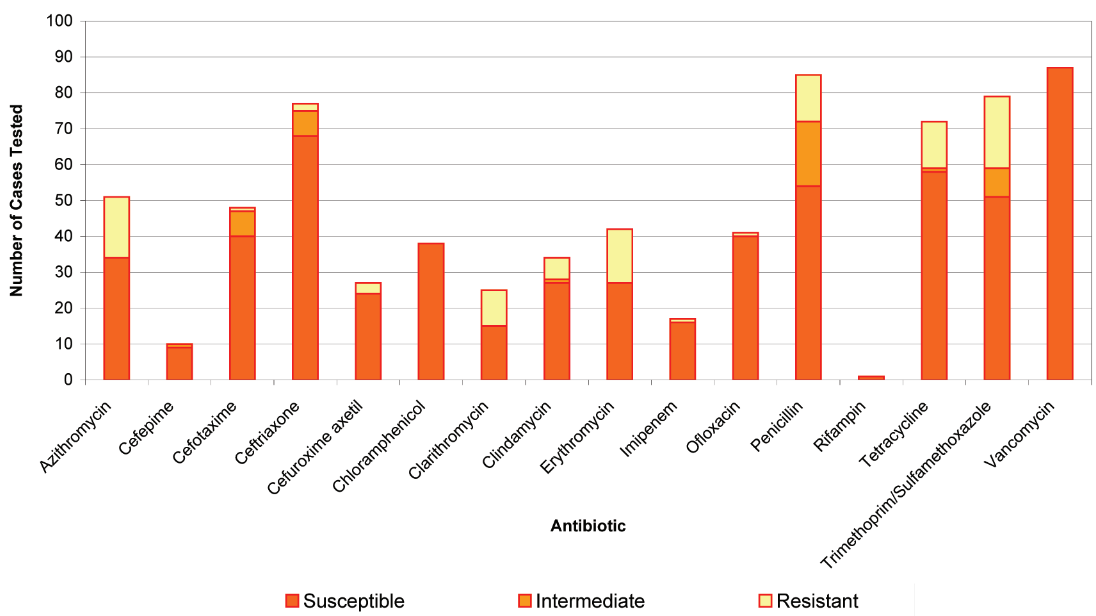


Figure 8. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, South East Region, Florida 2009

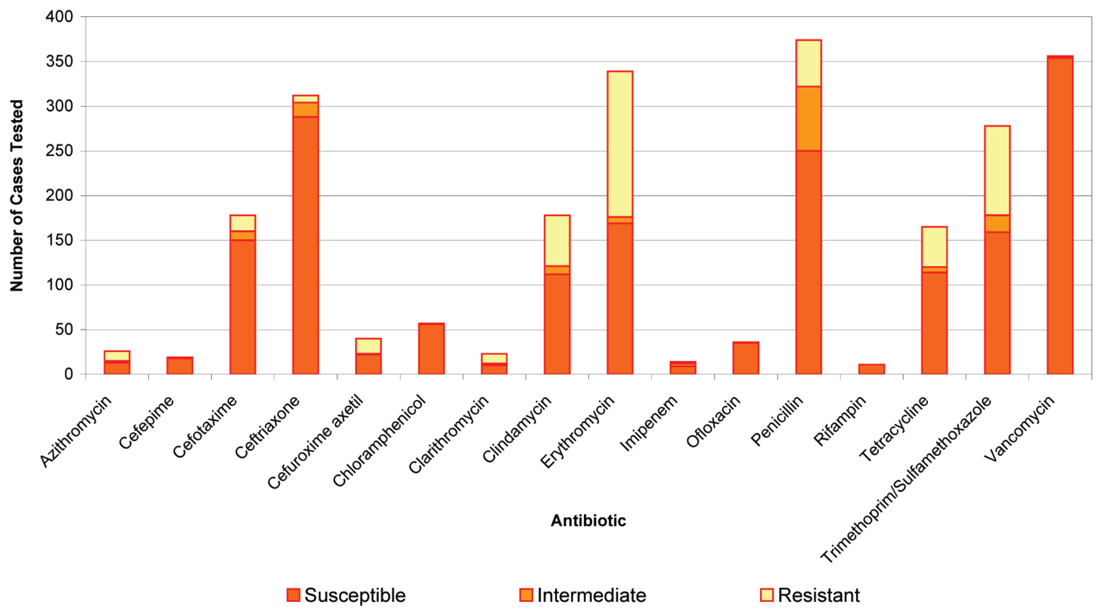


Figure 9. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, South West Region, Florida 2009

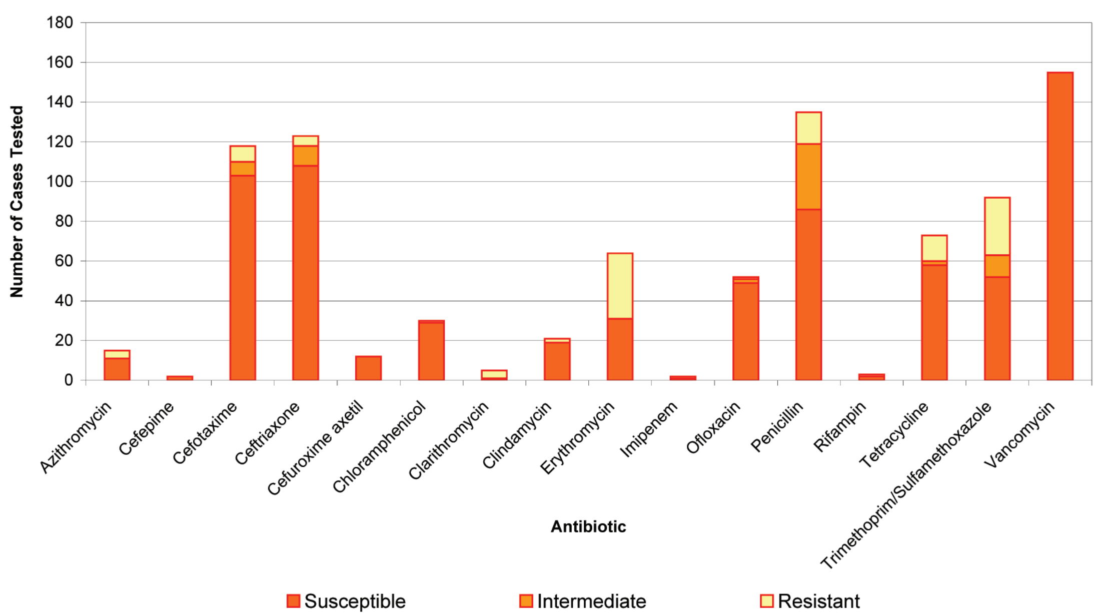


Figure 10. *Streptococcus pneumoniae*, Invasive Disease, Antibiotic Resistance, West Central Region, Florida 2009

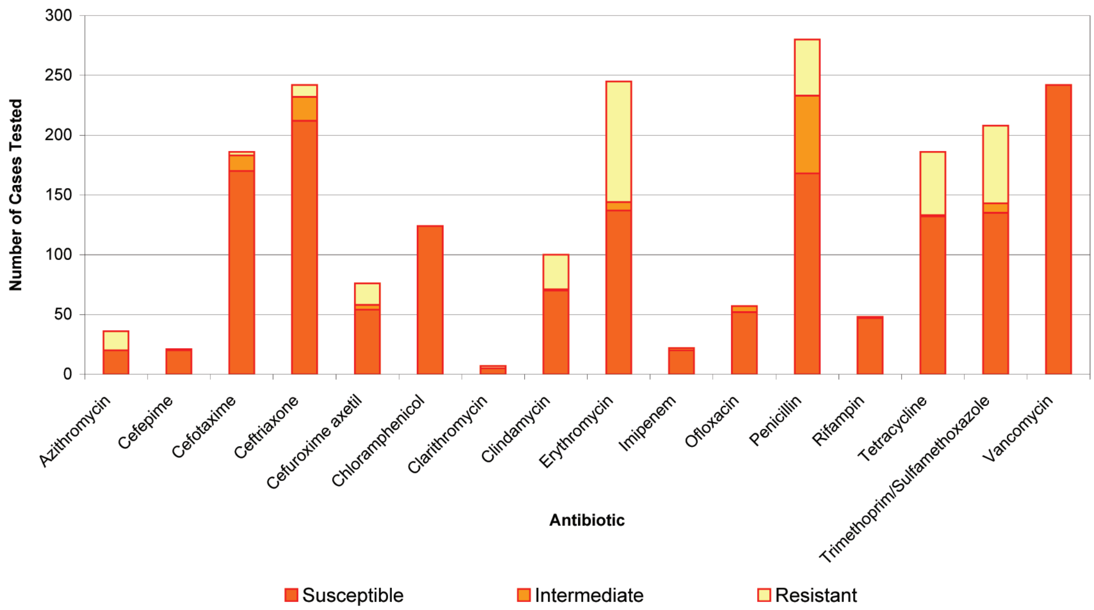


Table 4. *Streptococcus pneumoniae*, Invasive Disease, Percentage Resistant to Antibiotics by Region, Florida 2009

Region	Number of Isolates Tested‡	Azithromycin	Cefepime	Cefotaxime	Ceftriaxone	Cefuroxime axetil	Chloramphenicol	Clarithromycin	Clindamycin	Erythromycin	Imipenem	Ofloxacin	Penicillin	Rifampin	Tetracycline	Trimethoprim/ sulfamethoxazole	Vancomycin
East Central	259	47.8%	12.5%	11.0%	10.0%	33.3%	1.9%	-	26.5%	42.1%	14.3%	1.9%	42.9%	0.0%	31.6%	42.5%	0.8%
North Central	56	50.0%	0.0%	15.0%	8.8%	20.0%	0.0%	-	21.9%	37.5%	0%*	0.0%	28.9%	-	28.2%	26.8%	0.0%
North East	196	30.0%	10.9%	9.7%	12.0%	24.1%	1.3%	-	18.4%	38.3%	33.3%*	0.0%	38.3%	0%*	20.2%	34.6%	1.1%
North West	95	33.3%	10.0%	16.7%	11.7%	11.1%	0.0%	40.0%	20.6%	35.7%	5.9%	2.4%	36.5%	0%*	19.4%	35.4%	0.0%
South East	395	50.0%	5.3%	15.7%	7.7%	45.0%	1.8%	56.5%	37.1%	50.1%	35.7%	2.8%	33.2%	0.0%	30.9%	42.8%	0.6%
South West	165	26.7%	0%*	12.7%	12.2%	0.0%	3.3%	80.0%	9.5%	51.6%	50%*	5.8%	36.3%	33.3%*	20.5%	43.5%	0.0%
West Central	302	44.4%	4.8%	8.6%	12.4%	28.9%	0.0%	28.6%	30.0%	44.1%	9.1%	8.8%	40.0%	2.1%	29.0%	35.1%	0.0%
Total	**1,468**	**38.2%**	**8.3%**	**12.0%**	**10.5%**	**26.7%**	**1.1%**	**48.3%**	**28.9%**	**44.7%**	**16.7%**	**3.9%**	**37.5%**	**2.2%**	**27.0%**	**39.1%**	**0.5%**

*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.
‡Only one isolate per case was included in this analysis. Please see the methods section for a description of how isolates were selected for inclusion.

Table 5. *Streptococcus pneumoniae*, Invasive Disease, Percentage Resistant to Antibiotics by County, Florida 2009

County	Number of Isolates Tested‡	Azithromycin	Cefepime	Cefotaxime	Ceftriaxone	Cefuroxime axetil	Chloramphenicol	Clarithromycin	Clindamycin	Erythromycin	Imipenem	Ofloxacin	Penicillin	Rifampin	Tetracycline	Trimethoprim/ sulfamethoxazole	Vancomycin
Alachua	29	33.3%	13.3%	12.5%	13.8%	18.5%	0.0%	-	-	28.6%	-	-	28.6%	-	26.7%	35.7%	0.0%
Baker	4	0%*	50%*	33.3%*	33.3%*	25%*	0%*	-	25%*	25%*	-	-	33.3%*	-	0%*	0%*	0%*
Bay	19	-	-	0%*	0.0%	14.3%	0.0%	-	-	100%*	-	0.0%	29.4%	-	12.5%	44.4%	0.0%
Brevard	50	27.3%	-	14.3%	6.5%	0.0%	10.0%	-	0%*	32.4%	0.0%	0%*	38.0%	-	20.0%	38.5%	0.0%
Broward	126	100%*	-	9.1%	5.8%	-	0%*	50%*	32.2%	54.1%	-	0.0%	29.8%	-	33.3%	43.0%	0.8%
Calhoun	1	100%*	0%*	100%*	100%*	100%*	-	-	0%*	100%*	-	-	100%*	-	0%*	0%*	0%*
Charlotte	6	-	-	0%*	0%*	-	0.0%	-	-	20.0%	-	0.0%	50%*	-	16.7%	50.0%	0.0%
Citrus	17	-	0.0%	9.1%	7.1%	30.8%	-	-	23.1%	35.7%	0%*	0.0%	33.3%	-	18.2%	18.2%	0.0%
Clay	18	-	-	0.0%	16.7%	50%*	-	-	0%*	83.3%	-	0%*	56.3%	-	25%*	80.0%	0.0%
Collier	26	-	-	0.0%	0.0%	0.0%	-	-	-	53.3%	-	0.0%	34.6%	-	13.0%	43.5%	0.0%
Columbia	14	0%*	0%*	0%*	0.0%	0%*	0%*	-	-	0%*	-	-	23.1%	-	0%*	0%*	0.0%
Dade	191	37.5%	0%*	22.8%	10.4%	57.1%	2.9%	50.0%	45.8%	43.8%	45.5%	11.1%	31.6%	0.0%	24.2%	43.5%	0.6%
DeSoto	2	-	-	0%*	-	-	-	-	-	-	-	0%*	100%*	-	-	0%*	0%*
Dixie	3	100%*	0%*	66.7%*	66.7%*	100%*	0%*	-	-	66.7%*	-	-	66.7%*	-	66.7%*	100%*	0%*
Duval	87	26.3%	4.8%	5.4%	8.8%	14.3%	3.4%	-	15.6%	36.4%	-	0.0%	35.9%	-	18.2%	30.6%	0.0%
Escambia	50	37.1%	0%*	16.7%	10.4%	0.0%	0.0%	52.6%	19.0%	40.9%	0.0%	5.6%	40.9%	-	22.0%	41.0%	0.0%
Flagler	4	-	-	0%*	0%*	100%*	-	-	-	100%*	-	-	100%*	-	66.7%*	66.7%*	0%*
Franklin	1	-	0%*	0%*	0%*	0%*	-	-	0%*	0%*	-	-	0%*	-	0%*	0%*	0%*
Gadsden	5	-	-	0%*	0.0%	0%*	-	-	0%*	0%*	-	0%*	0%*	-	0%*	25%*	0%*
Gilchrist	2	50%*	0%*	0%*	0%*	0%*	0%*	-	-	100%*	-	0%*	0%*	-	0%*	0%*	0%*
Glades	1	-	-	0%*	0%*	-	-	-	-	-	-	-	0%*	-	-	-	0%*
Hamilton	1	-	-	-	0%*	-	-	-	-	-	-	-	0%*	-	-	-	0%*

*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.
‡Only one isolate per case was included in this analysis. Please see the methods section for a description of how isolates were selected for inclusion.

Table 5. (Continued) *Streptococcus pneumoniae*, Invasive Disease, Percentage Resistant to Antibiotics by County, Florida 2009

County	Number of Isolates Tested‡	Azithromycin	Cefepime	Cefotaxime	Ceftriaxone	Cefuroxime axetil	Chloramphenicol	Clarithromycin	Clindamycin	Erythromycin	Imipenem	Ofloxacin	Penicillin	Rifampin	Tetracycline	Trimethoprim/ sulfamethoxazole	Vancomycin
Hardee	3	0%*	-	0%*	0%*	-	0%*	0%*	-	100%*	0%*	0%*	-	-	33.3%*	33.3%*	0%*
Hendry	6	-	-	60.0%	60.0%	0%*	0%*	-	-	100%*	-	50%*	60.0%	-	40.0%	60.0%	0.0%
Hernando	30	50.0%	0%*	0%*	25.0%	33.3%	0%*	-	35.7%	50.0%	0%*	-	40.0%	-	42.9%	35.7%	0.0%
Highlands	12	80.0%	-	0.0%	10.0%	-	0.0%	80.0%	-	87.5%	0%*	10.0%	100%*	-	22.2%	60.0%	0.0%
Hillsborough	89	-	-	9.7%	7.5%	22.2%	0.0%	-	24.4%	47.1%	11.8%	18.5%	43.0%	2.9%	27.8%	38.7%	0.0%
Holmes	3	0%*	-	-	0%*	0%*	-	0%*	0%*	0%*	-	-	0%*	-	0%*	0%*	0%*
Indian River	9	-	-	-	14.3%	-	-	-	0.0%	44.4%	-	0%*	55.6%	-	-	-	22.2%
Jackson	4	33.3%*	33.3%*	25%*	33.3%*	33.3%*	-	0%*	25%*	25%*	33.3%*	0%*	50%*	-	25%*	25%*	0%*
Jefferson	2	-	-	0%*	0%*	-	-	-	0%*	50%*	-	-	0%*	-	100%*	50%*	0%*
Lake	31	100%	0%*	12.5%	17.2%	50%*	4.8%	-	50%*	38.9%	100%*	0.0%	38.5%	-	30.8%	40.0%	0.0%
Lee	53	0%*	-	25.0%	19.6%	0%*	-	-	-	33.3%*	-	20.0%	31.3%	-	14.3%	12.5%	0.0%
Leon	27	0%*	-	15.4%	20.0%	-	-	-	26.1%	40.0%	0%*	0%*	42.9%	-	24.0%	23.1%	0.0%
Levy	6	50%*	0%*	50%*	0.0%	66.7%	0%*	-	-	50%*	50%*	0%*	66.7%	-	50%*	50%*	20.0%
Manatee	24	0%*	0%*	11.8%	8.3%	0%*	9.1%	-	18.2%	52.9%	100%*	0.0%	45.0%	0%*	41.7%	63.6%	0.0%
Marion	31	27.3%	15.4%	13.3%	16.7%	26.7%	0.0%	-	25.0%	28.0%	-	-	32.3%	-	13.8%	32.1%	3.3%
Martin	6	-	100%*	100%*	33.3%	40.0%	-	-	-	50.0%	-	-	33.3%	-	100%*	-	0%*
Monroe	5	-	-	0%*	0.0%	-	-	-	0%*	33.3%*	-	0%*	25%*	-	0.0%	0.0%	0%*
Nassau	9	-	-	25.0%	25.0%	-	0%*	-	-	42.9%	-	0%*	55.6%	-	28.6%	28.6%	0.0%
Okaloosa	5	50%*	0%*	20.0%	25%*	0%*	0%*	0%*	50%*	20.0%	0%*	0%*	40.0%	-	20.0%	50%*	0%*
Okeechobee	2	-	-	-	0%*	-	-	-	-	0%*	-	-	-	-	-	-	0%*
Orange	80	33.3%*	0%*	9.1%	2.6%	0%*	0.0%	-	0%*	41.9%	-	3.0%	41.3%	-	30.6%	47.4%	0.0%
Osceola	11	100%*	0%*	11.1%	10.0%	0%*	0%*	-	-	33.3%	0%*	25%*	54.5%	-	28.6%	50.0%	0.0%

*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.
‡Only one isolate per case was included in this analysis. Please see the methods section for a description of how isolates were selected for inclusion.

Table 5. (Continued) *Streptococcus pneumoniae*, Invasive Disease, Percentage Resistant to Antibiotics by County, Florida 2009

County	Number of Isolates Tested‡	Azithromycin	Cefepime	Cefotaxime	Ceftriaxone	Cefuroxime axetil	Chloramphenicol	Clarithromycin	Clindamycin	Erythromycin	Imipenem	Ofloxacin	Penicillin	Rifampin	Tetracycline	Trimethoprim/ sulfamethoxazole	Vancomycin
Palm Beach	73	52.9%	6.3%	7.9%	6.5%	38.5%	0.0%	60.0%	27.8%	61.1%	0%*	0.0%	43.1%	-	40.9%	45.7%	0.0%
Pasco	26	28.6%	0.0%	0.0%	10.0%	37.5%	0.0%	50%*	28.6%	45.0%	-	0.0%	47.4%	0.0%	33.3%	29.4%	0.0%
Pinellas	62	-	100%*	9.4%	12.2%	20.0%	0.0%	0%*	41.2%	38.6%	-	0%*	41.4%	0.0%	19.4%	31.8%	0.0%
Polk	68	50%*	0%*	9.1%	14.5%	-	0.0%	33.3%*	33.3%*	43.5%	0%*	0.0%	34.8%	0%*	35.7%	43.5%	0.0%
Putnam	3	-	-	-	0%*	-	-	-	-	-	0%*	0%*	33.3%*	0%*	-	-	0%*
Santa Rosa	11	12.5%	0%*	0.0%	10.0%	0%*	0%*	0%*	20.0%	20.0%	0%*	0%*	18.2%	0%*	20.0%	10.0%	0.0%
Sarasota	33	0.0%	0%*	0.0%	0.0%	0%*	0%*	-	0.0%	36.4%	-	0%*	30.0%	100%*	9.1%	35.7%	0.0%
Seminole	12	50%*	0%*	0.0%	8.3%	50%*	0.0%	-	50%*	50.0%	-	0.0%	50.0%	-	33.3%	33.3%	0.0%
St. Johns	3	-	-	0%*	0%*	-	-	-	-	66.7%*	-	-	66.7%*	-	0%*	66.7%*	0%*
St. Lucie	16	-	0%*	0%*	7.1%	50%*	0%*	-	25%*	50.0%	-	0.0%	56.3%	-	50%*	66.7%*	0.0%
Sumter	7	-	0%*	14.3%	14.3%	-	0.0%	-	100%*	33.3%	-	0%*	33.3%	-	28.6%	28.6%	0.0%
Taylor	1	100%*	0%*	0%*	0%*	0%*	0%*	-	-	100%*	-	0%*	0%*	-	100%*	0%*	0%*
Volusia	44	0%*	0%*	25.0%	21.6%	100%*	0.0%	-	34.5%	50.0%	-	0.0%	42.9%	0.0%	34.1%	38.1%	0.0%
Wakulla	2	-	-	0%*	0%*	-	-	-	50%*	50%*	-	0%*	-	-	50%*	50%*	0%*
Walton	2	0%*	-	0%*	0%*	0%*	0%*	0%*	-	0%*	0%*	0%*	50%*	-	0%*	0%*	0%*
Washington	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1,468	38.2%	8.3%	12.0%	10.5%	26.7%	1.1%	48.3%	28.9%	44.7%	16.7%	3.9%	37.5%	2.2%	27.0%	39.1%	0.5%

*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.
‡Only one isolate per case was included in this analysis. Please see the methods section for a description of how isolates were selected for inclusion.

Staphylococcus aureus

Data Trends

Physicians must rely on local epidemiological data to inform empiric treatment decisions when patients present with infections that they suspect are caused by *S. aureus*. The Florida Department of Health had access to antibiotic susceptibility data starting in 2005 for all *S. aureus* isolates processed by Quest Diagnostics, a commercial laboratory that primarily serves outpatient providers operating throughout Florida. Data for all Quest *S. aureus* isolates from 2003 and 2004 were retrospectively collected and, as of 2009, seven years of data are available. In accordance with National Committee for Clinical Laboratory Standards (NCCLS) guidelines, only the first isolate per person per 365 days was included in this analysis; duplicate isolates were excluded from this analysis.

After the removal of duplicate isolates there were 50,996 isolates included in this analysis that were collected in 2006, 53,424 in 2007, 62,068 in 2008, and 64,924 in 2009. The percentage of all isolates that had methicillin-resistance was just above 50% for the entire period. Methicillin-resistant *S. aureus* is resistant to all β-lactam antibiotics, including penicillins, carbapenems, and cephalosporins. For moderately severe infections, when the rate of MRSA in the community is substantial, American Academy of Pediatrics treatment recommendations are to treat with clindamycin, doxycycline, or trimethoprim-sulfamethoxazole, unless the rate of clindamycin resistance is also substantial, in which case recommended treatment for *S. aureus* is vancomycin plus gentamicin or rifampin. Eighteen point five percent of all *S. aureus* isolates tested in 2009 were resistant to clindamycin. The commercial laboratory that supplied the data does not regularly test for resistance to doxycycline. Resistance against trimethoprim-sulfamethoxazole remained low with only 2.1% of cases being resistant. Other drugs against which there were high levels of resistance were: erythromycin (64.7%); amoxicillin-clavulanic acid (50.3%); cefazolin (50.4%); ciprofloxacin (28.5%); and levofloxacin (27.4%).

The commercial laboratory, Quest, that supplied the data for this analysis used the Vitek system to determine resistance patterns, a test method that has been noted for the occurrence of false-positive test results for vancomycin resistance. It is protocol that isolates that are initially non-susceptible to vancomycin should be retested using manual methods, but, unfortunately, final results of that testing are not always included in the data. While there are several vancomycin non-susceptible isolates included in this data, to date, there have been no vancomycin-resistant *S. aureus* (VRSA) infections reported to FDOH and only 10 laboratory-confirmed vancomycin-intermediate *S. aureus* (VISA) infections reported. There was one VISA case reported in 2007, three in 2008, and six in 2009. The case definition for VISA was changed during that period, lowering the MIC from ≥8 μg/ml to 4-8 μg/ml. The increase in reported VISA from 2007 to 2009 is thus partly attributable to a reporting artifact and not reflective of the true magnitude of any increase in VISA that may have occurred.

Figure 11. *Staphylococcus aureus,* Antibiotic Resistance, Florida 2009

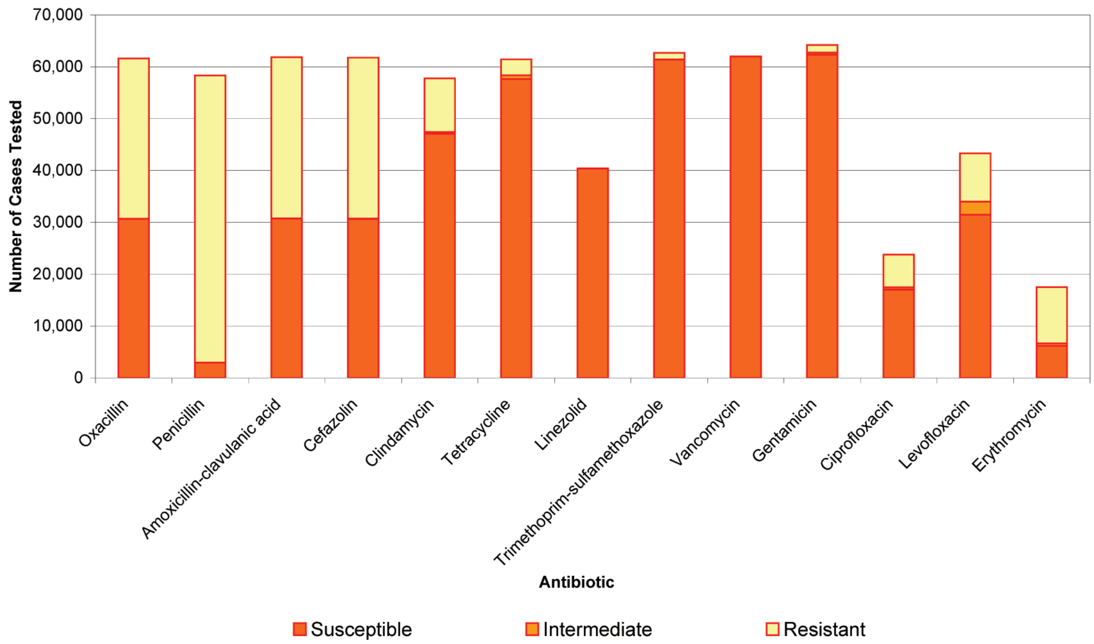


Table 6. *Staphylococcus aureus*, Antibiotic Resistance, Florida 2009

Antibiotic Name	Number of Isolates Tested	Susceptible	Intermediate	Resistant
Oxacillin*	61,626	49.8%	0.0%	50.2%
Penicillin	58,343	5.1%	0.0%	94.9%
Amoxicillin-clavulanic acid	61,869	49.7%	0.0%	50.3%
Cefazolin	61,786	49.6%	0.1%	50.3%
Clindamycin	57,780	81.5%	0.6%	17.9%
Tetracycline	61,439	93.8%	1.2%	5.0%
Linezolid	40,403	100%	0.0%	0.0%
Trimethoprim-sulfamethoxazole	62,701	97.9%	0.0%	2.1%
Vancomycin	62,008	99.9%‡	0.0%	0.0%
Gentamicin	64,219	97.1%	0.6%	2.3%
Ciprofloxacin	23,787	71.6%	1.9%	26.6%
Levofloxacin	43,343	72.6%	5.8%	21.6%
Erythromycin	17,527	35.3%	2.8%	61.9%

*Oxacillin resistance is a marker for MRSA.
‡Vancomycin non-susceptible cases are likely false-positives. There were only 6 laboratory-confirmed vancomycin-intermediate *S. aureus* cases reported to the FDOH in 2009.

The prevalence of resistance stayed relatively constant from 2006 to 2009 (Table 7). Antibiotics with slight increases include penicillin, clindamycin, trimethoprim-sulfamethoxazole, gentamicin, ciprofloxacin, and levofloxacin. Slight decreases in resistance were seen for cefazolin and erythromycin. Oxacillin is highlighted in Table 2 because oxacillin resistance is used as the marker for methicillin resistance in determining whether to classify an *S. aureus* organism as MRSA or methicillin-susceptible (MSSA).

Table 7. Percentage of *Staphylococcus aureus* Isolates with Intermediate or Higher Level Resistance to Antibiotics, Florida 2006-2009

Antibiotic Name	2006	2007	2008	2009
Oxacillin*	50.1%	52.0%	51.9%	50.2%
Penicillin	91.3%	91.7%	92.9%	94.9%
Amoxicillin-clavulanic acid	50.3%	52.3%	51.9%	50.3%
Cefazolin	56.1%	52.2%	52.0%	50.4%
Clindamycin	15.7%	18.9%	17.9%	18.5%
Tetracycline	6.2%	5.6%	5.6%	6.2%
Linezolid	0.2%	0.1%	0.0%	0.0%
Trimethoprim-sulfamethoxazole	1.2%	1.3%	1.8%	2.1%
Vancomycin	0.0%	0.0%	0.0%	0.1%‡
Gentamicin	1.7%	1.8%	1.9%	2.9%
Ciprofloxacin	25.5%	27.6%	28.4%	28.4%
Levofloxacin	23.9%	25.6%	24.3%	27.4%
Erythromycin	66.4%	65.9%	66.8%	64.7%

*Oxacillin resistance is a marker for MRSA.
‡Vancomycin non-susceptible cases are likely false-positives. There were only 6 laboratory-confirmed vancomycin-intermediate *S. aureus* cases reported to the FDOH in 2009.

In general, the prevalence of resistance to antibiotics is highest among young children aged one to four years, and among adults aged 25 years and older. Resistance to fluoroquinolones showed the greatest variation in resistance levels, with only 18.2% and 17.0% of isolates in children aged five to fourteen years resistant to ciprofloxacin and levofloxacin, respectively. While among persons aged 65 years and older, 44.9% and 39.9% of isolates, respectively, were resistant (Table 8).

Table 8. Percentage of *Staphylococcus aureus* Isolates with Full or Intermediate Resistance to Antibiotics by Age, Florida 2009

Age (years)	Number of Isolates Tested	Oxacillin*	Penicillin	Amoxicillin-clavulanic acid	Cefazolin	Clindamycin	Tetracycline	Linezolid	Trimethoprim-sulfamethoxazole	Vancomycin	Gentamicin	Ciprofloxacin	Levofloxacin	Erythromycin
<1	1,310	50.1%	95.1%	49.8%	50.4%	16.2%	4.8%	0.0%	1.4%	0.1%‡	1.9%	17.9%	19.2%	63.4%
1-4	5,389	61.6%	97.6%	61.5%	61.8%	11.3%	4.3%	0.0%	1.4%	0.1%‡	2.1%	21.2%	24.7%	70.8%
5-14	7,753	44.9%	96.5%	45.0%	45.1%	16.9%	4.5%	0.0%	1.0%	0.1%‡	1.4%	18.2%	17.0%	57.2%
15-24	7,944	46.8%	94.7%	46.9%	46.9%	14.9%	6.3%	0.1%	1.0%	0.0%	1.6%	18.7%	19.7%	61.1%
25-64	28,784	50.5%	94.8%	50.7%	50.7%	16.2%	6.4%	0.0%	2.0%	0.0%	2.5%	26.5%	28.0%	65.5%
65+	13,156	49.9%	93.1%	50.0%	50.1%	31.6%	7.4%	0.0%	3.8%	0.0%	6.1%	44.9%	39.9%	68.4%
Total	64,924§	50.2%	94.9%	50.3%	50.4%	18.5%	6.2%	0.0%	2.1%	0.1%‡	2.9%	28.5%	27.4%	64.7%

*Oxacillin resistance is a marker for MRSA.
§Column does not sum to zero due to missing age values.
‡Vancomycin non-susceptible cases are likely false-positives. There were only 6 laboratory-confirmed vancomycin-intermediate *S. aureus* cases reported to the FDOH in 2009.

Resistance patterns were also summarized by region and county. The Regional Domestic Security Task Force regions were used, as depicted in Figure 3. Of the 64,924 *S. aureus* isolates tested in 2009, 6,514 were from patients who were not Florida residents, and 3,977 were from patients who were Florida residents, but whose county of residence not available. This left 54,433 isolates that were from Florida residents whose county of residence was known.

Of the 54,433 *S. aureus* isolates from Florida residents tested in 2009 whose county of residence was known, 9,729 (17.9%) were from patients residing in the East Central Region of Florida (Figure 12 and Table 9). The resistance patterns seen were similar to those seen in the state as a whole. More than 25% of isolates were resistant to oxacillin, penicillin, amoxicillin-clavulanic acid, cefazolin, ciprofloxacin, levofloxacin, and erythromycin.

Of the 54,433 *S. aureus* cases from Florida residents tested in 2009 whose county of residence was known, 1,296 (2.4%) were from patients residing in the North Central Region of Florida (Figure 13 and Table 9). A higher proportion of isolates from the North Central Region was MRSA (57.2%) compared with the statewide average (50.7%). There were also a higher than average proportion of cases resistant to amoxicillin-clavulanic acid (57.4%), cefazolin (57.3%), and ciprofloxacin (31.4%). Additionally, more than 25% of isolates were resistant to penicillin and levofloxacin. There was slightly less resistance to clindamycin (12.6%) compared with the state as a whole.

Of the 54,433 *S. aureus* isolates from Florida residents tested in 2009 whose county of residence was known, 8,106 (15.0%) were from patients residing in the North East Region of Florida (Figure 14 and Table 9). The North East Region had a slightly higher proportion of *S. aureus* that was MRSA compared with the state (54.4%), as well as a slightly higher than average proportion of isolates resistant to amoxicillin-clavulanic acid (54.3%) and cefazolin (54.4%), and a substantially higher than average proportion of isolates resistant to erythromycin (81.8%). Penicillin, ciprofloxacin, and levofloxacin also had resistance percentages higher than 25%.

Of the 54,433 *S. aureus* isolates from Florida residents tested in 2009 whose county of residence was known, 1,506 (2.8%) were from patients residing in the North West Region of Florida (Figure 15 and Table 9). The North West Region had a higher than average proportion of *S. aureus* that was MRSA compared with the state (55.2%), as well as a slightly higher proportion of isolates resistant to amoxicillin-clavulanic acid (55.0%), cefazolin (55.2%), and ciprofloxacin (32.9%). Penicillin and levofloxacin also had resistance percentages higher than 25%. There was substantially lower erythromycin resistance in this region (20.0%).

Of the 54,433 *S. aureus* isolates from Florida residents tested in 2009 whose county of residence was known, 16,673 (30.8%) were from patients residing in the South East Region of Florida (Figure 16 and Table 9). The South East Region had the lowest proportion of *S. aureus* that was MRSA compared with the state (45.4%). The percent of isolates resistant to penicillin, amoxicillin-clavulanic acid, cefazolin, ciprofloxacin, levofloxacin, and erythromycin were also higher than 25%. While still relatively low, there was a slightly higher than average percentage of isolates resistant to clindamycin (23.5%), tetracycline (9.1%) and gentamicin (5.9%).

Of the 54,433 *S. aureus* isolates from Florida residents tested in 2009 whose county of residence was known, 6,896 (12.7%) were from patients residing in the South West Region of Florida (Figure 17 and Table 9). The South West Region had a resistance profile that was very similar to that of the state as a whole. The percent of isolates resistant to oxacillin, penicillin, amoxicillin-clavulanic acid, cefazolin, ciprofloxacin, levofloxacin, and erythromycin were higher than 25%.

Of the 54,433 *S. aureus* isolates from Florida residents tested in 2009 whose county of residence was known, 10,012 (18.5%) were from patients residing in the West Central Region of Florida (Figure 18 and Table 9). The South West Region had a resistance profile that was very similar to that of the state as a whole. The percent of isolates resistant to oxacillin, penicillin, amoxicillin-clavulanic acid, cefazolin, ciprofloxacin, levofloxacin, and erythromycin were higher than 25%.

Resistance rates by county are presented in Table 10.

Figure 12. *Staphylococcus aureus*, Antibiotic Resistance, East Central Region, Florida 2009

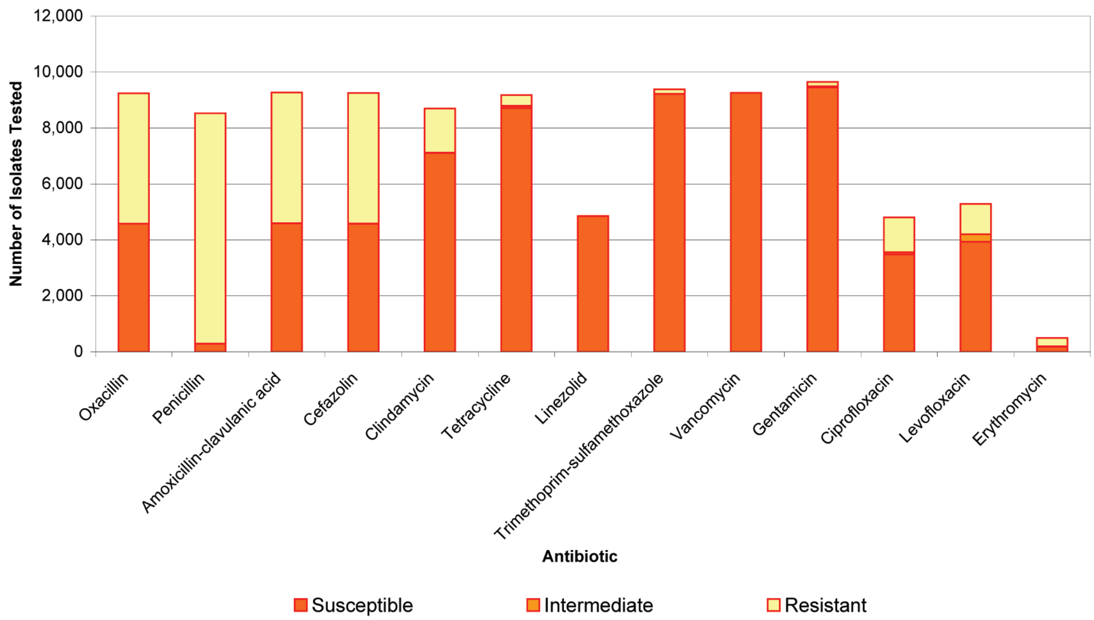


Figure 13. *Staphylococcus aureus*, Antibiotic Resistance, North Central Region, Florida 2009

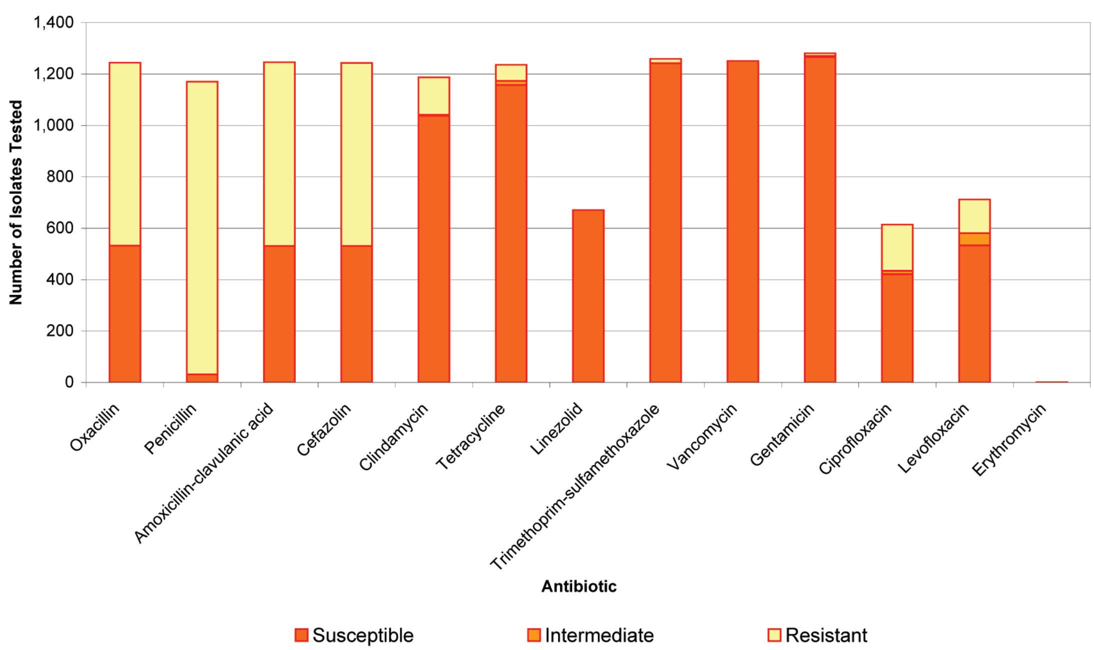


Figure 14. *Staphylococcus aureus,* Antibiotic Resistance, North East Region, Florida 2009

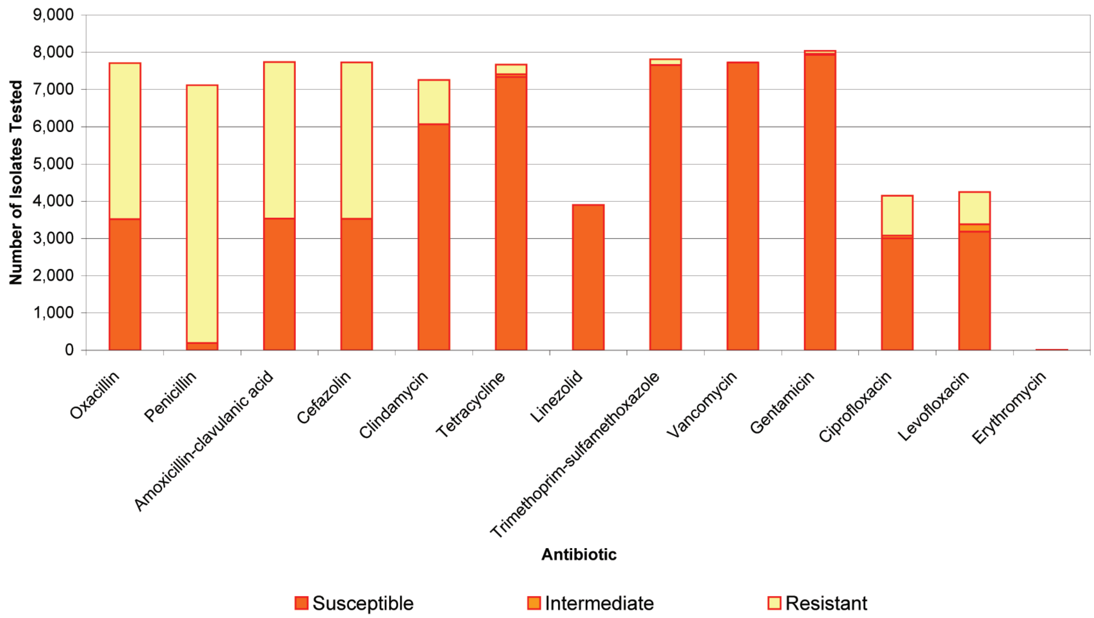


Figure 15. *Staphylococcus aureus*, Antibiotic Resistance, North West Region, Florida 2009

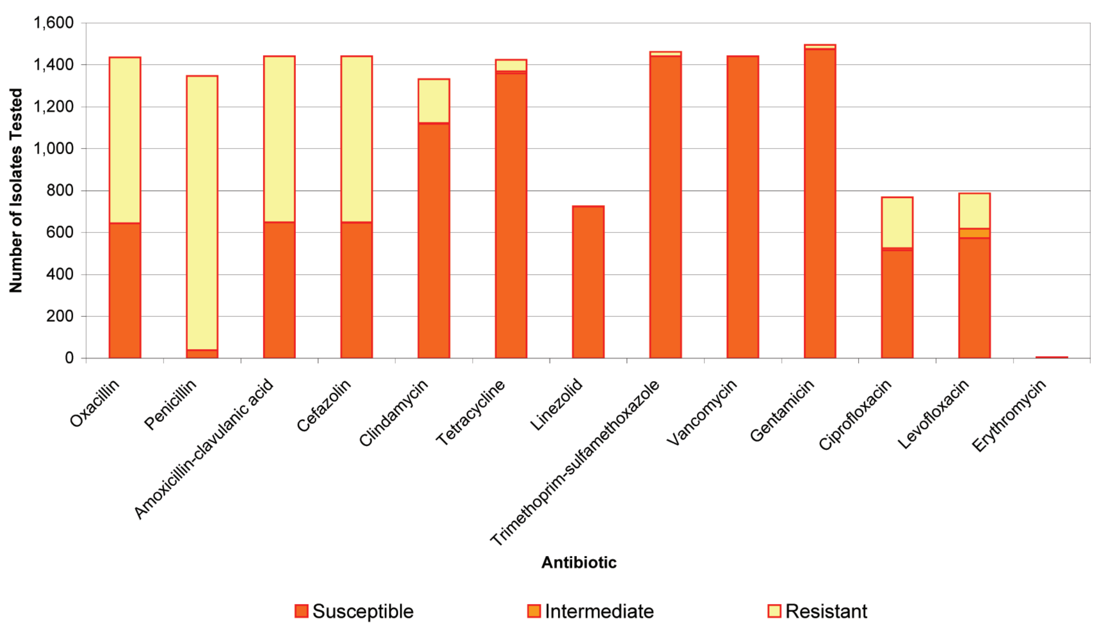


Figure 16. *Staphylococcus aureus*, Antibiotic Resistance, South East Region, Florida 2009

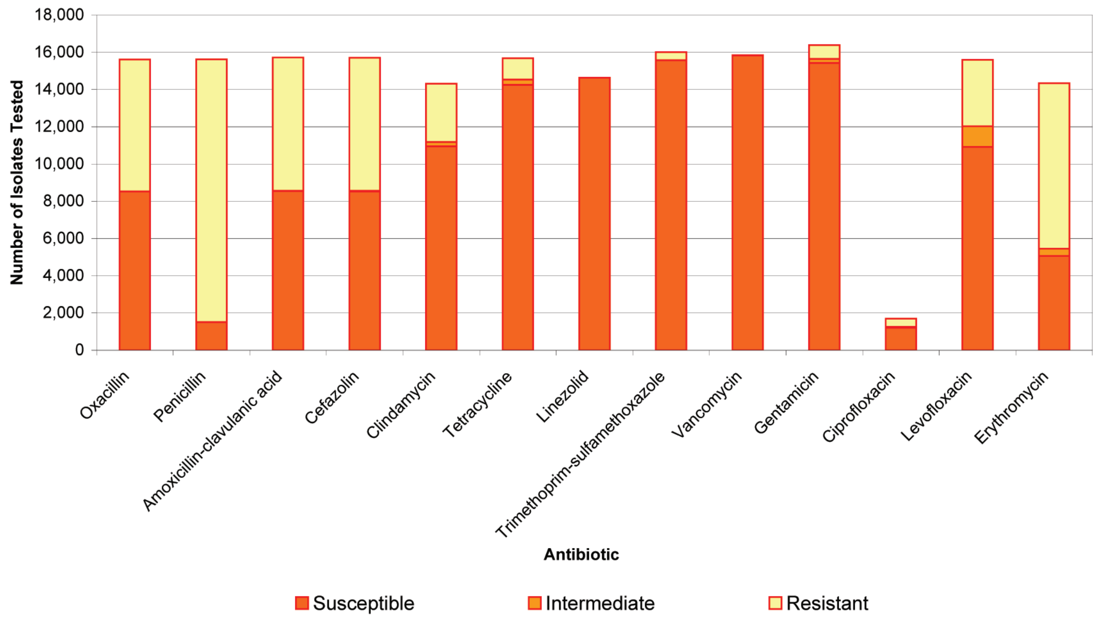


Figure 17. *Staphylococcus aureus*, Antibiotic Resistance, South West Region, Florida 2009

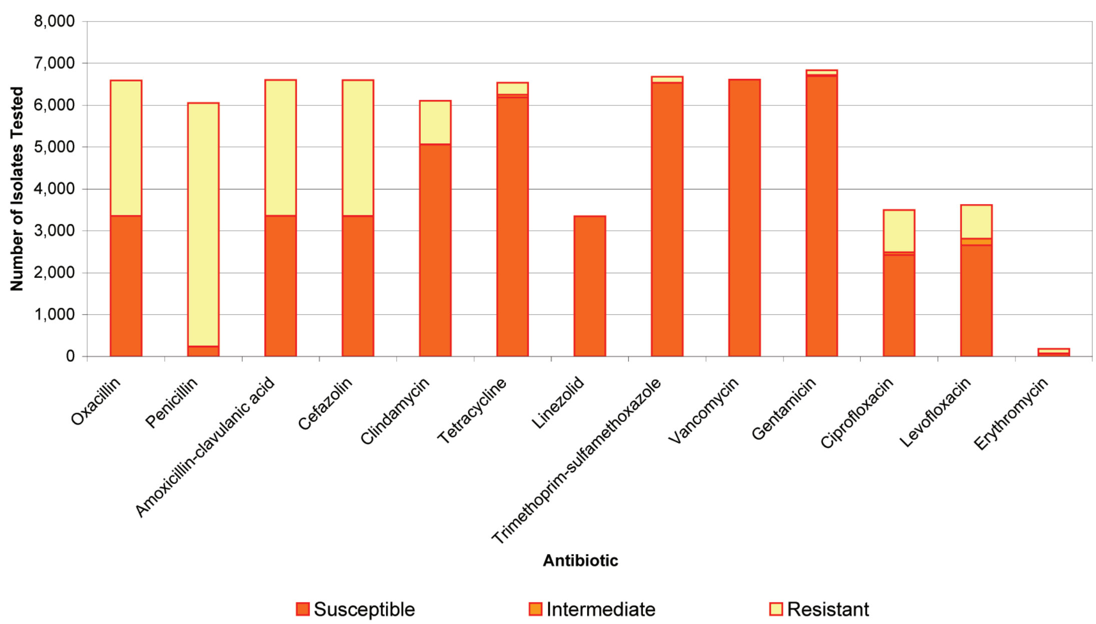


Figure 18. *Staphylococcus aureus,* Antibiotic Resistance, West Central Region, Florida 2009

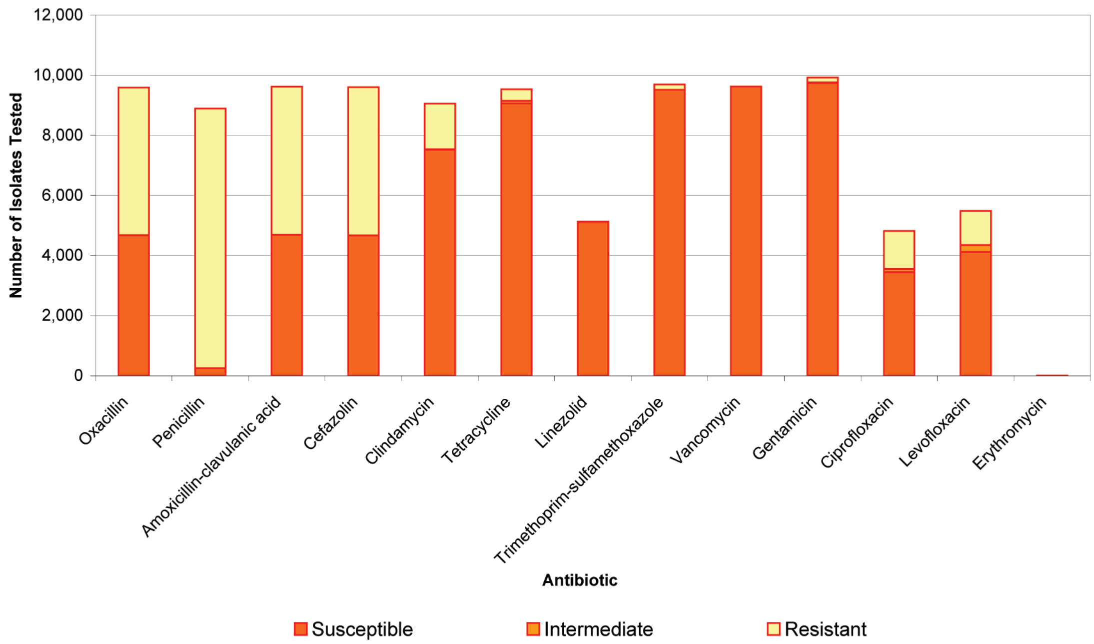


Table 9. Percentage of *Staphylococcus aureus* Isolates with Full or Intermediate Resistance to Antibiotics by Region, Florida 2009

Region	Number of Isolates	Oxacillin*	Penicillin	Amoxicillin-clavulanic acid	Cefazolin	Clindamycin	Tetracycline	Linezolid	Trimethoprim-sulfamethoxazole	Vancomycin	Gentamicin	Ciprofloxacin	Levofloxacin	Erythromycin
East Central	9,729	50.4%	96.6%	50.4%	50.5%	18.3%	5.1%	0.0%	1.8%	0.0%	1.9%	27.5%	25.6%	63.7%
North Central	1,296	57.2%	97.4%	57.4%	57.3%	12.6%	6.4%	0.0%	1.4%	0.0%	1.2%	31.4%	25.1%	0%*
North East	8,106	54.4%	97.3%	54.3%	54.4%	16.4%	4.4%	0.0%	2.0%	0.0%	1.4%	27.6%	25.1%	81.8%
North West	1,506	55.2%	97.2%	55.0%	55.2%	16.0%	4.6%	0.1%	1.4%	0.0%	1.4%	32.9%	27.2%	20.0%
South East	10,511	47.3%	90.1%	47.5%	47.6%	22.9%	8.2%	0.0%	2.9%	0.1%‡	5.4%	30.0%	30.2%	66.1%
South West	6,896	49.1%	96.1%	49.2%	49.3%	17.2%	5.3%	0.1%	2.2%	0.0%	2.1%	30.7%	26.6%	64.4%
West Central	10,012	51.2%	97.1%	51.3%	51.4%	17.0%	5.0%	0.1%	1.9%	0.0%	1.8%	28.4%	24.9%	70.0%
Total	64,924§	50.2%	94.9%	50.3%	50.4%	18.5%	6.2%	0.0%	2.1%	0.1%	2.9%	28.5%	27.4%	64.7%

*Oxacillin resistance is a marker for MRSA.
§Column does not sum to zero due to missing county values.
‡Vancomycin non-susceptible cases are likely false-positives. There were only 6 laboratory-confirmed vancomycin-intermediate *S. aureus* cases reported to the FDOH in 2009. Of those, 2 were in the South East Region, 2 were in the South West Region, and 2 were in the North East Region.
*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.

Table 10. *Staphylococcus aureus* Isolates, Percentage Resistant to Antibiotics by County, Florida 2009

County	Number of Isolates	Oxacillin*	Penicillin	Amoxicillin-clavulanic acid	Cefazolin	Clindamycin	Tetracycline	Linezolid	Trimethoprim-sulfamethoxazole	Vancomycin	Gentamicin	Ciprofloxacin	Levofloxacin	Erythromycin
Alachua	671	55.1%	96.2%	55.2%	55.3%	13.7%	5.0%	0.0%	2.8%	0.0%	0.7%	24.8%	23.6%	75%*
Baker	137	59.5%	99.2%	59.1%	59.1%	17.1%	2.4%	0.0%	3.1%	0.0%	1.5%	29.1%	27.5%	-
Bay	224	60.9%	96.1%	60.9%	60.9%	12.6%	6.7%	0.0%	2.8%	0.0%	0.9%	37.9%	32.2%	-
Bradford	85	73.5%	100.0%	73.5%	73.5%	14.3%	6.0%	0.0%	6.0%	0.0%	1.2%	38.6%	39.5%	-
Brevard	1,551	53.0%	96.9%	53.2%	53.2%	19.3%	4.3%	0.1%	1.9%	0.1%‡	1.0%	31.7%	30.5%	80.0%
Broward	4,769	48.6%	90.2%	48.8%	48.9%	21.5%	8.5%	0.0%	3.2%	0.0%	5.4%	34.0%	31.3%	66.3%
Calhoun	39	43.8%	100.0%	43.8%	43.8%	16.7%	3.1%	0.0%	2.9%	0.0%	2.6%	16.7%	22.7%	-
Charlotte	436	43.6%	96.2%	43.6%	43.6%	22.1%	4.3%	0.0%	2.6%	0.0%	3.7%	28.9%	30.5%	0%*
Citrus	285	55.1%	98.1%	55.1%	55.4%	15.7%	5.5%	0.0%	1.4%	0.0%	1.8%	39.4%	33.1%	100%*
Clay	700	59.1%	97.8%	59.1%	59.1%	15.8%	2.6%	0.0%	1.0%	0.0%	1.2%	26.5%	23.7%	-
Collier	581	38.6%	93.8%	38.6%	38.8%	16.9%	7.0%	0.4%	2.3%	0.0%	1.4%	27.1%	23.9%	66.7%*
Columbia	176	57.1%	95.6%	57.7%	57.5%	13.5%	7.1%	0.0%	1.2%	0.0%	1.2%	43.2%	22.4%	-
DeSoto	43	57.5%	94.4%	57.5%	57.5%	17.9%	5.0%	0.0%	0.0%	0.0%	2.4%	15.8%	26.9%	-
Dixie	126	66.7%	99.2%	66.9%	66.7%	7.9%	9.2%	0.0%	0.0%	0.0%	0.0%	35.6%	30.6%	-
Duval	3,445	55.1%	97.2%	55.2%	55.2%	15.9%	4.6%	0.0%	1.9%	0.0%	1.3%	26.1%	24.6%	100%*
Escambia	240	60.5%	97.7%	59.7%	60.2%	13.7%	6.9%	0.0%	1.7%	0.0%	1.7%	35.3%	28.1%	-
Flagler	153	64.8%	97.8%	64.8%	64.8%	16.5%	5.6%	0.0%	2.1%	0.0%	1.3%	27.0%	29.4%	100%*

*Oxacillin resistance is a marker for MRSA.
§Column does not sum to zero due to missing county values.
‡Vancomycin non-susceptible cases are likely false-positives. There were only 6 laboratory-confirmed vancomycin-intermediate *S. aureus* cases reported to the FDOH in 2009. Of those, 2 were in the South East Region, 2 were in the South West Region, and 2 were in the North East Region.
*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.

Table 10. (Continued) *Staphylococcus aureus* Isolates, Percentage Resistant to Antibiotics by County, Florida 2009

County	Number of Isolates	Oxacillin*	Penicillin	Amoxicillin-clavulanic acid	Cefazolin	Clindamycin	Tetracycline	Linezolid	Trimethoprim-sulfamethoxazole	Vancomycin	Gentamicin	Ciprofloxacin	Levofloxacin	Erythromycin
Franklin	51	65.3%	100.0%	65.3%	65.3%	8.3%	4.1%	0.0%	2.0%	0.0%	2.0%	34.6%	18.5%	-
Gadsden	78	67.1%	97.1%	67.1%	67.1%	14.5%	5.6%	0.0%	0.0%	0.0%	2.6%	27.0%	23.8%	-
Gilchrist	59	47.2%	100.0%	45.5%	47.2%	15.1%	1.9%	0.0%	5.6%	0.0%	1.8%	14.8%	20.6%	-
Glades	78	50.0%	97.0%	50.0%	51.4%	18.3%	2.7%	0.0%	1.3%	0.0%	1.3%	42.9%	28.9%	73.3%
Gulf	44	61.9%	100.0%	61.9%	61.9%	2.4%	2.4%	0.0%	0.0%	0.0%	0.0%	28.0%	10.5%	-
Hamilton	29	59.3%	100.0%	59.3%	59.3%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	37.5%	26.1%	-
Hardee	82	56.8%	100.0%	57.3%	57.3%	6.4%	3.7%	0.0%	1.2%	0.0%	2.4%	27.9%	22.5%	-
Hendry	75	57.7%	94.0%	57.7%	57.7%	16.2%	4.2%	0.0%	2.8%	0.0%	8.1%	33.3%	35.3%	88.9%
Hernando	701	49.5%	94.9%	49.8%	49.5%	22.8%	4.0%	0.0%	2.2%	0.0%	1.9%	35.9%	29.9%	-
Highlands	164	63.3%	98.7%	63.3%	63.3%	13.9%	4.4%	0.0%	0.6%	0.0%	1.8%	22.9%	26.4%	-
Hillsborough	4,403	51.7%	97.6%	51.7%	51.7%	15.9%	4.7%	0.0%	1.9%	0.0%	1.8%	26.7%	22.7%	75%*
Holmes	24	62.5%	95.7%	62.5%	62.5%	4.3%	0.0%	0.0%	0.0%	0.0%	4.2%	53.8%	36.4%	-
Indian River	394	49.1%	97.0%	48.9%	48.9%	15.3%	4.9%	0.0%	0.5%	0.0%	2.0%	33.8%	33.0%	33.3%
Jackson	42	62.5%	100.0%	62.5%	62.5%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	44.4%	31.3%	-
Jefferson	21	70.0%	100.0%	70.0%	70.0%	5.0%	5.0%	0.0%	5.0%	0.0%	4.8%	13.3%	14.3%	-
Lafayette	32	34.5%	100.0%	34.5%	34.5%	17.2%	6.9%	0.0%	0.0%	0.0%	0.0%	22.2%	23.5%	-
Lake	1,006	51.4%	97.0%	51.2%	51.3%	21.3%	4.9%	0.0%	1.1%	0.0%	1.6%	32.3%	27.5%	-

*Oxacillin resistance is a marker for MRSA.
[§]Column does not sum to zero due to missing county values.
[‡]Vancomycin non-susceptible cases are likely false-positives. There were only 6 laboratory-confirmed vancomycin-intermediate *S. aureus* cases reported to the FDOH in 2009. Of those, 2 were in the South East Region, 2 were in the South West Region, and 2 were in the North East Region.
*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.

Table 10. (Continued) *Staphylococcus aureus* Isolates, Percentage Resistant to Antibiotics by County, Florida 2009

County	Number of Isolates	Oxacillin*	Penicillin	Amoxicillin-clavulanic acid	Cefazolin	Clindamycin	Tetracycline	Linezolid	Trimethoprim-sulfamethoxazole	Vancomycin	Gentamicin	Ciprofloxacin	Levofloxacin	Erythromycin
Lee	1,819	45.8%	96.0%	46.0%	46.1%	15.0%	4.6%	0.1%	1.7%	0.0%	1.3%	27.2%	23.4%	36.4%
Leon	447	48.4%	95.8%	48.6%	48.4%	14.3%	6.5%	0.0%	1.1%	0.0%	1.4%	24.6%	22.9%	0%*
Levy	170	58.3%	99.3%	58.0%	58.3%	14.2%	6.2%	0.0%	2.4%	0.0%	2.4%	37.5%	33.0%	-
Liberty	15	84.6%	100.0%	84.6%	84.6%	15.4%	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	9.1%	-
Madison	35	67.6%	96.9%	67.6%	67.6%	6.9%	8.8%	0.0%	5.9%	0.0%	2.9%	27.8%	44.4%	-
Manatee	1,349	48.0%	97.1%	47.9%	48.3%	16.0%	5.4%	0.1%	1.5%	0.1%‡	0.6%	23.5%	22.0%	-
Marion	1,092	51.8%	97.1%	51.9%	51.7%	19.1%	4.5%	0.0%	1.3%	0.0%	1.6%	31.6%	27.6%	-
Miami-Dade	6,162	42.1%	90.7%	42.4%	42.5%	24.6%	10.6%	0.0%	2.5%	0.2%	6.8%	27.0%	29.8%	62.3%
Martin	562	49.0%	91.2%	49.1%	49.5%	23.4%	7.4%	0.0%	3.1%	0.4%‡	5.8%	23.7%	26.7%	64.2%
Monroe	242	53.1%	88.1%	53.7%	53.7%	18.3%	7.0%	0.0%	1.3%	0.0%	5.0%	34.8%	31.3%	67.1%
Nassau	289	52.8%	96.7%	52.2%	52.2%	20.7%	5.3%	0.0%	3.7%	0.4%‡	1.7%	28.4%	15.2%	0%*
Okaloosa	329	54.2%	95.2%	54.2%	54.5%	17.4%	5.5%	0.0%	1.3%	0.0%	0.9%	41.1%	28.8%	0%*
Okeechobee	44	66.7%	97.3%	66.7%	66.7%	8.8%	2.6%	0.0%	2.5%	0.0%	0.0%	59.3%	33.3%	100%*
Orange	3,000	48.4%	96.9%	48.3%	48.5%	17.5%	5.6%	0.0%	1.7%	0.0%	2.0%	23.6%	21.7%	71.4%
Osceola	792	49.3%	96.7%	49.3%	49.6%	16.9%	4.4%	0.0%	2.1%	0.0%	1.8%	27.3%	24.4%	0%*
Palm Beach	5,500	46.0%	90.1%	46.2%	46.3%	24.3%	8.0%	0.0%	2.6%	0.1%‡	5.4%	25.6%	29.1%	65.8%
Pasco	1,519	51.1%	96.4%	51.2%	51.5%	19.3%	5.5%	0.4%	1.4%	0.0%	2.4%	32.6%	28.1%	100%*

*Oxacillin resistance is a marker for MRSA.
§Column does not sum to zero due to missing county values.
‡Vancomycin non-susceptible cases are likely false-positives. There were only 6 laboratory-confirmed vancomycin-intermediate *S. aureus* cases reported to the FDOH in 2009. Of those, 2 were in the South East Region, 2 were in the South West Region, and 2 were in the North East Region.
*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.

Table 10. (Continued) *Staphylococcus aureus* Isolates, Percentage Resistant to Antibiotics by County, Florida 2009

County	Number of Isolates	Oxacillin*	Penicillin	Amoxicillin-clavulanic acid	Cefazolin	Clindamycin	Tetracycline	Linezolid	Trimethoprim-sulfamethoxazole	Vancomycin	Gentamicin	Ciprofloxacin	Levofloxacin	Erythromycin
Pinellas	2,634	51.4%	96.5%	51.4%	51.6%	17.4%	5.1%	0.0%	2.0%	0.0%	1.9%	32.5%	25.6%	66.7%*
Polk	1,361	53.9%	97.3%	53.9%	53.9%	15.4%	5.2%	0.0%	2.7%	0.0%	2.4%	27.1%	26.9%	0%*
Putnam	171	69.8%	98.1%	69.8%	69.8%	9.6%	4.3%	0.0%	2.4%	0.0%	0.6%	33.3%	28.9%	-
Santa Rosa	195	58.3%	96.0%	58.8%	58.3%	14.4%	4.3%	0.0%	0.5%	0.0%	1.0%	33.7%	29.6%	-
Sarasota	1,095	45.0%	97.1%	44.9%	45.0%	18.2%	3.9%	0.0%	1.8%	0.1%‡	1.8%	27.4%	25.4%	100%*
Seminole	1,165	48.8%	97.0%	48.8%	48.8%	17.1%	4.8%	0.0%	1.4%	0.0%	1.3%	24.7%	23.4%	100%*
St Johns	460	50.7%	98.5%	50.7%	50.7%	18.9%	3.2%	0.4%	1.1%	0.0%	1.8%	23.7%	24.9%	33.3%*
St Lucie	1,022	53.6%	96.4%	53.6%	53.5%	19.4%	7.4%	0.0%	3.6%	0.0%	3.5%	35.8%	32.4%	63.0%
Sumter	312	47.3%	95.8%	47.1%	47.1%	23.5%	5.2%	0.0%	1.3%	0.0%	1.0%	32.4%	26.1%	-
Suwannee	86	45.8%	97.4%	45.8%	45.8%	20.5%	7.3%	0.0%	2.4%	0.0%	0.0%	36.1%	26.4%	-
Taylor	141	73.5%	100.0%	73.5%	73.5%	7.4%	4.4%	0.0%	2.2%	0.0%	0.0%	37.9%	35.3%	-
Union	39	61.5%	100.0%	61.5%	61.5%	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	22.2%	-
Volusia	1,064	54.1%	97.2%	54.2%	54.2%	17.7%	4.6%	0.2%	2.6%	0.0%	2.4%	28.6%	26.3%	75%*
Wakulla	59	56.1%	98.1%	55.2%	56.1%	14.3%	7.0%	0.0%	1.7%	0.0%	3.4%	46.4%	12.5%	-
Walton	63	48.3%	98.2%	48.3%	48.3%	24.1%	1.7%	0.0%	1.6%	0.0%	1.6%	32.1%	21.1%	0%*
Washington	41	50.0%	91.2%	50.0%	50.0%	13.9%	2.7%	0.0%	0.0%	0.0%	2.5%	36.4%	35.0%	-
Total	64,924§	50.2%	94.9%	50.3%	50.4%	18.5%	6.2%	0.0%	2.1%	0.1%	2.9%	28.5%	27.4%	64.7%

*Oxacillin resistance is a marker for MRSA.
§Column does not sum to zero due to missing county values.
‡Vancomycin non-susceptible cases are likely false-positives. There were only 6 laboratory-confirmed vancomycin-intermediate *S. aureus* cases reported to the FDOH in 2009. Of those, 2 were in the South East Region, 2 were in the South West Region, and 2 were in the North East Region.
*Marked observations are those in which too few specimens were tested to produce reliable estimates of resistance.

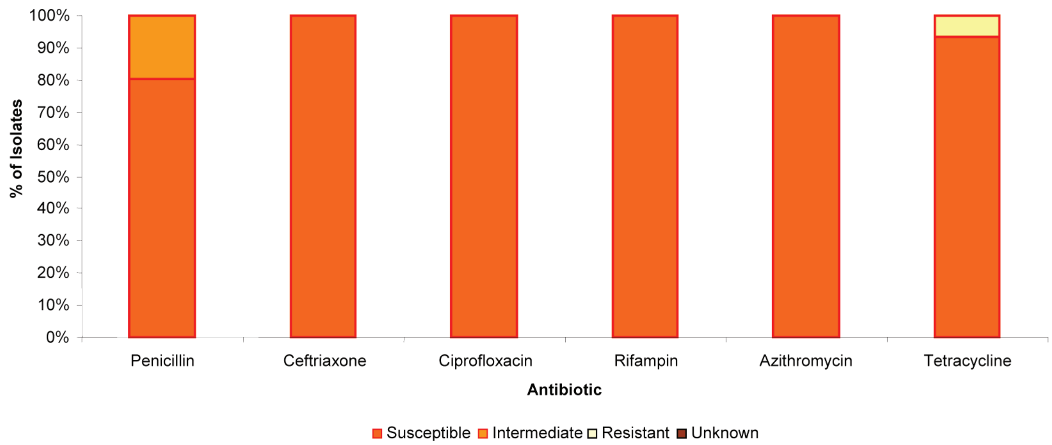
Neisseria meningitidis

Meningococcal disease is an acute, potentially severe illness caused by the bacterium *Neisseria meningitidis*. Invasive meningococcal disease refers to *Neisseria meningitidis* infection in the blood (meningococcemia), in the cerebral spinal fluid (meningitis), or from any normally sterile site in the body, such as joints. Common symptoms of meningococcal disease include high fever, neck stiffness, confusion, nausea, vomiting, photophobia, lethargy, and petechiae or a purpuric rash. The currently recommended chemoprophylactic antibiotics include ciprofloxacin, a second-generation fluoroquinolone, which is effectively and frequently prescribed to adults (men and non-pregnant women) because the regimen is simple (a single oral dose), is associated with low rates of adverse events, and has relatively few drug interactions.

The emergence of fluoroquinolone-resistant *Neisseria meningitidis* in the U.S. has raised important questions regarding current chemoprophylaxis guidelines and highlights the expanding threat of antimicrobial resistance in bacterial pathogens. The Centers for Disease Control and Prevention (CDC) responded to this threat by forming MeningNet, an enhanced meningococcal surveillance system used to monitor antimicrobial susceptibility. As part of MeningNet, Florida began forwarding all *N. meningitidis* isolates to the CDC for antibiotic susceptibility testing in late 2008.

Of the 52 cases of meningococcal disease in Florida in 2009, 46 cases had an isolate that was submitted to CDC for testing as part of MeningNet. All 46 isolates from Florida were tested for susceptibility to penicillin, ceftriaxone, ciprofloxacin, rifampin, azithromycin, and tetracycline with the use of the Etest or broth-microdilution panels. Non-susceptible and intermediate isolates were confirmed with the use of broth microdilution. Thirty-seven isolates (80.4%) were susceptible to penicillin and nine (19.6%) had intermediate resistance to penicillin. Those isolates with the highest penicillin G MICs (intermediate resistance with MIC ranging from .125 to .350) consisted of 67% (6 isolates) from serogroup Y, 22% (2 isolates) and 11% (1 isolate) were of serogroups C and B, respectively. All other isolates were fully (100%) susceptible to ceftriaxone, ciprofloxacin, rifampin, and azithromycin. Forty-three (93.5%) of the isolates tested susceptible to tetracycline, and the susceptibility of the other three (6.5%) were undetermined (Figure 19).

Figure 19. *Neisseria menningitidis* Isolates and Level of Susceptibility, Florida 2008-2009



Other Activities

In the 2008 revision to *F.A.C.* Rule 64D-3, Florida made community-associated *S. aureus* mortality a reportable condition. Additionally, antibiotic susceptibilities for all *S. aureus* isolates from sterile sites became reportable via electronic laboratory reporting. This applies only to laboratories participating in electronic laboratory reporting with the Florida Department of Health, and individual case investigations are not required. The goal of this surveillance is to monitor trends of antimicrobial resistance and the data collected through 2009 will be analyzed and included in future reports. The Bureau of Epidemiology is actively pursuing electronic laboratory partners and the amount of data available for analysis will increase over the next years.

Section 5

Summary of 2009 H1N1 Influenza A Surveillance

Background

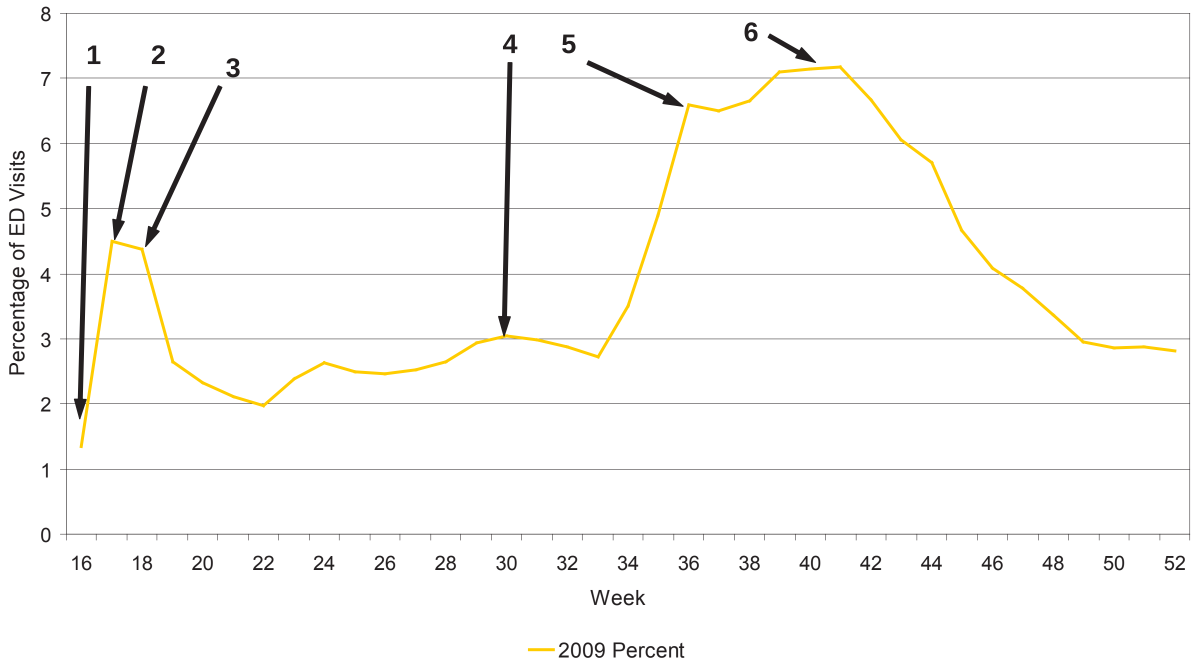
Influenza causes annual seasonal epidemics in Florida and around the world. In Florida, influenza typically occurs in the fall through early spring and peaks sometime in the first three months of the year. Periodically, a genetically novel strain of influenza circulates worldwide, causing an influenza pandemic. These periodic pandemics vary in severity but are defined by a number of criteria: there must be a new influenza A subtype in humans with minimal or no immunity in the population; it must cause clinical illness; and it must show evidence of sustained person-to-person transmission.

The 2009 calendar year began in the middle of a traditional influenza season, in which influenza activity peaked in late February. Multiple strains of seasonal influenza were present during the first months of 2009, including seasonal influenza A H1 and H3, but unusually the dominant strain was influenza B. This contrasted with the rest of the U.S., where the majority of influenza identified was seasonal influenza A H3. Multiple surveillance systems in Florida, as well as nationally, showed that the severity of the 2008-2009 influenza season was mild and comparable to that in previous non-pandemic influenza seasons.

In April 2009, a novel strain of influenza A H1N1 was identified in California, and Florida began issuing guidance for diagnosing and investigating potential infections with this novel virus within the state. (A summary of the California index cases can be found in the April 24, 2009 MMWR: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5815a5.htm). The new novel influenza A H1N1 virus had emerged in early 2009 in Mexico. Although it was an H1N1 influenza virus, it was different than the recent circulating seasonal H1N1 virus. The novel 2009 influenza A H1N1 virus was the result of a triple re-assortment with some genes from birds, pigs, and humans. The highest attack rate was in children and young adults. Adults born before 1957 had some pre-existing immunity to the new strain and were, therefore, relatively spared.

Figure 1 that follows depicts the overall 2009 Influenza A H1N1 Florida activity timeline of key events. Key events include: the CDC state conference call notifying states of the identification of the California index cases; the identification of the first suspected cases in Florida; the laboratory confirmation date of the first Florida case; and dates when key case reporting and surveillance guidance were issued. These events are referenced throughout the following influenza surveillance discussions.

Figure 1. 2009 Influenza A H1N1 Florida Activity Timeline, Influenza-like Illness Visits (by Chief Complaint) to Emergency Departments (ED) as a Percentage of All ED Visits, Florida ESSENCE Participating Hospitals (N=138), Week 1, 2009 through Week 52, 2009



1. April 23-25, 2009
    - 4/23: CDC call with states – Situation Briefing
    - 4/24: First CHD Epidemiology Conference call – H1N1 Situation Briefing
    - Guidance issued: a) hospitals and clinicians b) sentinel physicians
    - 4/25: First suspect cases begin to be investigated by CHDs
2. April 26-May 2, 2009
    - 4/28: Outbreak module 1521 opened
    - 4/29: CHD notified of first H1N1 case
    - 5/1: Florida shifts to a community mitigation strategy
    - CDC Laboratory confirms first 2 Florida cases
3. May 7, 2009
    - Bureau of Laboratories begins RT-PCR testing for H1N1
4. August 3, 2009
    - H1N1 reporting guidelines change
5. September 4 -10, 2009
    - Influenza activity rises dramatically in multiple surveillance systems
6. October 5, 2009
    - First deliveries of H1N1 vaccine arrive in Florida

Influenza Surveillance in Florida

To collect information on seasonal influenza transmission, morbidity, and mortality in Florida, the Florida Department of Health (FDOH) maintains a number of influenza surveillance systems listed here and described in more detail in following sections. All of these systems were used during some phase of the pandemic and their strengths and weaknesses are discussed later, as well.

- Notifiable disease case reports
    - Influenza due to novel or pandemic strains
    - Pediatric influenza-associated mortality
- Bureau of Laboratories (BOL) viral strain surveillance
- Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) Emergency Department (ED) syndromic surveillance for
    - Influenza-like illness (ILI) chief complaints
    - ILI admissions from EDs
- Florida Pneumonia and Influenza Mortality Surveillance System (FPIMSS)
- County influenza activity code reporting
- Influenza and ILI outbreak reporting (through EpiCom)
- Florida Influenza-Like Illness Surveillance Network (ILINet) sentinel surveillance

2009 Influenza A H1N1 Case Report Data

Two specific conditions related to influenza are reportable. In preparation for an influenza pandemic, Florida made influenza due to novel or pandemic strains a reportable condition in 2006. Influenza deaths from seasonal or pandemic strains in people under 18 years old are also reportable. Individual infections due to seasonal influenza viruses are not currently reportable in Florida.

In the initial weeks of the pandemic, DOH sought case reports of all laboratory-confirmed cases of 2009 influenza A H1N1. On April 25, 2009, county health departments (CHD) began investigating the first cases of suspected infection in Florida, and by May 1, the CDC had confirmed the first two 2009 influenza A H1N1 cases in Florida. As 2009 influenza A H1N1 became more widespread, the reported cases of infection were recognized to be a substantial underestimation of the true number of infections across the state. On August 3, the guidelines for individual influenza case reporting were modified to include only people with life-threatening 2009 influenza A H1N1 illness, people who died, and pregnant women who were hospitalized with 2009 influenza A H1N1. All case reports, including those from special surveillance populations, were entered into Merlin, the state's internet-based system for notifiable disease reporting. An outbreak module was opened in the Merlin Outbreak Module four days after the first case was identified. Use of the Merlin Outbreak Module enhanced case reports by allowing a flexible set of survey questions to be attached to the electronic 2009 H1N1 case report, making it possible to collect and manage data electronically on demographics, underlying conditions, vaccination status, and other characteristics.

There were 5,291 cases of 2009 influenza A H1N1 infection reported during 2009. Figure 2 displays a timeline of these reports. The peak of 2009 influenza A H1N1 reporting was in week 29 (ending July 25), after which reporting declined due to the previously mentioned change in case reporting guidelines to include only special surveillance populations. Because of the change in case definition, laboratory-confirmed case data represented in Figure 2 that follows does not accurately represent the true level of morbidity caused in Florida by 2009 influenza A H1N1. The actual peak of 2009 influenza A H1N1 activity occurred in the early fall between weeks 35 and 43 (Figure 6).

Figure 2. Laboratory-Confirmed H1N1 Cases by week of Report, Week 1, 2009 to Week 52, 2009

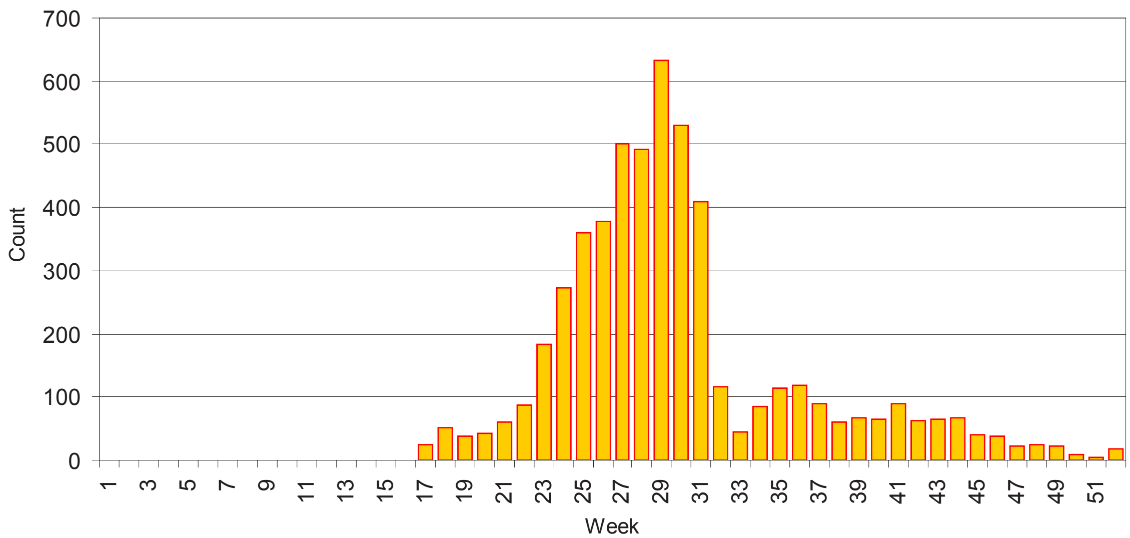
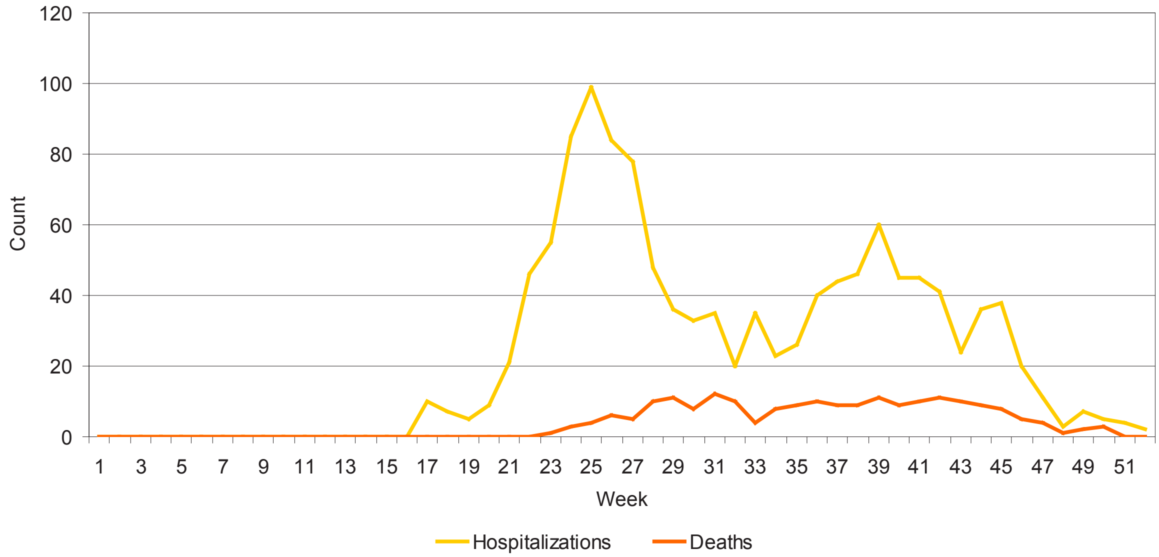


Figure 3 indicates that a first peak in confirmed 2009 influenza A H1N1 hospitalizations occurred before the change in case reporting guidelines, followed by a second peak in fall 2009. As publicity surrounding the developing pandemic escalated in April and May 2009, there was a sharp increase in hospital ED visits and hospitalizations. These were most likely “worried ill,” meaning that they were seeking care for mild respiratory symptoms that they were concerned might be 2009 influenza A H1N1 and for which, in a non-pandemic situation, they would not normally have sought care. Additionally, as anecdotal reports of severe illness in pregnant women increased, physicians became more likely to admit symptomatic pregnant women to the hospital even with relatively mild influenza. Therefore, the early peak is unlikely to represent the peak of influenza severity or distribution among the population. H1N1 death reporting did not have a similar early peak. Death reporting remained relatively consistent throughout the pandemic and was not subject to some of the biases that affected hospitalization and case reporting.

Figure 3. Total Deaths and Hospitilalizations Per Week in Novel H1N1 Cases, Week 1, 2009 to Week 52, 2009



In 2009, there were 187 laboratory confirmed deaths of people with 2009 influenza A H1N1 and 1,204 laboratory confirmed hospitalizations reported. These counts are likely substantial under-estimations of the total deaths and hospitalizations due to the novel virus for several reasons. At the height of the pandemic, the guidelines for testing and treatment were to treat all ILI as 2009 influenza A H1N1 because 100% of the detected circulating influenza strain was the new virus. As a result, many patients were treated empirically by their physicians without also being tested for influenza. Additionally, many who were tested by their physicians were tested using influenza A rapid tests that were not specific for 2009 H1N1 and that gave false negative results. Lab-confirmed influenza cases are only a small proportion of actual infections, because infected people may have had mild illness, not have sought care for their influenza illness, or not have been tested specifically for influenza.

As Figures 3 and 4 indicate, rates of 2009 influenza A H1N1 death and hospitalization were distributed unequally among different age groups. A death was recorded as a 2009 influenza A H1N1 death if the person was ill with laboratory-confirmed 2009 influenza A H1N1 at the time of death, regardless of the contribution to the cause of death from infection due the influenza virus. Hospitalizations were defined similarly. Rates of 2009 H1N1 death were highest in the 50- to 64-year-old age group, while rates of hospitalization were highest among the 0- to 4-year-old age group. Both death and hospitalization rates were relatively low for those 65 and older; a contrast from normal seasonal influenza in which the elderly are traditionally the most affected.

Figure 4. Cumulative Laboratory-Confirmed Death Rate in Novel H1N1 Cases and Cumulative Deaths in Novel H1N1 Cases by Age Group through Week 52

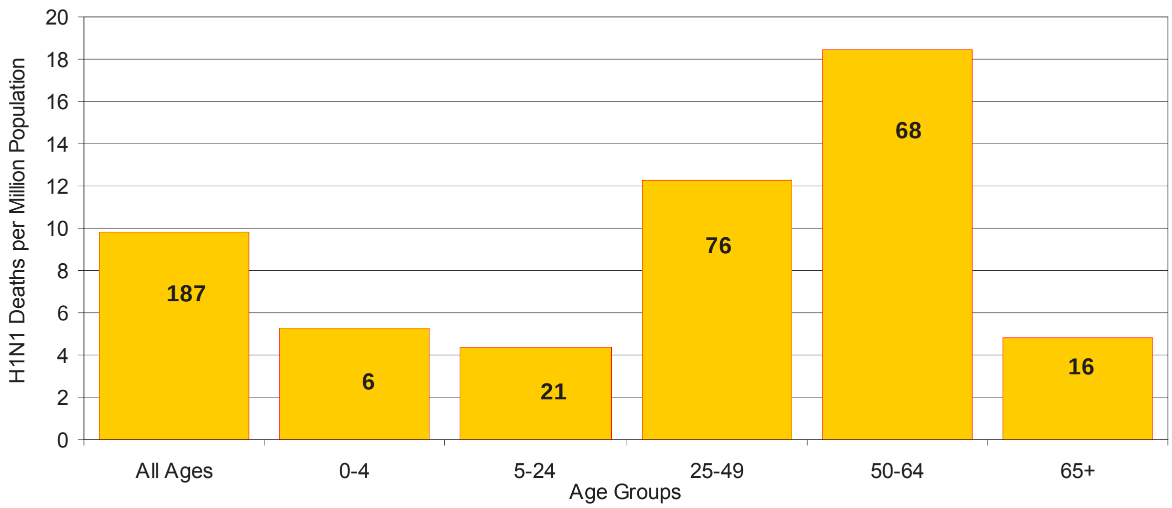
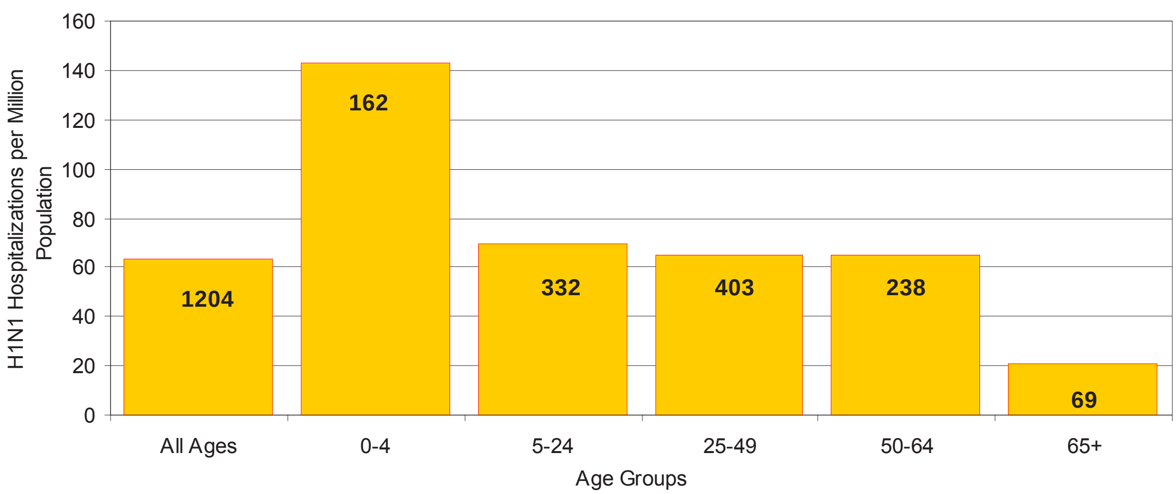


Figure 5. Cumulative Laboratory-Confirmed Novel H1N1 Hospitalization Rate and Cumulative Hospitalizations in Reported Novel H1N1 Cases by Age Group through Week 52, 2009



In addition to reporting infection with novel or pandemic strains of influenza, pediatric mortality due to all strains of influenza is reportable in Florida. In 2009, there were 13 deaths in children under age 18 from laboratory-confirmed influenza. The case definition for pediatric influenza mortality is different from the case definition that was adopted for 2009 influenza A H1N1. Pediatric influenza mortality cases are only reported after influenza is determined to be a main or directly contributing cause of death, as opposed to 2009 influenza A H1N1 deaths.

The extended information collected through the Merlin Outbreak Module made it possible to analyze novel H1N1 cases on a regular basis using a number of different variables. Among the analyses performed were studies on occupational risk of H1N1 infection, associations between age, race, ethnicity, and 2009 H1N1 infection, and the risk of severe H1N1 infection in pregnant women. Results from some of these analyses are published in the Florida Department of Health Bureau of Epidemiology's monthly newsletter, *Epi Update*, including:

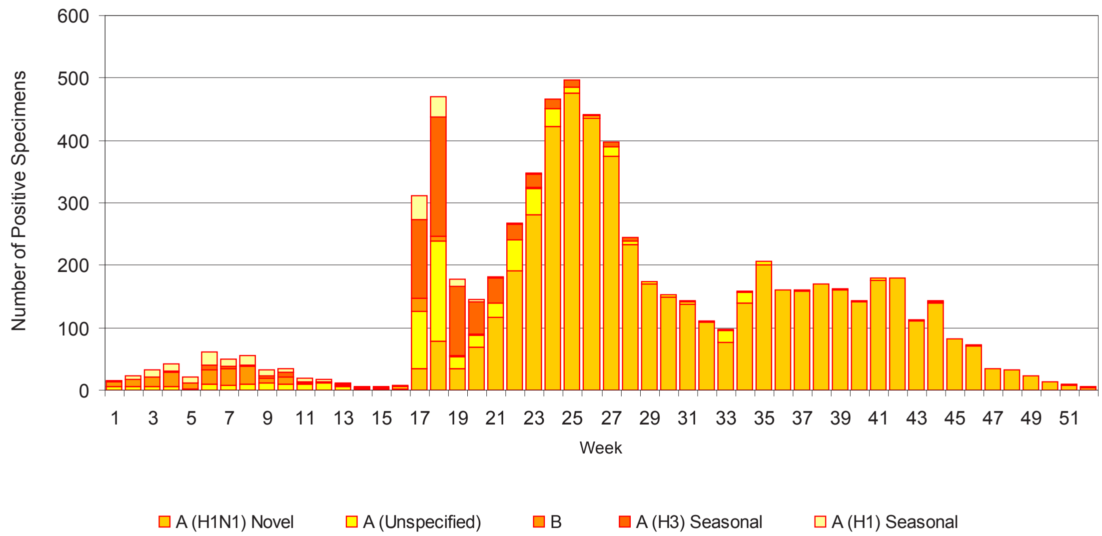
- Race, Ethnicity, and Severe H1N1 Illness in Florida, 2009 http://www.doh.state.fl.us/disease_ctrl/epi/Epi_Updates/2010/January2010EpiUpdate.pdf
- Are Florida Healthcare Workers at Increased Risk of 2009 Influenza A H1N1 Infection? http://www.doh.state.fl.us/disease_ctrl/epi/November2009EpiUpdate.pdf

After the case reporting guidelines were changed to no longer require reporting of every case, surveillance systems other than notifiable disease reporting became even more important. In the absence of individual case reports for all Floridians with 2009 H1N1, each system contributed to a larger overall view of influenza activity.

Bureau of Laboratories (BOL) Viral Strain Surveillance

Figure 5 shows BOL influenza surveillance data for 2009. In the early months of 2009, the majority of influenza-positive isolates tested by the BOL were influenza B, although a substantial proportion tested positive for other strains such as seasonal influenza A H1. When the BOL was first able to test for the novel virus in week 17, the number of influenza laboratory submissions increased dramatically. During the early part of the pandemic, BOL was the only location in the state where testing to confirm 2009 influenza A H1N1 could be conducted, as no private laboratory had the appropriate reagents and testing capability. In April and May, the majority of the positive influenza results from the BOL were for other influenza types. Similar to the Merlin case data from Figures 1 and 2, there is a large peak around week 28, followed by a decrease when reporting guidelines were changed, then a sustained number of positive specimens over the late summer and early fall. This later peak (~weeks 35-43) coincides with the true peak in 2009 influenza A H1N1 activity. During the fall and winter of 2009, the new H1N1 virus predominated among influenza-positive laboratory submissions, with very few specimens testing positive for any other influenza viruses. Specimen submission and the total number of positive specimens declined after week 26 even though other influenza surveillance mechanisms showed that the virus was in wide circulation. The decreased number of submissions and positives most likely reflects the testing and treatment guidance that was issued during that period; namely that the vast majority of cases with influenza-like illness were infected with 2009 influenza A H1N1 and should be treated as such before, or in the absence of, positive test results. BOL specimen submission was limited to testing associated with a death, a patient with severe life threatening illness, outbreaks in defined settings, or if resistance to antivirals was suspected. In addition, laboratory testing to confirm 2009 influenza A H1N1 strain became available in the private sector. BOL laboratory surveillance data were extremely helpful in developing influenza treatment and testing guidance during the course of the pandemic.

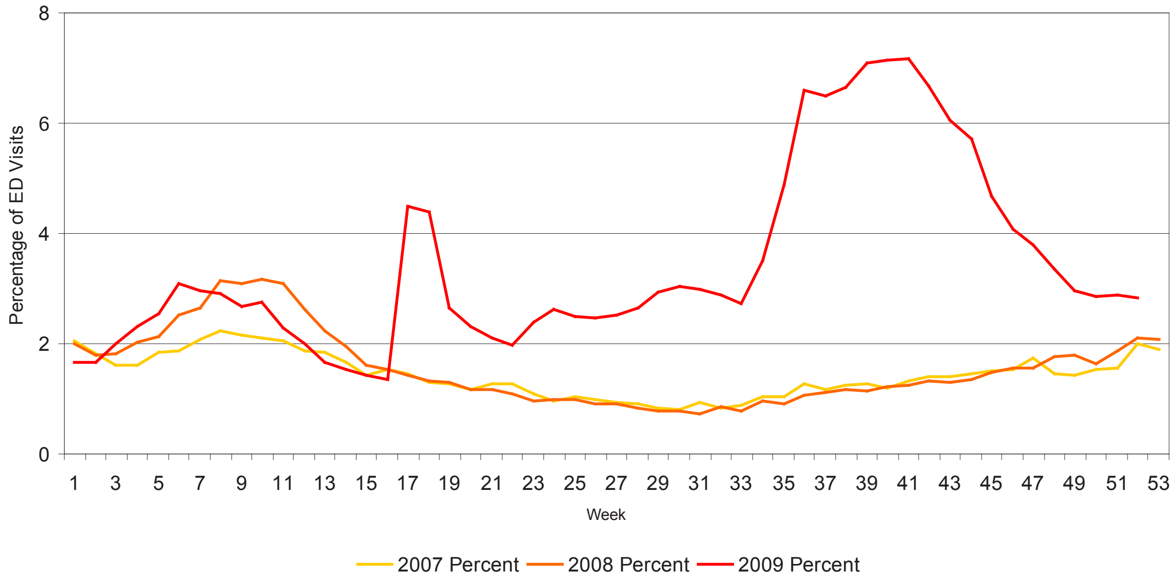
Figure 6. Number of Influenza-Positive Specimens Tested by the Florida Bureau of Laboratories (BOL) by Subtype by Lab Event Date* Week 1-52, 2009



* Lab Event Date: The earliest of the following dates associated with the laboratory test result: date specimen collected, date specimen received by the laboratory, date reported, or date inserted.

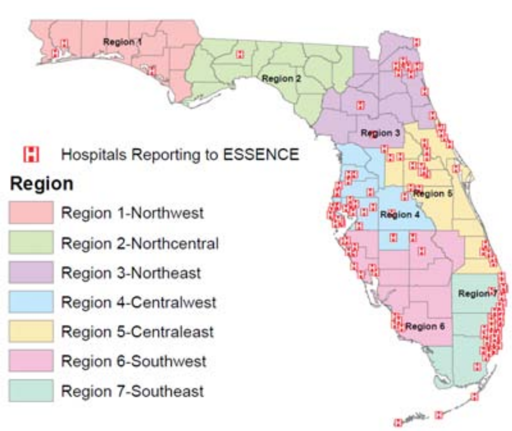
Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE) Emergency Department (ED) Syndromic Surveillance:
ESSENCE is Florida's ED syndromic surveillance system that compiles data from 138 hospital EDs, spread across every region of the state. The ESSENCE system provided near-real time information on ED chief complaints for ILI throughout the course of the epidemic, in addition to historical admissions data for ILI. Figure 7 provides the percentage of ED visits due to ILI for the years 2007 to 2009. The ESSENCE data show an initial surge in 2009 week 17, before the new H1N1 virus was in wide circulation, which was probably composed of people who were ill with something other than 2009 influenza A H1N1 and presented for care at the ED because they were concerned about possible infection with the pandemic virus. The data also show the large increase in ILI visits during the fall of 2009 compared with previous years. Because the ED data were not affected by the case definition changes, the peak of influenza activity seen in ESSENCE around week 42 probably reflects the true course of the epidemic better than case report counts. They were also more timely and complete than the reportable disease data, which helped the Bureau of Epidemiology stay up-to-date with influenza activity in Florida.

Figure 7. Influenza-like Illness Visits (by Chief Complaint) to Emergency Departments (ED) as a Percentage of All ED Visits, Florida ESSENCE Participating Hospitals (N= 138), Week 1, 2007 through Week 52, 2009

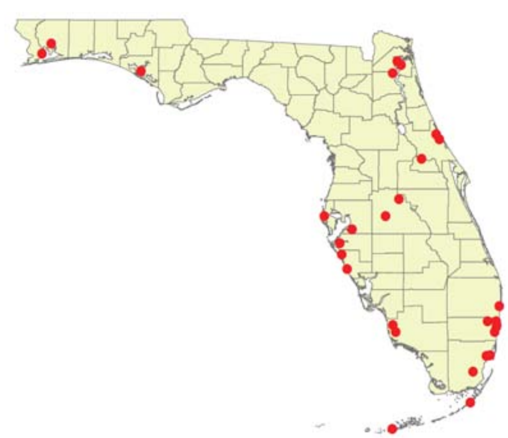


A subset of hospitals participating in ESSENCE were able to provide daily data about patients' ED discharge disposition. This provided information about the number of patients who presented to the ED for care that met the ILI case definition and were admitted to the facility. Information from these 30 facilities was used to assess the severity of the ILI ED visits.

Hospitals Reporting Emergency Department (ED) Data to Florida ESSENCE, April 20, 2010 (N=137)



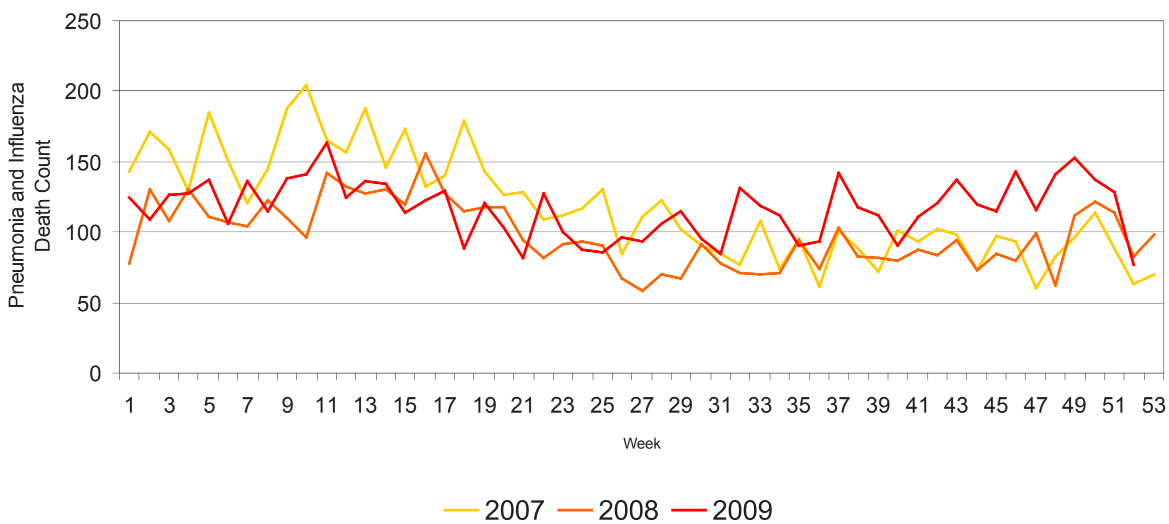
Hospitals Reporting Emergency Department (ED) Admissions Data to Florida ESSENCE, April 20, 2010 (N=30)



Florida Pneumonia and Influenza Mortality Surveillance System (FPIMSS):

The FPIMSS uses death certificate data from the 24 largest Florida counties to track influenza mortality by counting deaths in which either pneumonia or influenza (P&I) are mentioned on the death certificate, regardless of underlying cause. Although the aggregate data collected in FPIMSS are not as detailed as those collected as part of reportable disease surveillance, the historical data collected in previous years provided a basis of comparison for the influenza mortality seen in 2009. According to FPIMSS data displayed in Figure 8, total P&I mortality in 2009, although concentrated in different age groups than previous seasons, was similar to that in previous influenza seasons in both total numbers and proportions. These results agreed with, and helped to validate, information from our other surveillance systems. FPIMSS is a broadly defined, timely indicator of P&I mortality, and it indicated that the change in case reporting requirements for 2009 influenza A H1N1 did not hide any substantial increases in influenza mortality.

Figure 8. Pneumonia and Influenza Deaths for 24 Florida Counties, 2007 (Weeks 1-52), 2008 (Weeks 1-53), and 2009 (Weeks 1-52)

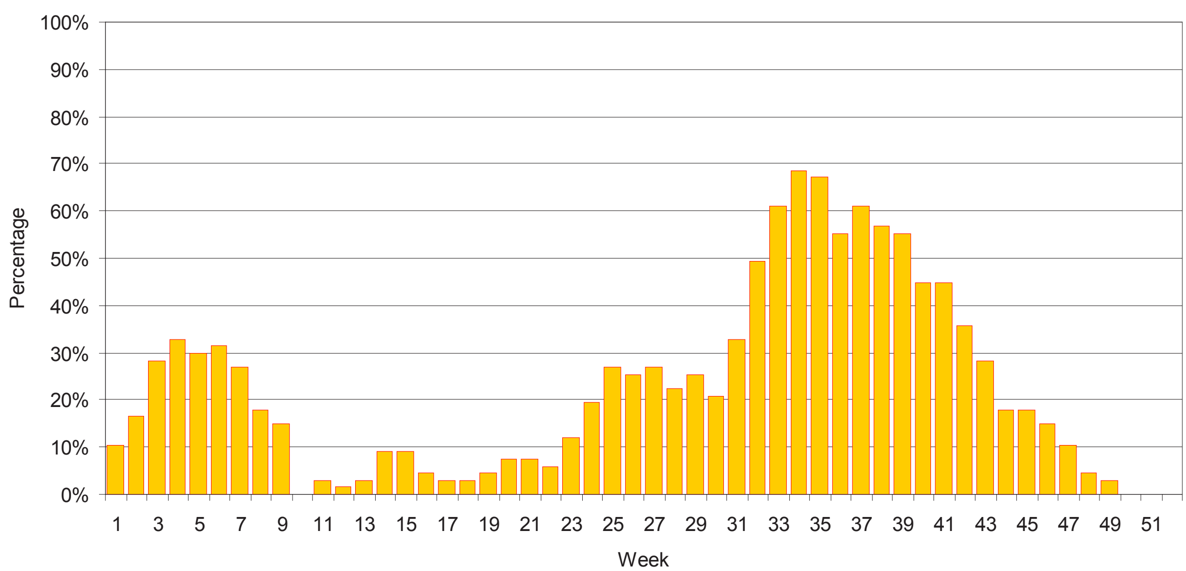


County Influenza Activity Code Reporting

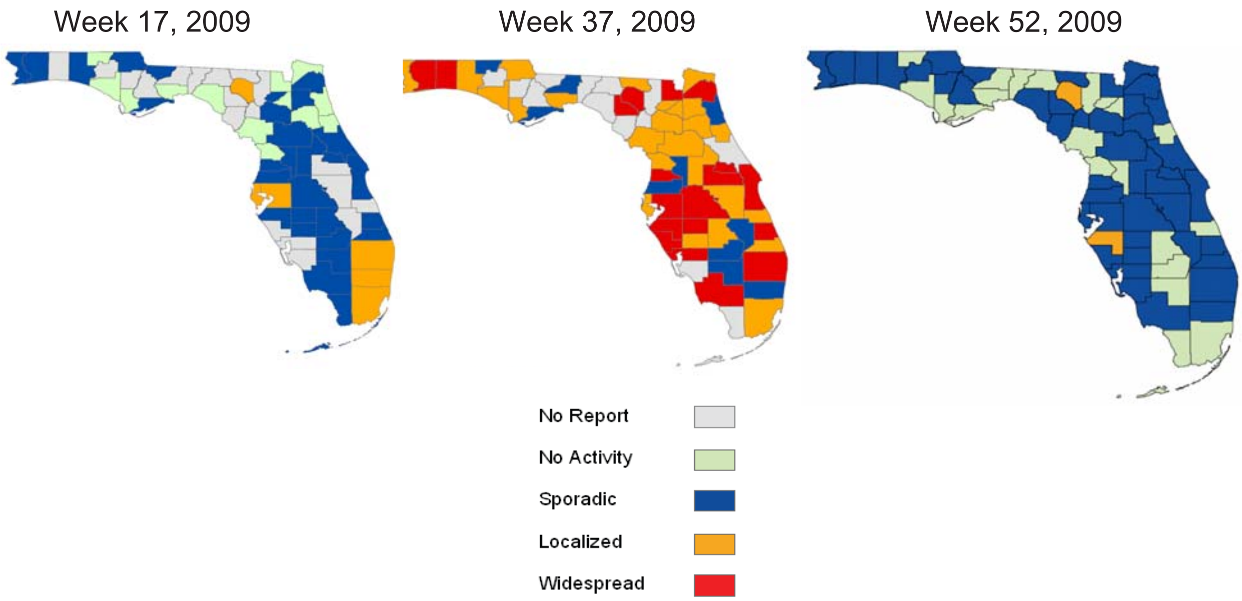
Each week all county FDOH epidemiologists are asked to report on the level of influenza activity in their respective counties. There are two county influenza activity reporting mechanisms; the overall county influenza activity code, which collects a single report of influenza activity from each county, and an additional set of indicators that were started in response to the 2009 influenza A H1N1 pandemic. These new indicators display information about influenza activity at different sites (schools, businesses, jails) in their counties, and an assessment of whether influenza activity is increasing, decreasing, or at a plateau.

Overall county weekly influenza activity was reported as one of four codes: no activity, sporadic, localized, or widespread. Figure 9 shows the percentage of counties that reported either localized and widespread activity each week. The number of counties reporting localized or widespread activities shows a similar pattern of influenza activity to that seen in the other surveillance systems that were not affected by the change in individual case reporting requirements. These systems provided valuable data about the progression of influenza activity in each county, and the site-specific data helped pinpoint areas of special concern.

Figure 9. Percentage of Counties Reporting Localized or Widespread Activity into County Flu Activity Code, Weeks 1-52, 2009



Map 1. County Flu Activity Codes by County, 2009



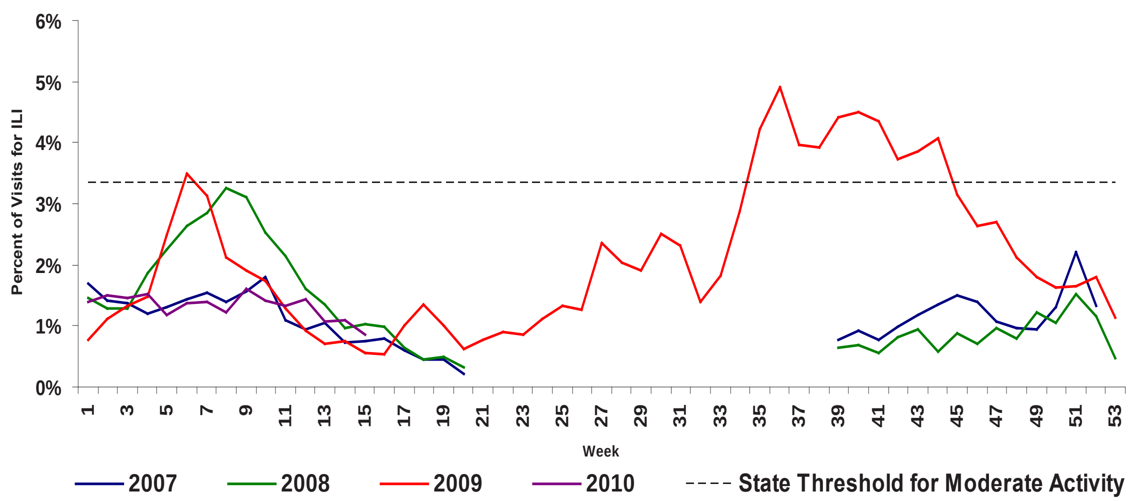
Influenza and ILI Outbreak Reporting (through EpiCom)

Outbreak reporting into EpiCom (Florida's electronic, secure, threaded, moderated notification system) helped identify the specific settings where influenza clusters and outbreaks were occurring. Outbreak setting information collected through EpiCom shows that a majority of outbreaks occurred in settings where children were present. In 2009, there were 426 confirmed or suspected outbreaks of 2009 influenza A H1N1 or ILI, most of which occurred in schools (60.3% of outbreaks), summer camps (11.7%), day care centers (6.3%), and correctional facilities (5.4%). This information helped characterize the burden from 2009 influenza A H1N1 and inform interventions and guidance during the pandemic. More detailed outbreak reports can be found in "Section 6: Summary of Notable Outbreaks and Case Investigations, 2009" under the "Influenza" heading.

Florida Influenza-Like Illness Surveillance Network (ILINet) Sentinel Surveillance

The Influenza-Like Illness Surveillance Network (ILINet), which collects specimens and ILI reports (Figure 10) from sentinel physicians across the state, was useful in reinforcing the information collected by other surveillance systems. Specimens submitted by physicians participating in the ILINet program were consistently identified as 2009 influenza A H1N1, which reinforced the idea that this novel virus was causing the vast majority of ILI and that laboratory confirmation of each case of illness was not always necessary.

Figure 10. Percentage of Visits for Influenza-Like Illness Reported by ILINet Sentinel Providers Statewide, 2007 (Weeks 1-20, 40-52), 2008 (Weeks 1-20, 40-53), 2009 (Weeks 1-52), and 2010 (Weeks 1-15) as Reported by 5:00 p.m. April 20, 2010



Summary:

Each of the surveillance systems used during the 2009 H1N1 pandemic (including notifiable disease reporting) had its own strengths and weaknesses. Combined, these systems provided timely, accurate information on the pandemic, which helped inform clinicians, policymakers, and the general public.

Information from the previously mentioned surveillance systems was monitored on a daily and weekly basis and used in a variety of reports, including the weekly influenza surveillance report, “Florida Flu Review”, available online at: http://www.doh.state.fl.us/disease_ctrl/epi/swineflu/Reports/reports.htm.

Section 6

Summary of Notable Outbreaks & Case Investigations

Listed alphabetically by disease or surveillance system

In Florida, any disease outbreak in a community, hospital, or institution, as well as any grouping or clustering of patients having similar disease, symptoms, syndromes, or etiological agents that may indicate the presence of an outbreak is reportable, as per *Florida Administrative Code,* Rule 64D-3. Selected outbreaks or case investigations of public health interest that occurred in 2009 are briefly summarized below. Following many investigation summaries are citations or links where additional information can be found about the event. Investigation summaries are organized by disease name; within each disease category investigations are listed chronologically (January through December, 2009).

Additional disease summaries and information describing epidemiologic events in Florida can be found in issues of *Epi Update. Epi Update,* a publication of the Bureau of Epidemiology, Florida Department of Health, can be accessed at http://www.doh.state.fl.us/disease_ctrl/epi/Epi_Updates/index.html.

Food and waterborne disease outbreaks in Florida are summarized in annual reports produced by the Bureau of Environmental Public Health Medicine accessible via the following site: http://www.doh.state.fl.us/environment/community/foodsurveillance/annualreports.htm.

Annual food and waterborne reports include overall statewide data as well as summaries of selected outbreaks. In addition, a bibliography of journal and *Epi Update* articles on food and waterborne disease can be found at http://www.myfloridaeh.com/medicine/foodsurveillance/BibliographyPage.html.

Amoebic Encephalitis

Primary Amoebic Meningoencephalitis Investigation, Nassau County, July 2009
The Nassau County Health Department was notified on July 9, 2009 by a school health nurse that a student was receiving treatment for meningoencephalitis at a Duval County hospital. The patient, a 13-year-old boy, was a resident of Nassau County who had exposure to a freshwater lake in Madison County one week prior to his onset of symptoms on July 2. His family vacationed at the park's campground from June 27 to July 5. He swam in the park's lake regularly until July 2 when he ceased swimming due to an ear ache. Following nine days of illness, he was pronounced brain dead on July 10, 2009 and was withdrawn from artificial life support. The cerebrospinal fluid sample tested at the Centers for Disease Control and Prevention's (CDC) Division of Parasitic Diseases confirmed the diagnosis of primary amoebic meningoencephalitis (PAM) on July 17 using polymerase chain reaction (PCR) testing methods.

An investigation was conducted by the CDC and the Florida Department of Health to gather more information from family members who had the same exposure to *Naegleria fowleri*, but who did not get PAM. The purpose of the investigation was to determine whether subclinical infections with the amoeba also occurred in conjunction with the confirmed case. Of the patient's 18 family members surveyed, 17 had exposure to the freshwater lake at the park. Family members over the age of 12 were asked to provide a blood sample to be tested for anti-*Naegleria* antibody titers. IFA tests were conducted to determine total immunoglobulins (IgA, IgM, IgG). Ten samples were collected and sent to the CDC for serological testing.

Each sample had low levels of antibody, as expected for an organism that is common in the environment, and none of the samples tested had antibodies higher than is expected in the general population.

Primary Amoebic Meningoencephalitis Case Investigation, Hillsborough County, August 2009

The Hillsborough County Health Department (CHD) received a report from a local hospital that a 10-year-old boy died after being diagnosed with meningococcal disease in early August. The patient received medical treatment in hospitals in both Polk and Hillsborough counties. On October 19, 2009, the Polk CHD received a call from the Polk County Medical Examiner's Office reporting that the child's diagnosis was changed to primary amoebic meningoencephalitis, based on the observation of amoeba in brain tissue during the autopsy. It was determined that the child had recreational water exposure while swimming and inner-tubing in a lake in Polk County on August 9, 2009. On October 29, 2009, the Centers for Disease Control and Prevention (CDC) confirmed the presence of *Naegleria fowleri* from cerebrospinal fluid submitted for testing. Based on this information, press releases were issued by CHDs in the area and prevention information was provided to the residents and guests living around and near the identified lake in Polk County. Because the patient was an organ donor, the CDC followed up and determined that the patient's kidneys had been harvested for transplant and notified the physicians whose patients had received the donated organs. No transmission of *Naegleria fowleri* to the organ recipients has been reported to date.

Primary Amoebic Meningoencephalitis Case, Orange County, September 2009

On September 19, at approximately 8:30 a.m., the Orange County Health Department (CHD) was notified by a local hospital of a 22-year-old man diagnosed with amoebic meningoencephalitis. The patient attended a local college and had a history of wakeboarding at a local man-made lake that is used for water sports events and training.

Medical records showed that the symptom onset date was September 17, 2009. Symptoms included decreased appetite, nausea, vomiting, headache, neck pain, and fever. He was admitted to the hospital the following day. On September 19, his symptoms progressed to confusion with more clear signs of encephalitis, abnormal eye movements, and diminished level of consciousness. His treatment included antibiotic and steroid therapy. He died on September 21, 2009. Amoebas were seen on a slide of cerebrospinal fluid (CSF) collected and analyzed on September 18. On September 30, the Centers for Disease Control and Prevention (CDC) confirmed all CSF samples submitted were positive for *Naegleria flowleri* by polymerase chain reaction (PCR) and one of the CSF samples was positive by cell culture.

Reported dates of exposure to a local water sports facility were September 9, 11, and 16. The patient described a hard fall during one of his visits. No other known freshwater exposures were reported. Orange CHD visited the water sports facility on September 19 and distributed information brochures on *Naegleria fowleri* to facility management. The facility offers nose plugs free of charge to customers as well as provides information on the various hazards of exposure to fresh water including microbial risks. This facility was also an identified exposure site for a primary amoebic meningoencephalitis case in 2007. Orange CHD prepared a press release regarding precautions for the public while participating in freshwater activities. Orange CHD also issues a press release each spring advising the public of the hazards of exposure to freshwater venues including the increased occurrence of *Naegleria fowleri* in freshwater during the summer months.

Botulism

Infant Botulism in a Three-Week-Old, Hillsborough County, January 2009
In January 2009, the Hillsborough County Health Department investigated a case of infant botulism in a three-week-old infant. The baby was born at a healthy weight and was "moving around vigorously" until January 18, 2009 when symptoms first developed. The symptoms included congestion, constipation, decreased oral intake, extreme lethargy, and weakness. The baby was taken to the emergency department where he became limp and apneic. Other symptoms included loss of gag reflex, loss of tendon reflex, a weak cry, and floppy baby syndrome. The baby was not put on a ventilator.

The attending physician and the pediatric infectious disease doctor consulted with the Infant Botulism Prevention and Treatment Program in California. BIGIV (Botulism Immune Globulin Intravenous (Human)) was sent overnight to the hospital from this program for administration to the baby on January 27, 2009. A stool specimen was sent to the Centers for Disease Control and Prevention (CDC) for testing. The stool (enema wash) specimen tested positive for botulinum toxin type A. The baby was moved out of the pediatric intensive care unit, made slow, steady progress, and eventually recovered completely.

The baby was primarily breastfed but also consumed formula (powder plus bottled water). At the request of the attending physician, the CDC agreed to test the dry and ready-made formula that was consumed by the infant. No botulinum spores were found in either product. The baby consumed no honey. The causal exposures are not normally identified for infant botulism cases. However, the baby did have exposure to a farm, which makes it more likely he could have been infected from botulism spores that had been aerosolized from the soil.

Brucellosis

***Brucella* Exposure in Hospital Laboratory, Hillsborough County, October 2009**
On October 27, 2009, the Hillsborough County Health Department was notified by a local hospital laboratory of a death of a patient with a preliminary *Brucella melitensis* result. An investigation in conjunction with the hospital infection preventionist (IP), the hospital laboratory, the hospital employee health nurse and the Bureau of Laboratories (BOL) in Jacksonville was immediately initiated. On November 5, subsequent testing at the BOL in Jacksonville indicated that the organism was actually *Brucella suis*.

The hospital laboratory did not use appropriate precautions when handling and conducting the blood culture, as the doctor did not initially suspect *Brucella*. Once *Brucella* was identified, the laboratorians worked with the culture in a biosafety cabinet, but the microbiology laboratory workers had been exposed to the culture prior to the identification. Hospital employee health staff evaluated all who were exposed and identified nine laboratory workers who met the definition of high risk and 21 who met the definition of low risk. All nine high-risk people were prophylaxed; seven received the standard combination of doxycyline and rifampin for 21 days, and two received an alternate course of prophylaxis with trimethoprim-sulfamethoxazole and rifampin for 21 days. In addition, review of the patient's second hospital admission records indicated that laboratory workers were exposed to a previous culture from the patient that again, had not been identified or handled as suspect *Brucella*. Testing was also recommended for these workers. All exposed laboratory workers were asked to submit serum shortly after the exposure had been identified, and then at the recommended intervals (two, four, six, and twenty-four weeks) to screen for potential unidentified infection. The serum was sent to the Centers for Disease Control and Prevention (CDC) for agglutination testing. Members of the employee health group went to the microbiology laboratory to collect screening specimens from staff twice a day at shift change for several days at each of the specified intervals. Laboratory staff were also given the option to be tested by making an appointment with the employee health program. All 32 of the workers who were considered low- and high-risk exposures submitted initial samples for testing, and 28 submitted samples for the week 24 final tests. The results of the final Week 24 agglutination tests indicated that no laboratory workers acquired brucellosis from either exposure.

Since this investigation, information has been sent to local doctors regarding the importance of screening patients for brucellosis risk factors. In addition, the investigation and laboratory recommendations were presented to a group of sentinel laboratorians. This investigation underscores the need for good laboratory training as brucellosis is the most common bacterial laboratory-acquired infection and *Brucella suis* is endemic in Florida wild pigs.

Case of Brucellosis with Laboratory Exposures, Orange and Seminole Counties, December 2009

Seminole County Health Department (CHD) investigated a single case of brucellosis in a 27-year-old white female after receiving telephone notification from the Bureau of Epidemiology on December 12, 2009. The patient reported an acute and intermittent onset of fever of unknown origin, myalgia, malaise, and lack of appetite beginning on October 25, 2009. She had an outpatient visit with her primary care provider on October 30 and was treated with Tamiflu for presumptive influenza, even though the rapid test performed by the primary care physician was negative for influenza viruses. The patient was admitted to a local hospital on November 30, 2009 due to worsening symptoms. Blood cultures were performed on specimens collected on November 20, November 23, December 1, December 5, and December 7. Diphtheroids were identified in the first four cultures, while possible *Brucella* sp. was reported for the December 7 culture. An isolate from the specimen collected on December 7 was sent to the Bureau of Laboratories (BOL) in Jacksonville on December 14.

A telephone interview with the patient on December 15 revealed that prior to becoming ill, she traveled to Mexico (Cancun and Cozumel) and Belize from August 30, 2009 to September 6, 2009. She also traveled to the Bahamas from October 16 to October 19. While in these countries, there were no high-risk exposures such as raw milk or cheese consumption, animal contact, or other agricultural exposures. When the patient was re-interviewed on December 17, she mentioned that her husband occasionally hunted deer and that she was exposed to deer blood while handling the meat in early October. Her husband was also interviewed on December 17 and admitted hunting hogs and deer the previous year. He did not store any of the pork at home and carcasses are normally taken to a “processor” in a neighboring county. He is a member of a local hunting club and refused to provide information on the group or their most recent activity. He denied recent or previous illness or wounds as well as declined a request to provide serum samples for testing. The Lake CHD epidemiology program was contacted to see if they could find out additional information about the “processor”. As a result of this collaborative effort, it was learned that the facility was listed as a taxidermist. The regional environmental epidemiologist was informed about the facility and notified the Florida Department of Agriculture and Consumer Affairs.

Brucella suis was confirmed on December 26; however, the exact source of exposure was not able to be confirmed. The patient and her spouse were given educational information about illness prevention that included recommendations to avoid consuming unpasteurized milk or cheese and wearing rubber gloves when handling viscera of animals.

Multiple laboratorian exposures to *Brucella* were associated with this case. A total of 32 exposed hospital laboratory workers were identified from two hospital campuses; one in Seminole County and the other in Orange County. Fourteen of the workers were considered to be high-risk exposures, 17 low-risk, and one no-risk. The hospital infection preventionist and occupational health staff were provided guidance on prophylaxis and testing of exposed staff. No evidence of *Brucella* infection was reported. Staff specimens were submitted to the Centers for Disease Control and Prevention (CDC) through the Bureau of Laboratories in Jacksonville for *Brucella* agglutination testing according to the recommended schedule of zero, two, four, and six weeks. Recommended testing at 24 weeks is pending at the time of this report. The laboratory has implemented corrective actions to prevent future exposures of this kind.

This investigation highlights the importance of collaborating with other local CHDs and state and regional personnel to jointly follow up on cases that may inadvertently “spill” outside of a county’s jurisdiction. This event also raised awareness for hospital personnel of the current CDC protocols for handling *Brucella* and other suspected bioterrorism agents.

Carbon Monoxide

Carbon Monoxide Poisoning Cluster, Duval County, December 2009

The Duval County Health Department (CHD) Epidemiology Program utilizes the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) to monitor emergency department (ED) chief complaint data from eight county hospitals. In December 2009, daily review of the ESSENCE syndromic surveillance system identified a cluster of 11 carbon monoxide (CO) poisoning exposures. Individual case reports were obtained through the Florida Poison Information Center Network. The reports provided information about exposure, laboratory results, and the environmental monitoring efforts at that time. Although the outbreak exposed additional people, only four patients met the case definition of CO poisoning and were reported as cases.

In the early morning of December 7, 2009, a 13-year-old boy awoke with symptoms of nausea and dizziness and attempted to wake his mother. When she had difficulty responding, he dialed 911. Responders from the Jacksonville Fire Rescue Department (JFRD) determined that the family of five had been exposed to CO due to the improper use of a gas stove to heat the home. The five family members, as well as six additional exposed people in an adjacent apartment, were transported to two local hospitals for medical evaluation and treatment. Four family members of the primary apartment exposure had critically high COHb levels with fractional percentages of 10.6%, 15.0%, 29.3%, and 37.7%. These patients were admitted and treated in hyperbaric oxygen chambers for less than 72 hours, then discharged. The family members of the secondary apartment exposure were examined and discharged without treatment. A total of 11 individuals were known to be exposed in this outbreak.

The JFRD emergency responders and HAZMAT team spoke to residents of the apartment complex regarding the dangers of CO poisoning. Local news sources reported on the story and provided education on safe ways to heat a home during the winter, as well as signs and symptoms of CO poisoning. Citizens were reminded to install a CO detector in their homes and to replace the batteries regularly. On December 22, 2009, the FDOH Office of Communications issued a press release on the hazards of CO poisoning.

For more information about this investigation, see
Fung J, Barnes A, Harper T, Azarian T, "Carbon Monoxide Poisoning Case Investigations in Duval and Orange Counties" Florida Department of Health, Bureau of Epidemiology *Epi Update,* February 2010, pg 13-15. http://doh.state.fl.us/disease_ctrl/epi/Epi_Updates/2010/February2010EpiUpdate.pdf

Chemical Exposures

Elevated Chlorine Level Exposure at a Zoo Splash Fountain, Hillsborough County, June 2009

The Hillsborough County Health Department was informed that approximately 25 children who were playing in a splash fountain at a local zoo in Tampa on June 11, 2009 experienced skin and eye irritation. Prior to the incident, the splash fountain had been closed for routine maintenance and had just been reopened when the incident occurred. The bathers had been exposed to super chlorinated water for two to three minutes before the fountain was shut down by park staff. The predominant symptoms reported were irritations of the skin and eyes, which occurred almost immediately after exposure.

During the environmental field assessment it was determined that during cleaning and refilling of the splash fountain's collector tank, 40 gallons of 10% chlorine solution had been accidently back-siphoned into the holding tank. It is estimated that the children were briefly exposed to chlorine levels as high as 2000 ppm. The Florida Public Swimming Pool Code 64-E9 requires that public bathing areas have chlorine levels of greater than 1 ppm and less that 10 ppm. Eight of the symptomatic children were sent to a local hospital. Seven were immediately released and one of the exposed children had some temporary scarring of the cornea. All of the symptomatic people have since recovered.

Ciguatera

Six Ciguatera Cases After Consuming Amberjack in the Bahamas, Alachua County, June 2009

On June 15, 2009, the Aquatic Toxins Program received a report of six ciguatera cases from a physician who traveled with his family to the Bahamas and caught and consumed an amberjack. All cases were Alachua County residents from the same extended family. Of the nine persons who consumed the amberjack, six developed symptoms of ciguatera intoxication, two were boating in the Bahamas and were unable to be reached, and one did not develop symptoms.

The amberjack was consumed on multiple occasions over a four-day period, making it difficult to determine the incubation period for illnesses. The group consumed the fish from June 9 to June 12; five of the six persons developed illness on June 10 and one person developed illness on June 11. The following symptoms were reported by 83% (n=6): a feeling of tingling; burning, or shock when touching cold items; itching; fatigue; and headaches. Muscle weakness was reported by 67%; 50% reported abdominal pain, joint or muscle pain, body aches, numbness or tingling of the hands or feet, and numbness of the mouth. In addition, 33% reported diarrhea, dizziness or vertigo, irritability, skin eruption or rash, insomnia, and temperature reversal. The following symptoms were reported by 17%: numbness or tingling of the teeth or gums; memory problems; attention or concentration problems; problems multi-tasking; slowed thinking; depression; dry mouth; slowed heart beat; feeling lightheaded; pain or difficulty urinating; difficulty breathing; and the sensation of their teeth falling out. In total, 83% of cases reported having some delayed symptoms that started after their initial onset date. None of the cases received medical treatment for ciguatera. No fish was available for testing at the FDA Gulfcoast Seafood Laboratory.

Cryptosporidiosis

Outbreak of Cryptosporidiosis Associated with Exposure at an Apartment Pool Complex, Orange County, August 2009

In September 2009, the Brevard County Health Department (CHD) led an investigation of a cluster of eight cases of cryptosporidiosis in two families reported to the Brevard CHD. Onsets of disease occurred August 26 (1) and August 28 (7). Two cases were initially reported as antigen-confirmed by a local hospital laboratory. A reference laboratory confirmed one of the two samples provided by the hospital laboratory as positive for *Cryptosporidium*. Symptoms were reported to be diarrhea (8), nausea (5), abdominal pain (1), and vomiting (1). The ages ranged from 3 to 33 years with a median of 11 years. Five (62.5%) of the cases were female. Three cases were treated at an emergency room.

The two families reported exposures on August 22 at swimming pools located at an apartment complex in east Orlando. The complex has two pools. The investigation identified chlorine and pH levels outside of the recommended levels for swimming pools. Required levels are 1.0 ppm to 10.0 ppm chlorine and pH levels of 7.2 to 7.8 for swimming pools. Chlorine residuals were 1.0 ppm in Pool A on September 10 and 0.0 ppm on September 11. Pool B had visible mustard algae observed on September 10 and 3.0 ppm of chlorine on September 11. The pH level of pool A was 8.2 on September 10 and 7.4 on September 11. The pH of Pool B was 7.4 on September 11. Each swimming pool structure has separate circulation, disinfection, and filtration systems. The filtration system for both pools used diatomaceous earth. Automatic chlorine feeders provided disinfection. Maintenance and fecal accident records for the month August were not available. It was learned during the inspection that dogs frequently swim in both pools. Both swimming pools were closed by the Orange CHD until all discrepancies were corrected.

Outbreak of Cryptosporidiosis Associated with Exposure at a Hotel Pool Complex, Orange County, August 2009

Orange County experienced an increase in reported cryptosporidiosis cases during July and August 2009. Three cases were reported for July 2009, compared to none in July 2008. Ten cases were reported for August 2009, compared to three in August 2008. These increases prompted heightened surveillance activities by the Orange County Health Department (CHD) and the Florida Department of Health (FDOH). Because of this increased surveillance, Orange CHD and FDOH detected and conducted an investigation of a small cluster of cryptosporidiosis in August 2009 with exposure to a local water themed resort hotel.

Five cases of cryptosporidiosis associated with four families were reported. The index case, a 13-year-old boy from Orange County, had onset of illness on August 9, 2009. Symptoms reported included abdominal cramping, low-grade fever, loss of appetite, and diarrhea. He was a local resident who stayed at a local water themed resort from August 4 to August 6.

A seven-year-old boy from Hillsborough County with cryptosporidiosis and the same date of disease onset was reported to the Orange CHD on September 24, 2009. The family of four stayed at the implicated resort from August 7 to August 9. Symptoms included watery diarrhea, abdominal pain, cramps, and weight loss. The three other family members were asymptomatic. The mother of the case reported anecdotally that there were fecal accidents at the hotel on August 8; one in the morning and two in the afternoon. Fecal log books from the resort documented one fecal accident on August 8 at 8:15 a.m.; however, it is not noted in which pool the accident occurred.

A six-year-old girl from St. Johns County had onset of illness on August 17, 2009. Symptoms included abdominal cramps, watery diarrhea, nausea, and vomiting. The case had exposure to pools at the water themed resort hotel from August 15 to August 16.

One confirmed case and one probable case of cryptosporidiosis in a family of four from Lee County were reported with an onset date of illness of August 18, 2009. The confirmed case was a one-year-old girl and the probable case was her two-year-old brother. The family stayed at the hotel from August 14 to August 16. The mother reported that the pool was closed temporarily due to a fecal accident on one or more of those days.

Chlorination in recreational pools will not immediately destroy *Cryptosporidium* oocysts in the pool. A level of 10 ppm will inactivate *Cryptosporidium* in 25.5 hours, 20 ppm will inactivate *Cryptosporidium* in 12.75 hours, and 40 ppm will inactivate *Cryptosporidium* in 6.4 hours. It is important for the pool operator to know that for these inactivation levels to be effective, the pH needs to be 7.5 or less with a temperature of 77°F (25°C) or higher. A 1 µm or less filter is required to remove *Cryptosporidium* from water. Most pool filters used in public recreational facilities range from 4 µm to 25 µm particle removal size. The resort performs disinfection procedures after each fecal and vomit episode and voluntarily hyperchlorinates the pool overnight every week. However, documentation for hyperchlorination times and amounts was lacking. If correctly performed, hyperchlorination should prevent larger outbreaks. It is unlikely that weekly hyperchlorination will prevent all illnesses, especially with a large volume of patrons and high number of fecal accidents.

***Cryptosporidium* Outbreak at a Swimming Pool, Santa Rosa County, September 2009**

On September 3, 2009, the Santa Rosa County Health Department received a report of a positive case of cryptosporidiosis in a local child. An investigation revealed that there were four more confirmed cryptosporidiosis cases that had a common exposure at a public pool in neighboring Escambia County. Interviews with the parents of the ill children did not find any other common exposures. There were also six probable secondary cases among family members of the ill children. During an environmental assessment of the pool and interview with the pool operator by an Escambia County environmental health specialist, it was learned there was a fecal accident in the pool during swimming lessons. It was suspected that this was the most likely cause of the illnesses. The management at the facility, following the Centers for Disease Control and Prevention guidelines, had cleaned the pool, and no subsequent cases were reported.

Dengue

Outbreak of Dengue Fever in Key West, Monroe County, July-October 2009
On September 1, 2009, the Monroe County Health Department (CHD) was notified of a likely case of dengue fever in a New York resident with travel to Key West from August 2, 2009 to August 9, 2009 and symptom onset on August 10, 2009. No recent travel to a dengue-endemic area was reported. Infection with dengue virus serotype 1 was subsequently confirmed by the Centers for Disease Control and Prevention (CDC). Florida Keys Mosquito Control District (FKMCD) was notified prior to confirmation and implemented enhanced vector control measures. A public press release was issued and local physicians were notified of the possibility of locally-acquired dengue and asked to consult with Monroe CHD on suspected cases. Following public notification, a Key West resident reported prior dengue-like illness with onset on August 25, 2009 and indicated that his wife became ill with similar symptoms two weeks later; both tested positive for dengue. This indicated on-going local transmission and prompted active surveillance to determine the extent of the outbreak.

In addition to passive surveillance, a medical record review and seroprevalence survey were completed in Key West. In total, 27 likely cases of locally-acquired dengue with onset dates ranging from July to October 2009 were identified; 22 met the case definition. Based on specimens collected by the Florida Department of Health, the seroprevalence in the Old Town study area was estimated to be 4.9% (confidence interval=1.8-7.9). Risk factors associated with recent infection included using air conditioning less than 50% of the time, having windows open more than 50% of the time, having vegetation cover more than 50% of the yard, not using repellent with DEET, not emptying water from containers in the yard at least once per week, and having a bird bath. Monroe CHD implemented an educational campaign to encourage mosquito bite prevention and emptying water containers around the home. FKMCD performed household sweeps to eliminate mosquito breeding sites and maintained increased spraying in the area through 2010.

For more information about this investigation please see the following publication.
Locally Acquired Dengue – Key West, Florida, 2009-2010. *Morbidity and Mortality Weekly Report*. May 21, 2010. Vol. 59 (19): 577-612.

ESSENCE

The Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) is Florida’s syndromic surveillance system. Daily emergency department (ED) visits from enrolled hospitals (143 facilities) are available through this system and can be visualized with statistical algorithms that identify increases in certain illness categories. These illness categories are based on the chief complaint field (also known as the reason for visit) which is most often a free-text field within that patient’s electronic medical encounter record. It is also possible to query chief complaints using selected key words. Many county health departments (CHD) monitor ESSENCE on a regular basis for indications of potential outbreaks or unusual disease patterns. With the use of the key word search, it is possible to identify potential cases of reportable diseases that might not have otherwise been reported to the local CHD. Additionally, looking at chief complaint data by the time of day the person was seen can potentially identify clusters of disease that would normally have been masked by the overall aggregation of these data into generic symptom categories. Included below are several summaries of uses for ESSENCE at the CHD level.

Investigation summaries for the outbreaks listed below, identified using ESSENCE, can be found in this section under the disease name or type of illness cluster.

- Gastrointestinal Illness Cluster Identified Through ESSENCE, Duval County, March 2009
- Reportable Diseases, *Streptococcus pneumoniae,* Detected in ESSENCE, Pinellas County, March 2009
- Carbon Monoxide Poisoning Cluster, Duval County, December 2009

Escherichia coli

E. coli O157:H7 Investigation in a Correctional Facility, Lafayette County, May 2009
On May 26, 2009, the Department of Corrections reported a cluster of gastrointestinal (GI) illness in the Lafayette Correctional Institution in Mayo, Florida. Forty-two of the 1,323 male inmates in the facility inmates were reported ill from May 15 to May 30. No cases were initially reported among staff members at the facility. Cases were not confined to a single dormitory. An analysis of interview data from 18 cases and 18 controls was conducted. The following symptoms were reported: diarrhea (100%); abdominal cramps (100%); bloody stool (72%); and fever (56%). Onset dates ranged from May 18 to May 28. No cases of hemolytic-uremic syndrome (HUS) were reported. On May 29, two of the nine stool specimens collected tested positive for *E. coli* O157:H7. One of the two confirmed samples was collected from a food service employee who worked in the correctional facility's cafeteria. Several other ill inmates were employed in the cafeteria.

The epidemiological curve indicated a point-source outbreak with the peak onset of symptoms occurring on May 23. The index case, who worked as a food service employee in the cafeteria, reported a May 15 onset date. Following the index case, secondary case onset dates were May 21 and later.

The data analysis indicated a single dinner meal that occurred on May 17 was highly associated with gastrointestinal (GI) illness. The odds ratio was 12.6 (confidence interval: 2.19, 72.26; p-value=0.002). Further analysis indicated three implicated food items from the dinner meal on May 17 as highly associated with GI illness: turkey-ham, macaroni and cheese, and cake. The odds ratio for the turkey-ham was 4.94 (confidence interval: 1.21, 22.64; p-value=0.013). The odds ratio for the macaroni and cheese was 5.22 (confidence interval: 1.24, 25.44; p-value=0.012). The odds ratio for the cake was 7.36 (confidence interval: 1.61, 42.26, p-value=0.004). Poor record keeping and incomplete recall meant that a link between the ill food worker and the implicated food products could not be established.

Gastrointestinal Illness, Unknown Etiology

Gastrointestinal Illness Cluster Identified Through ESSENCE, Duval County, March 2009
The Duval County Health Department (CHD) Epidemiology Program uses the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) to monitor emergency department (ED) chief complaint data from eight county hospitals. On March 31, 2009, daily review of the ESSENCE syndromic surveillance system identified a cluster of ED visits for gastrointestinal (GI) illness. This cluster consisted of two adults and two children from similar zip codes who reported to the ED within a 20-minute time period on the evening of March 30. The four chief complaints included nausea, vomiting, and diarrhea, with one stating “food poisoning”. Per the Duval CHD ESSENCE response protocol, the hospital infection preventionist was contacted and information regarding the visits was obtained.

Contact information was collected and an interview was conducted with one of the individuals. The group included two sisters and their daughters, aged nine and three, who ate at the deli of a local supermarket. The meal included teriyaki chicken wings, potato wedges, and macaroni and cheese, which they all shared. Onset of symptoms ranged from 30 minutes in the children to one hour in the adults after consuming the meal. Symptoms included vomiting, nausea, severe abdominal cramps, and dizziness. Stool and vomitus specimens were not collected at the hospital. A food complaint was completed by Duval CHD and submitted to the Department of Agriculture and Consumer Services (DACS).

On April 6, 2009, DACS conducted an inspection of the local supermarket deli where the implicated food items were purchased. During the inspection, it was discovered that one of the food-warmer heating bulbs was not functioning. As a result, the chicken teriyaki and potato wedges were found to be below safe holding temperatures. A stop-sale was issued on these food items.

No other illnesses were reported associated with this location and an etiologic agent was not identified. However, this event demonstrated the utility of syndromic surveillance systems to identify relatively small clusters of illnesses of public health importance. The detection of this cluster and subsequent rapid public health response potentially prevented additional cases.

Detention Facility Gastrointestinal Outbreak, Glades County, November 2009
On November 11, 2009, the Glades County Health Department (CHD) was notified of a possible foodborne illness outbreak among inmates of the Glades County Detention Facility, a county correctional facility not under the jurisdiction of the Florida Department of Corrections. The initial call reported 153 of 438 inmates were ill with abdominal cramps and diarrhea within six to eight hours after eating dinner on Tuesday, November 10. Based on the symptoms reported and the short incubation times, *Clostridium perfringens* or *Bacillus cereus* toxins were the suspected agents. Four stool samples were collected and sent to a private laboratory for analysis of enterics and Norovirus, and all were negative. Additional tests requested for *Clostridium perfringens* and *Bacillus cereus* were not performed. The frozen dinner from the implicated meal was sent to the Bureau of Laboratories in Tampa, for analysis of the lima beans for *Clostridium perfringens* and *Bacillus cereus*. The laboratory results were negative for both agents.

Sixty-two questionnaires were completed, and 13 (21%) cases were identified. The incubation period ranged from 5.5 hours to 12 hours, with a median of 9 hours. The duration of symptoms ranged from 11 hours to 52 hours, with a median of 33.5 hours. In this cross-sectional study, the epidemiological data and environmental investigation suggest that the lima beans served at the dinner on November 10 were the likely food item that caused this outbreak (OR=undefined, 95 % CI = undefined, p-value=0.003). The reported onset dates and times of illnesses are clustered indicating a point-source exposure. The symptoms, duration, and incubation are consistent with either *Clostridium perfringens* or *Bacillus cereus* intoxication. Since laboratory results were negative, the etiology is unknown.

Thanksgiving Dinner Foodborne Outbreak, Marion and Sumter Counties, November 2009
The Marion and Sumter County Health Departments (CHD) and the Department of Agriculture and Consumer Services investigated a cluster of gastrointestinal (GI) illness in a family who purchased and consumed a take-out Thanksgiving dinner from a Marion County grocery store. The ill people resided in Sumter County. The Thanksgiving meal was purchased from the grocery store deli on November 25, 2009 and included cornbread stuffing, gravy, mashed potatoes, and cranberry-orange relish. Foods were refrigerated and reheated on November 26 prior to serving. No leftover food items were available for testing. Two home-made food items were served with the meal, broccoli casserole, and chocolate cake, although not all ill family members consumed these items. The family ate the Thanksgiving meal around lunch time and had leftover turkey sandwiches later for dinner. Food items were refrigerated immediately between lunch and dinner and stored properly. The common food items among the ill family members were turkey, gravy, and mashed potatoes.

Of the seven family members who attended the meal, six developed illness, with a mean incubation of 34 hours. One family member, a three-year-old child, did not develop illness and also did not eat any of the Thanksgiving meal food items. None of the family members reported any illness prior to consuming the meal. Among the ill family members interviewed the following symptoms were reported: vomiting (100%); diarrhea (100%); chills (100%); fatigue (75%); nausea (75%); fever (50%); abdominal cramps (50%); sweating (25%); and dizziness (25%). Illness onset dates and times ranged from 9:00 p.m. on November 27 to 12:00 a.m. on November 28. One person went to the emergency room; however, stool samples were not collected. A joint environmental assessment of the grocery store deli was conducted with the Sumter CHD and the Department of Agriculture and Consumer Services.

Hepatitis C

Hepatitis C Cases Associated with an Outpatient Clinic, Hillsborough County, July 2009
In July 2009, the Hillsborough County Health Department (CHD) investigated a cluster of hepatitis C cases linked to an outpatient medical office that provides intravenous procedures including chelation therapy. Nine newly diagnosed hepatitis C infections may be linked to this medical clinic. Five of the nine infected individuals had discrete onset of symptoms with onset dates ranging from May 15, 2009 to July 2, 2009.

The Bureau of Epidemiology regional epidemiologist and Hillsborough CHD epidemiology staff conducted the initial facility site visit on July 17, 2009. Breaches in infection control were observed and many centered around one particular nurse. Recommendations to the facility included replacing multi-dose medication vials with single dose vials, never reusing syringes or needles, mixing all intravenous solutions in the dedicated pharmacy room, providing better availability of hand hygiene products, cleaning counters in the pharmacy with an EPA-approved disinfectant, and adding sharps boxes to the pharmacy and treatment room.

At the time of the outbreak, this clinic had approximately 160 patients receiving intravenous therapy. The BOE regional epidemiologist requested that the facility notify all patients that were treated by the nurse whose infection control breeches were identified and may have put the patients at risk for bloodborne pathogens. In addition, patients were tested for bloodborne pathogens. Sera from the nine hepatitis C-positive patients were sent to the Centers for Disease Control and Prevention (CDC) for genotyping. CDC laboratory testing definitively linked the hepatitis viral genotypes of three of the nine patients. Sufficient virus for testing was not available for four of the patients. Genetic analysis from the two remaining patients resulted in strains that did not match the other three.

Transmission likely occurred in mid-April 2009, as all nine patients received intravenous therapy during an eight-day period around that time, and five of the nine received treatment on a single day. Many of the infected individuals had no other risk factors apart from the intravenous procedures performed at this clinic. The cases are residents of Hillsborough, Manatee, Polk, and Pasco counties. This outbreak was likely caused by systematic procedural failures at the medical facility that caused the contamination of single-use medication vials that were used multiple times. Patients from the facility reported that a staff member inappropriately reused syringes, which may have led to medication vials being contaminated with hepatitis C.

Influenza

Prior to the emergence of 2009 influenza A H1N1, the 2008-2009 flu season in Florida was characterized as mostly an influenza B season with some circulating influenza A H3 toward the end of the season. This seasonal outbreak was of average severity.

The 2009 influenza pandemic affected all counties and cities within the state. The typical influenza season is from late fall through early spring with a peak in activity around the middle of February. This pandemic began in late April and had unprecedented impact over the summer months and into the fall of 2009. Throughout the pandemic, counties remained vigilant in identifying clusters of influenza-like illness (ILI) and influenza outbreaks. County epidemiology staff were also essential in identifying emerging trends in influenza epidemiology such as special populations affected, unique risk-factor identification, and unusual outcomes of infection. It would not be possible to recount all 436 outbreaks that were reported to the Bureau of Epidemiology (BOE) during the pandemic. However, the selected outbreaks included below are meant to reflect several key points that were learned over the course of the pandemic. Additional influenza and ILI outbreak reports can be viewed by public health partners in EpiCom, the state's health alert network. Additional information on the 2009 influenza pandemic can be found in Section 5 of this report. BOE also publishes a weekly influenza report accessible through the BOE website: http://www.doh.state.fl.us/disease_ctrl/epi/htopics/flu/2010/index.html.

School Outbreak of 2009 Influenza A H1N1, Seminole County, May 2009
On May 20, 2009, the Seminole County Health Department (CHD) began an investigation of a possible cluster of 2009 influenza A H1N1 among students attending a local high school. Nasopharyngeal specimens subsequently collected from two students and a teacher tested positive for the virus by the Bureau of Laboratories in Jacksonville.
The first positive case was in a 15-year-old boy with onset on May 18 of cough, sore throat, weakness, and a fever of 103.5°F. The patient was seen by his pediatrician on May 20 who

conducted a rapid flu test that was positive for influenza A; the pediatrician notified the Seminole CHD and arranged for H1N1-specific testing. The patient stated he knew of at least two other friends who attend the same school and were also ill with similar signs and symptoms; a 15-year-old boy with an onset date of May 16 and a 15-year-old girl with an onset date of May 18. The patient stated he had been working closely with another 15-year-old female friend (not the individual noted above) on May 18, the last day he attended school, who subsequently became symptomatic on May 21, the last day she attended school. Specimens were collected from all three individuals on May 22 and the sample from the case with a May 21 onset date tested positive for 2009 influenza A H1N1. None of the patients or their parents were aware of any other friends or family members with similar signs and symptoms. The school board nurse was contacted and stated that there had not been any recent increase either in the numbers of students sent home through the school's clinic or in excused absences due to illness. A letter was distributed on May 26 to students, staff, and teachers alerting them to the positive 2009 H1N1 case and providing them with prevention information recommended by the Centers for Disease Control for school settings.

A 47-year-old female teacher became symptomatic on May 25, and her last day of work was May 26. On May 27, she sought treatment at a walk-in clinic, which was also a sentinel provider site in the state's influenza-like illness surveillance network (ILINet), and where a specimen was collected. The teacher stated that a 48-year-old male household contact became symptomatic on May 27 and he was seen later that day at the same clinic. A nasopharyngeal specimen was collected and tested positive for 2009 influenza A H1N1.

The school board nurse determined that three of the four students were enrolled in the symptomatic teacher's class, including the student with an onset date of May 21. The school clinic staff monitored absenteeism reports and observed students presenting to the clinic for possible signs and symptoms of influenza, but no additional cases were identified through the last day of school, June 5, 2009.

Cluster of 2009 Influenza A H1N1 at a Correctional Facility, Orange County, June 2009

On June 23, 2009, the Orange County Health Department (CHD) received notification from a local correctional facility nurse of 10 cases of influenza-like Illness (ILI) among its male inmates. Onset dates ranged from June 20 to June 23. Symptoms included fever, runny nose, cough, body aches, nausea, and vomiting. No staff members were reported as being ill. Nine of the ten ill inmates were housed in the juvenile section of the facility, which is kept separate from the adult population. The ill juveniles were isolated within the same quad of the dormitory. The entire juvenile section of approximately 400 inmates was placed on lock-down and prohibited from access to communal areas for seven days. Corrections officials were provided with influenza guidelines and were educated on influenza outbreak prevention and control.

Orange CHD provided specimen collection kits and samples were submitted to the Bureau of Laboratories in Tampa for four of the ill juveniles and the adult patient. On July 1, Orange CHD received notification that three of the five inmates tested positive for 2009 influenza A H1N1. A juvenile inmate and the adult inmate tested negative for influenza A and B. One additional ill juvenile was later identified with an onset date of June 29. The patient was isolated in the infirmary along with his cellmate, as advised, for seven days or until 24 hours after symptoms resolved, whichever was longer. The patient's illness resolved and he was released from isolation. No further cases were identified.

2009 Influenza A H1N1 Influenza Outbreak at a Federal Detention Center, Miami-Dade County, June 2009
On Tuesday, June 9, 2009, the Miami-Dade County Health Department (CHD), Epidemiology, Disease Control, and Immunization Services (EDC-IS) was notified by the clinical director of a Miami Federal Detention Center that 13 detainees presented with influenza-like illness (ILI) symptoms (fever, cough, sore throat, headache, and body aches). The Detention Center is an all-male facility with approximately 571 detainees and 150 clinical and supportive staff. The Center had three separate housing units comprised of nine open-space dorms (pods), with approximately 60 to 70 bunk beds per dorm.

On Wednesday, June 10, 2009, a joint inspection was performed by representatives from EDC-IS and the Office of Environmental Health. The assessment included interviews with the Clinical and Assistant Director, review of case notes of ill detainees, and a tour of the facility. No patient interviews were conducted. Nasopharyngeal swab samples from five detainees were sent to the Bureau of Laboratories in Miami for testing.

Three of the five samples tested positive for 2009 influenza A H1N1. One of the detainees with a confirmed case was admitted to a hospital. All detainees with ILI symptoms were isolated in rooms in the Center's health clinic and treated with Relenza. Ill detainees resided in five of the nine dorms. Specifically, most ill detainees resided in Pods 1, 2, 3, and 5 of one building. The age range of the ill detainees was between 22 to 45 years old. Their facility length of stay ranged between two and six weeks. The onset of symptoms was June 8 to June 10, 2009. The Center continued to monitor high-risk detainees, such as individuals with chronic disease, HIV, and/or people 65 years of age and older. Seven staff were identified with ILI symptoms.

The Center provided 571 detainees with Tamiflu as prophylaxis. Community activities among detainees were ceased and the Center closed for visitors and new entries. All staff were informed to take droplet precautions (i.e., use of masks, hand washing) when in close contact with detainees. Ill staff were advised to stay home until symptoms subside. EDC-IS provided center-specific recommendations for prevention of further spread and maintained frequent communication with the Clinical Director.

2009 Influenza A H1N1 Outbreak at a North Carolina Boy Scout Camp, Palm Beach County, June 2009
On June 11, 2009, the Palm Beach County Health Department (CHD) Epidemiology Program was notified of a cluster of influenza-like illness (ILI) in a scout troop. A group of 33 boy scouts and eight adults had traveled to a camp in North Carolina on June 6. On June 9, a cluster of 10 scouts and one adult were identified with illness with onsets of June 8 and June 9. Symptoms were fever over 101°F, headache, cough, sore throat, and body aches. This initial cluster returned to Florida, two by plane and the remainder in a van with two other adults, arriving on June 10. Two of the children who returned were seen by their primary care physicians and tested positive for influenza A on a rapid test. Three nasopharyngeal swabs were collected and sent to the Bureau of Laboratories in Tampa for PCR testing. On interviewing the parents and children, one child was found who felt feverish and had a sore throat prior to leaving on the trip.

Among the children and adults who stayed at the camp, an additional six children and one adult were found to have ILI symptoms. Three other children only had fever. Two swabs had been collected from this group and sent to the North Carolina State Laboratory for testing. Of the original 41 individuals who went to North Carolina to camp, there were five confirmed cases and 19 suspected cases of H1N1 influenza. Two additional suspect cases were identified in the group that remained at the camp until June 13. Influenza A H1N1 was detected in all but one of the five swabs sent for testing. Family members were contacted before the remaining children returned from camp and informed regarding preventive measures and use of antiviral prophylaxis for at-risk family members.

Additonal information about this outbreak can be found in the following publication.
Doyle, TJ and RS Hopkins. Low secondary transmission of 2009 pandemic influenza A (H1N1) in households following an outbreak at a summer camp: relationship to timing of exposure. *Epidemiology and Infection*; 2010 Jun 21:1-7.

Five Influenza Outbreaks in Camps during One Week, Palm Beach County, June 2009
During the week of June 22, 2009, the Palm Beach County Health Department (CHD) investigated several outbreaks of influenza in local camps. Of five outbreaks investigated, three were confirmed as 2009 influenza A H1N1, one was confirmed as seasonal influenza A H3, and one was confirmed as both 2009 influenza A H1N1 and seasonal influenza A H3.

<u>2009 Influenza A H1N1</u> – Two of the three confirmed 2009 influenza A H1N1 outbreaks were in overnight camps. The first outbreak was in a local group of 49 people on an overnight trip to Georgia. From this group, nine total people (children and staff) were identified with influenza-like illness (ILI). Five of the nine individuals were tested and confirmed positive for 2009 influenza A H1N1. The second confirmed 2009 influenza A H1N1 outbreak was in an overnight camp located in Palm Beach County. Of the 125 campers housed that week, 10 of 11 children in one unit were identified with ILI. Three swabs were obtained and all were positive for 2009 influenza A H1N1. The third confirmed 2009 influenza A H1N1 outbreak was in a day camp at a local elementary school. Forty-nine out of 130 in attendance were reported with ILI. The outbreak was confirmed as 2009 influenza A H1N1 with three positive swabs.

<u>Influenza A H3</u> – Fifteen children were identified with ILI out of 90 at a day camp located in Palm Beach County. All three swabs obtained were confirmed as seasonal H3.

<u>2009 Influenza A H1N1 and H3</u> – A third local day camp reported an outbreak of ILI during the same week. Out of 320 enrollees, 51 cases of ILI were identified. Influenza A H1N1 was found in four specimens and seasonal H3 was found in two specimens obtained from this group.

In all instances, camps were provided with and advised to follow the guidelines issued by the CDC, *Guidelines for Day and Residential Camps in Response to Human Infections with the Novel Influenza A (H1N1) Virus.* Individuals were advised to be excluded from group settings for seven days after onset of ILI symptoms. At-risk contacts were referred to their physicians or the Palm Beach CHD for prophylaxis. Families were instructed regarding prevention measures to use in home settings. Surveillance was instituted until levels of illness returned to what was considered normal compared with previous years.

Bank Closure Due to ILI Outbreak, Nassau County, July 2009
On July 14, 2009, the Nassau County Health Department (CHD) received a request from an employee at a local bank to test her child for the “swine flu.” The parent reported the child had fever, cough, diarrhea, and lethargy with an onset of July 13. The employee mentioned the bank was closed that day and that other co-workers had similar influenza-like illnesses (ILI) symptoms. The employee also reported that she had previous similar ILI symptoms of fever,

congestion, diarrhea, anorexia, and cough on July 9. The employee's child was referred for testing to her primary care physician and tested positive on July 21 for 2009 influenza A H1N1.

On the same day, the local sheriff's department also called Nassau CHD. The sheriff's office reported they were being "inundated" with calls from the public due to the unexpected bank closure and had received rumors that the bank closure was due to "swine flu" in employees. Since the bank was closed, it was difficult for Nassau CHD to obtain information from local bank managers regarding the status of the closure or employee illnesses. Another bank office location was contacted for further information and a regional safety manager for the closed branch contacted Nassau CHD. After local bank managers were interviewed by the Nassau CHD, it was determined that the first employee became ill on July 8 and subsequently eight out of ten employees had ILI symptoms.

Since 80% of the employees were ill, the bank had to recruit employees from other area branches to staff the bank. On the evening of July 13, the bank contracted a cleaning crew to clean and sanitize all surfaces inside the building. The bank was closed for one day, July 14, and reopened on July 15. Nassau CHD advised management to request that ill employees stay home until they recovered, and recommended that ill employees self isolate for seven days, or 24 hours after cessation of symptoms, whichever was longer. The bank representative identified and contacted the ill employees and requested that they contact the Nassau CHD epidemiology program for interviews. One employee who contacted Nassau CHD reported a positive rapid flu test from his primary care physician. This was confirmed by Nassau CHD as positive for influenza A. The patient was prescribed Tamiflu by his physician.

Media coverage included three news stories regarding the bank closure. This resulted in calls from area residents and a cleaning crew member concerned about their exposure to the bank. On 07/15/2009, the Nassau CHD issued a general awareness press release about influenza in the county and how to prevent it. No additional related ILI illnesses were known to have occurred after the bank reopened.

Death from Severe 2009 Influenza A H1N1 Illness in a Previously Healthy Individual, Walton County, July 2009

On July 30, 2009, the Walton County Health Department (CHD) was notified by a local hospital of a suspected case of H1N1 in a 21-year-old man who was hospitalized and on a ventilator. The patient's illness onset was July 21, after returning from a vacation in the Orlando area. He presented to the emergency room of a small local hospital on the July 26 complaining of aches, cough, and newly developing shortness of breath. He was admitted to the hospital that same day. He developed progressive hypoxia and was transferred on July 28 to a larger hospital and admitted to the intensive care unit for mechanical ventilation. He was polymerase chain reaction (PCR)-positive for non-specific influenza A on July 30 at the hospital laboratory. He tested positive for 2009 influenza A H1N1 at the Bureau of Laboratories on July 31, 2009. Frequent contact was kept between the CHD and infection control staff at the hospital for updates on the patient's status.

On August 6, 2009, Walton CHD was notified by infection control staff at the hospital that the patient had died. His final diagnoses included 2009 influenza A H1N1, post-viral bacterial pneumonia, pneumonia with septic shock, severe acute respiratory distress syndrome, hypoxia, and bilateral pneumothoraces. The patient had no history of underlying illness. He was an apparently healthy, non-smoking young man.

Firemen involved in transport of the patient from Hospital A to Hospital B received prophylaxis. Family members of the patient were referred by hospital staff to their primary physicians for prophylaxis. No H1N1-positive contacts were reported related to this case.

Influenza-Like Illness Cluster at a Local Military Facility, Clay County, October 2009
The Clay County Health Department (CHD) was notified on October 1, 2009 of a cluster of influenza-like illness (ILI) in a military unit at a local military installation. A visit was made to the facility on October 2 to speak with the officers in charge, review the infection control procedures, interview soldiers, collect specimens, answer any questions, and assist in establishing active surveillance of ILI activity in the units assigned to the installation. Six soldiers in one unit were identified with ILI. They were monitored and treated as ordered by the physician on staff. Onset of symptoms was on October 2 and the soldiers all rode the same buses to the installation from many areas around Florida. Of the six soldiers interviewed, five had temperatures above 101°F. Other symptoms included chills, fatigue, cough, and headache. Two of the soldiers stated they had a family member or friend who had influenza-like symptoms. One solder stated a close friend had been diagnosed with H1N1 about a week before the soldier had to report for duty. Five nasopharyngeal specimens were collected and sent to the Bureau of Laboratories. The regional epidemiologist was notified and consulted. Infection control procedures were reviewed and precautions were in place using isolation, triage, good personal hygiene, and posting of hand-washing signs. Hand gel was provided to all soldiers. Ill soldiers were immediately isolated until asymptomatic and able to return to duty. All five specimens collected were positive for the 2009 influenza A H1N1 virus. Surveillance follow-up noted six more cases of ILI in soldiers. Nasopharyngeal specimens were not collected on these soldiers. All soldiers recovered without any adverse events.

Legionellosis

Legionnaires' Outbreak Associated with a Local Fitness Center, Seminole County, July 2009
On July 20, 2009, the Seminole County Health Department (CHD) Epidemiology Program was notified by a local hospital of a urine antigen positive laboratory result for *Legionella* in a 75-year-old man with illness onset on July 14, 2009. On July 28, the Seminole CHD received a report of another laboratory-confirmed case of legionellosis in a 70-year-old man with illness onset on July 15. Both people were hospitalized because of their illness. The investigation revealed that they were members of the same local fitness club, and both visited prior to illness onset. The two confirmed cases had chronic lung disease; one had diabetes and one was a current smoker. An environmental investigation conducted at the fitness club on August 10 noted no relevant sanitation deficiencies. Swabs and water samples were collected from the showers and showerheads, water heater, and the equipment room water. All samples were negative for *Legionella pneumophila*.

The source of these two epidemiologically-linked legionellosis cases was likely the shower heads. Recent studies have concluded that cases of Legionnaires' disease have been attributed to exposure to contaminated residential water distribution systems. Another study also found that shower heads may present a significant potential exposure to aerosolized microbes, including documented opportunistic pathogens. To become infected with *Legionella*, a susceptible individual must inhale or aspirate aerosols (generally about 5 μm in size) containing sufficient numbers of virulent *Legionella* cells.

For further information, please see the following publication.
Tara Richardson, M.P.H., Peggy Booth, R.N., B.S.N., Helen Morin, R.N., B.A., Gregory Danyluk, Ph.D, M.P.H., M.S. "Case Analysis of Legionellosis, Seminole County, July 2009", *Epi Update*, Florida Department of Health, Bureau of Epidemiology, March 2010.

Legionellosis Case Investigation, Alachua County, November 2009

The Alachua County Health Department investigated a case of legionellosis in a patient at a local hospital. The case was in a 56-year-old man who was admitted to the hospital's cancer ward on November 20, 2009. The patient later developed a pneumonia-like illness with a high fever on November 30 and later died on December 5. Legionellosis was diagnosed on December 2, 2009 based on a positive urine antigen test. Water samples were collected from three locations in the patient's room: the bathroom sink, the healthcare provider sink, and the bathroom showerhead. The two samples collected from the sinks tested positive for *Legionella sp.* The hospital forwarded three samples to the Bureau of Laboratories in Jacksonville for confirmation. Two of the three samples submitted were patient specimens; the other was from the patient's sink. Both patient samples were positive for *Legionella* serogroup 1. The sink sample tested positive for *Legionella,* but the testing methodology used did not distinguish between non-serogroup 1 and groups 2 to 6.

The hospital's infection control department conducted a review of patient charts as part of an active case finding initiative. A retrospective review of patient charts from July to December 8, 2009, found 126 patients who were routinely tested for *Legionella* during their hospital stay. Staff also tested an additional 70 patients who were hospitalized during the same time the case was hospitalized and who may have been exposed to *Legionella.* Each patient had received either a urine antigen or respiratory culture test. No additional cases were identified through these case-finding efforts.

The hospital's water system received super-chlorination and heat treatments. Following treatment, water testing was performed by an independent water testing group. None of the samples were positive following treatment. The hospital concluded that the patient most likely acquired the legionellosis prior to admission. As the patient's immune suppression therapy progressed (the patient was receiving chemotherapy for a bone marrow transplant), he became symptomatic. Additionally, the hospital determined that the patient had received extensive dental work prior to admission into their facility, which is a risk factor for developing legionellosis.

Legionellosis Cases Associated with a Hotel, Miami-Dade County, November 2009

On November 2, 2009, the Miami-Dade County Health Department (CHD) Office of Epidemiology, Disease Control, and Immunization Services (EDC-IS) received a report from the Miami-Dade County Medical Examiner's Office that a visitor to the state had died from Legionnaire disease (LD). The tourist, a 57-year-old man living in England, had a history of travel on a cruise ship embarking from the port of Miami and a stay at a local hotel (Hotel X) in Miami, Florida. On board the ship, LD serogroup 1 was confirmed by urine antigen testing and the patient died at a Miami hospital several days later. Two weeks later, EDC-IS received an email from the friend of an ill German resident who also stayed at Hotel X, and upon further investigation, the health department in Germany confirmed LD by urine antigen test. Within the same week, the Centers for Disease Control and Prevention (CDC) reported another laboratory-confirmed case of LD in a resident of Spain who also stayed at Hotel X. These findings prompted both an environmental and epidemiological investigation into the water system and illnesses due to water exposure at Hotel X.

An environmental survey of the water system included measurement of chlorine levels, total coliform counts, and sampling for cultures to confirm the presence of *Legionella pneumophila*. Cultures were taken by an independent contractor on December 13 to attempt to grow *L. pneumophila* from the water supply. Based on the initial findings of inadequate chlorine residual in the water at Hotel X, the Department of Business and Professional Regulation placed the hotel on a “bottled water use only” restriction; subsequently, the Miami-Dade CHD issued a Health Advisory recommending all residents, guests, and employees of Hotel X cease water usage beginning December 11, 2009. The hotel voluntarily closed and guests/residents were advised to temporarily relocate until further notice.

In June 2009, Hotel X management had installed a special activated charcoal-based water filtration system. Testing of water both downstream and upstream from the filters confirmed that the activated charcoal filters that were located between the incoming city water supply and the distribution of water throughout the hotel and residences was removing all or most of the chlorine residual that would be available to disinfect the water in the building.

As of March 11, 2010, 109 interviews, out of 1,700 residents and guests, were completed. To date, there are seven confirmed cases and three probable cases of LD. Initial cultures taken by an independent contractor prior to any remediation efforts done by the hotel showed 23 out of 25 cultures positive for *L. pneomophila* serogroup 1 in samples taken randomly throughout both the hotel and residences. Unfortunately, no cultures were available from any of the cases to match with the cultures from the hotel water samples. The only tests available on cases were urine antigen and serology tests.

Malaria

Transfusion-Associated Malaria, Manatee County, August 2009

On July 7, 2009, the Manatee County Health Department (CHD) was contacted by the Hillsborough CHD to report a Manatee County resident in a Tampa hospital with an admitting diagnosis of malaria or babesiosis. The patient, a 41-year-old man, was diagnosed with leukemia on approximately May 15, 2009. He was hospitalized at that time, underwent chemotherapy, and received several blood transfusions from multiple donors. The patient was discharged in mid-June, and then readmitted a week later after experiencing severe fatigue and incontinence. A blood smear tested positive for either malaria or *Babesia*. A specimen was sent to the Bureau of Laboratories (BOL) in Jacksonville for further testing and confirmation. The BOL in Jacksonville reported the specimen as likely malaria (*Plasmodium falciparum*), which was then confirmed by the Centers for Disease Control and Prevention (CDC). The patient was treated with Malarone.

The patient reported no travel history outside of Florida. He resided on a boat but reported no mosquito bites prior to hospitalization. As a precaution, Manatee County Mosquito Control was notified of the general location of the boat.

The blood bank conducted an investigation and was able to contact 16 of the 23 donors. They conducted in-depth interviews and obtained additional blood samples. One of the donors was a 27-year-old man who had immigrated from Nigeria five years ago and had malaria at the age of 12. He was successfully treated at that time and had since remained asymptomatic. A sample was sent to the USF College of Public Health malaria research laboratory for thick smear and hemoculture, of which both results were negative. A blood sample forwarded to the CDC for polymerase chain reaction (PCR) testing was also negative. However, the CDC did report a positive serologic test and stated that it is normal in these situations for donors to be smear-negative and immune fluorescent assay (IFA)-positive, as they are usually maintaining very low parasitemia, which is below the limit of detection on the PCR test. All of the other donors who submitted samples also had negative smears, and reported histories with no other risk factors.

Measles

Imported Measles Cluster, Orange County, May 2009

On May 9, 2009, a local hospital infectious disease physician notified the Orange County Health Department (CHD) of a suspected measles case, imported from England. The case was a nine-year-old male heart-transplant patient visiting the central Florida area with his parents and three siblings. The family arrived on May 1 and reported visiting various locations in Orange and Seminole counties including theme parks, two resorts, a grocery store, a restaurant, a children's store, and a baby store. The patient had cough onset on May 5, rash onset on May 7, fever of 102˚F, conjunctivitis, and coryza with questionable Koplik spots. He was seen at a walk-in clinic on May 8 and hospitalized until the evening of May 9. Laboratory results were reported as measles IgG-negative and IgM-positive on May 13. The patient and siblings had no reported history of measles vaccine or natural disease. The parents reported history of disease. Serum samples collected from the parents showed immunity to measles. Urine samples were collected from the patient by the parents on May 10 and May 11 and sent to the Centers for Disease Control and Prevention (CDC) for viral culture and further analysis through the Bureau of Laboratories in Jacksonville. The parents reported that six children from the patient's grade had been diagnosed with measles prior to their trip. MMR vaccine was offered to the siblings, but the parents declined.

The CDC Quarantine Station was notified of the case and flight history. The family's scheduled return to England on May 15 was postponed. The parents were advised that susceptible family members would be released to return to England on May 25 or 21 days after the last exposure to a confirmed case in the household, whichever was later, on advice of the CDC Quarantine Station. Immune family members were given the option to return as scheduled. The susceptible household contacts were placed on voluntary quarantine and were cooperative throughout the travel restrictions. The investigating nurse contacted the family daily for updates on the health status of the case-patient and siblings. The 3½-year-old twin siblings developed symptoms of fever on May 12 and May 14 and the 14-year-old sibling reported illness on May 15. The family departed for England on May 29, 2009.

The infection control staff at the hospital and walk-in clinic were notified of the measles case, but no susceptible contacts were identified and the clinic and hospital reported that appropriate isolation and infection control procedures were followed. Both resorts were contacted and advised to report any susceptible employees to the CHD. The theme parks were notified of visit dates and advised to contact the CHD with reports of suspected cases. No additional cases were reported in the central Florida area as a result of this cluster.
A summary of the case investigation was posted on Epi Com through the Florida Department of Health (FDOH) and on the CDC Epi-X forum. The FDOH received notification from the CDC of a likely spread case in an unimmunized 10-year-old female visitor from Canada diagnosed with measles who visited the same resort where the index patient and family stayed and attended

two parks on the same days. The virus strains in the two confirmed cases were considered nearly identical. This investigation demonstrates the importance of vaccines in preventing infections in residents and visitors in a community.

Melioidosis

Melioidosis in a Puerto Rican Resident, Hillsborough County, November 2009
The Hillsborough County Health Department investigated a probable case of melioidosis in an 88-year-old man who was a resident of Puerto Rico. The patient presented to the hospital on November 4, 2009 with a patchy, peripheral-based, multilobar pneumonia. He reported a history of fever, cough, and anorexia for one week. He also reported anterior chest, mid-back and left arm pain. The patient reported falling in the shower in Puerto Rico on October 28, 2009 and had visible signs of bruising on his head. He was evaluated at a hospital in Puerto Rico for this fall. The patient has a medical history of peripheral vascular disease and coronary artery disease but no history of diabetes, which is a risk factor for melioidosis.

Blood cultures tested positive for *Burkholderia* species at the hospital laboratory. The Bureau of Laboratories in Jacksonville reported a preliminary positive test for *Burkholderia pseudomallei* (the causative organism for melioidosis) by RT-PCR. Subsequently, the Centers for Disease Control and Prevention (CDC) confirmed this result. The patient responded well to a combination of antibiotics and he continued on a course of doxycycline and septra for 20 weeks. He was released from the hospital on November 17, 2009. He continued to be monitored by an infectious disease specialist.

The patient is a veteran who served in WWII, Korea, and Panama. His recent pre-illness travel history was limited to travel between Puerto Rico and Tampa. He was living in a rural area in Puerto Rico. The patient had spent time digging a ditch in his yard in the month prior to his illness. Transmission was initially thought to have most likely occurred from contact with contaminated soil or surface water. While melioidosis is not widely reported in Puerto Rico, there are several published articles reporting sporadic cases acquired in Puerto Rico. However, based on culture multi-locus sequence typing (MLST) performed at CDC, infection most likely occurred while the patient was stationed in Asia 50 to 60 years ago. *Burkholderia pseudomallei* infections may be associated with latency periods of many years. The illness is suspected to be linked with waning host immune function. The case was officially reported in Puerto Rico due to the case’s residence status, although the individual was planning on staying in Tampa and living with relatives.

All laboratories that handled the specimen were informed of the positive blood culture for *B. pseudomallei* due to the potential of aerosolization of the bacteria when it is amplified in culture. Four laboratory personnel were determined to have had low-risk exposures to the culture. Proper steps were taken to determine staff exposures and provide prophylaxis and monitoring when necessary.

Meningitis, Other

Death of a Young Child, Waterhouse-Friderichsen Syndrome Secondary to Meningitis, Polk County, January 2009
On January 19, 2009, the Polk County Health Department (CHD) was notified by a local hospital of a death of a 19-month-old child. The child became ill with a fever of 101°F and a slightly runny nose on the evening of January 18 and was given ibuprofen. In the middle of the night, the mother found the child unresponsive and not breathing well and went to the local emergency department.

A CT scan of the child's head revealed acute sinusitis, and no other significant findings were noted. The overall impression of the physician was septic shock. The hospital emergency department collected blood cultures after the administration of antibiotics. An autopsy was performed on January 20 and blood, cerebrospinal fluid (CSF) and brain tissue were sent to an outside laboratory. On January 27, the outside laboratory reported that the CSF gram stain showed gram positive cocci in pairs and CSF culture had few gram negative rods. The brain biopsy results were positive for *Haemophilus parainfluenzae*. The post-mortem CSF isolate was also sent to the Bureau of Laboratories (BOL) for identification. On February 10, the BOL reported that the organism isolated from CSF was *Haemophilus influenzae* serotype A, Biotype II. This biotype is not vaccine-preventable, nor is it associated with person-to-person spread or outbreaks.

The cause of death listed on the death certificate by the medical examiner was Waterhouse-Friderichsen Syndrome (WFS) secondary to meningitis. WFS is a severe manifestation of bacterial sepsis, with severe damage to the adrenal glands, that is most commonly associated with *Neisseria meningitidis*, but can be associated with other bacterial pathogens.

The child attended a large, popular, local pre-school with last date of attendance on January 16. Information regarding the child's pre-school classmates was obtained from the school director. Two letters, sent a week apart, were provided to the concerned parents of the pre-school as updates became available. Contact was made with local pediatricians to request reporting of any suspect cases. No other cases were reported and no antibiotic prophylaxis was recommended.

Lemierre's Syndrome in a University Student, Orange County, September 2009
On September 17, 2009, the Orange County Health Department received notification from a local university student health center of a suspect meningitis case in a student who was admitted to the hospital on September 16. The patient, who had a history of meningococcal vaccine, presented to the student health center on September 13 complaining of headache, fever, and pharyngitis. Rapid influenza test and rapid strep test were negative. Blood work was ordered to get a complete blood count but the patient declined. No antibiotics were prescribed. The patient was advised to take an over-the-counter fever reducer and return in 24 hours for a recheck but the patient did not return.

On September 15, the patient was taken by ambulance to the hospital after his roommates discovered him unresponsive in his room. He went into respiratory distress and was intubated. A lumbar puncture showed rare gram-positive rods, elevated white blood cells , elevated protein, and normal glucose levels. A CT scan showed evidence of a subdural hematoma. Diagnoses included altered mental status, severe sepsis, acute renal failure, multi-organ system failure, suspected subdural hematoma, and acute bacterial meningitis. Antibiotic treatment was initiated. Final cerebrospinal fluid culture results were reported as no growth after three days.

On September 19, blood culture results showed *Fusobacterium* species, an anaerobic gram-negative bacilli, which is known to cause a rare condition called Lemierre's syndrome. Lemierre's syndrome is characterized by preceding oropharyngeal infection, disseminated foci of infection or septic emboli, and bacteremia demonstrated by blood cultures positive for *Fusobacterium*. It typically affects young, healthy males. The patient recovered and was released to a rehabilitation facility on October 15.

Mumps

Imported Mumps Case, Alachua County, September 2009

On September 9, 2009, the Alachua County Health Department Epidemiology Program received a positive mumps IgM report from a reference laboratory from a 22-year-old male university student. He was originally from India and arrived in the U.S. for the first time on August 11, 2009. Onset of symptoms was August 20; he complained of fever and swelling of the left salivary glands. He was seen in the university infirmary on August 21, was diagnosed with sialoadenitis, which is an infection of the salivary gland as opposed to parotitis, which is inflammation of a parotoid gland more common in mumps cases. He was treated with Keflex. On August 28, he returned to the infirmary because of left testicular pain and some abdominal pain. Testicular pain and swelling, referred to as orchitis, is common in mumps cases. He was referred to the local hospital for further evaluation. Serology on August 28 was positive for mumps IgM.

The patient's immunization records from India had two questionable mumps vaccine dates and his mumps titer done in India was low. A contact investigation was initiated. There were two roommates identified and both had two documented doses of mumps vaccine (MMR). The university infirmary nurse checked all MMR vaccination records of the 43 students seen during the two days prior to when the patient visited the clinic and all students had two documented MMRs. Titer was drawn on one of the clinic staff who did not have MMR records and the result was negative. MMR vaccine was given to the staff. At the completion of follow-up at the end of September, no new mumps cases were reported.

Norovirus

Outbreak of Norovirus at a Sorority House, Alachua County, January 2009

The Alachua County Health Department (CHD) received a report of an outbreak of gastrointestinal illnesses at a sorority house on January 28, 2009. Thirty-one of the sorority house's 40 residents reported illness with onset dates of January 27 and 28.

A total of 24 cases and 24 controls were contacted. In addition, one secondary case was interviewed. Of the cases, 96% were female and 4% were male. Cases ranged in age from 18 to 56 years with a mean age of 21 years. Twenty-nine percent of cases resided in the main dormitory and the remaining students lived off campus or in another dormitory. All cases and controls consumed at least one group meal at the dormitory from January 24 to January 27,

2009. Cases reported the following symptoms: fatigue (100%); vomiting (96%); nausea (96%); chills (92%); abdominal cramps (83%); sweating (83%); diarrhea (79%); muscle aches (75%); dizziness (63%); fever (50%); and numbness or tingling (8%). The mean incubation for illness was 35.5 hours (range: 14.5 to 56.5 hours). The illness duration ranged between 6 to 24 hours with a mean duration of 18-hours. Three stool specimens tested positive for Norovirus GII at the Bureau of Laboratories in Jacksonville.

An environmental assessment of the kitchen and dining facilities at the sorority house was conducted with the Alachua CHD and the regional environmental epidemiologist. The sorority house had a common kitchen, dining area, and refrigerator where residents could help themselves to leftover food items and use the ice machine 24 hours a day. The affected dining facility was open to all members of the 175-member sorority, although only 40 members reside in the affected house. Sorority members who lived outside the house were also reportedly ill. It was a common practice that any sorority member, regardless of residential status, dined in the sorority house's dining room. Students were observed handling ready-to-eat foods with their bare hands and using their personal cups in the ice machine during the site visit.

During the environmental assessment, an ill food service employee was identified who had worked in the kitchen on the same day that he later developed vomiting and diarrhea. The employee's job duties the day of his illness onset included preparing food items for the salad bar. Consuming salad bar foods and ice were the risk factors most associated with illness in the outbreak. Ice consumption was common for both those who were ill and those who were not ill, making it difficult to measure an odds ratio (OR) for their exposures. Consumption of salad bar items served with dinner and lunch on January 26 was highly associated with illness. Both odds ratios for the January 26 lunch and dinner salad bars were significant. The OR for the lunch salad bar was 5.75 (confidence interval: 1.67, 21.8; p-value: 0.0048) and the OR for the dinner salad bar was 6.70 (confidence interval: 1.648, 34.85; p-value: 0.0063).

Outbreak of Norovirus Gastroenteritis, Nassau County, January 2009

On Friday, January 9, 2009, the Nassau County Health Department (CHD) received a complaint of gastrointestinal (GI) illnesses among patrons who ate lunch at a local Fernandina Beach restaurant on Monday, January 5, 2009. During the course of the investigation, Nassau CHD was notified of two other groups whose members all ate lunch at the restaurant on the same day and were also experiencing GI illnesses. Several food service employees of the implicated restaurant experienced gastroenteritis from January 2 to January 11, and were working at the restaurant during the course of their illness. Norovirus GII was identified as the causative agent for the outbreak.

Among the three different customer groups, which totaled thirteen people, eleven reported being ill with GI illness. Twenty food service workers were also identified as cases. The attack rate for the employees based on a line list of 54 employees was 37.0%. There were also several reports of secondary cases of gastroenteritis among family members of ill food service workers. The outbreak was a result of person-to-person transmission among the food workers and a subsequent point source exposure of the groups that had meals at the facility when food workers were preparing meals while symptomatic. The contaminated foods were not specifically identified but salad and ice were considered likely to have been contaminated due to ill workers and bare-handed contact with these items.

Norovirus Person-to-Person Suspected Transmission Outbreak Associated with a Birthday Party, Broward County, February 2009

On February 2, 2009, the Broward County Health Department Epidemiology Program received a report of a suspected outbreak associated with a birthday party held at a local park in Coconut Creek, FL. The initial report stated that at least nine of the approximately 40 attendees became ill with vomiting and/or diarrhea 10 hours to 30 hours following the party. Most of the food was catered by a local grocery store; however, attendees prepared some food items. A cross-sectional study was performed.

Twenty-three attendees could be interviewed and 10 reported being ill. Based on the epidemiological data collected, no common foods were determined to be statistically associated with illness. It was reported by several sources that the birthday child was not feeling well on the day of the party and had diarrhea two days prior to the party. Several people mentioned handling the child at the party, including group members who prepared and/or served food. It is suspected that the child is the index case for the outbreak resulting in the rest of the group becoming ill. Norovirus GII was found in three clinical specimens collected from people whose illness met the case definition. In addition, all of the people who met the case definition reported similar symptoms, incubation periods, and durations of illness consistent with a norovirus infection.

Norovirus Outbreak Investigation at a Country Club, Orange County, February 2009

On February 18, 2009, the Orange County Health Department Epidemiology Program was notified of multiple cases of gastrointestinal disease following a banquet for an international theology school held at a local country club on February 13. The banquet dinner included 141 guests from across the country and a few international guests. Investigators were able to administer questionnaires to 39 of the guests who had available contact information. Twenty-one (53.8%) of the 39 guests interviewed were identified as having cases. One secondary case was also identified. Women represented 61.9% of the cases. Ages ranged from 30 to 88 years old with a median of 63 years. Onset dates ranged from February 13 to February 16. Duration of illness ranged from 12 to 144 hours with a median of 48 hours. Frequently reported symptoms include watery diarrhea, nausea, vomiting, and fatigue.

Attendees of a separate function at the country club on February 14 also reported similar illnesses. This cohort included 40 guests, 22 of whom completed a phone interview. Nine cases were identified. Ages ranged from 55 to 65 years old with a median of 58.5 years. Men represented 66.6% of the cases. Onset dates ranged from February 15 to February 17 and duration of illness ranged from 24 hours to 96 hours with a median of 24 hours. Frequently reported symptoms include watery diarrhea, nausea, and fatigue.

Five (29.4%) of the seventeen food workers interviewed reported experiencing gastrointestinal illness. Onset dates ranged from February 12 to February 15. Two of the ill food workers worked both the banquet service and the a la carte service, two for the a la carte service only, and one for the banquet service only. Symptoms reported by the ill food workers included: diarrhea (100%); vomiting (80%); nausea (80%); fatigue (80%); weakness (80%); and abdominal pain (20%). Illness durations reported by four food workers ranged from 24 hours to 32 hours with a median of 25 hours. Two of the food workers reported working while ill. Onset dates for these two food workers were February 12 and February 14. Their duties included preparation of food in all areas of the kitchen and preparation of pastry and baked goods. Both worked on February 13 and 14 for the banquet and a la carte services.

Statistical analysis showed a significant association between illness and the citrus vinaigrette (RR= 2.55, p-value=0.022) served at the banquet dinner. Analysis of exposures for the club meeting on February 14 indicated no food items as statistically significant predictors of illness. Stool samples submitted by a food worker and an attendee of the banquet dinner tested positive for Norovirus GII and negative for other enteric diseases.

Foodborne Outbreak, Bay County, April 2009

On April 27, 2009, a local company contacted the Bay County Health Department (CHD). The company had ordered take-out meals for a luncheon from Restaurant A on April 23 and multiple people became ill with gastrointestinal symptoms on April 24 and April 25. After preliminary employee interviews, it was determined that approximately 75% of employees who ate the take-out lunch developed illness. The regional environmental epidemiologist, the Department of Business and Professional Regulation, and the Bay CHD Environmental Health Department were contacted and a multi-agency investigation was conducted. On April 27, a second company reported similar symptoms in employees who had consumed a take-out lunch from the same restaurant during a similar time interval. Over the next few days, six additional clusters of illnesses were reported from patrons of Restaurant A. The people who were ill had consumed items purchased from Restaurant A over a three-day period including both take-out meals and items at the restaurant. Laboratory results confirming Norovirus GII were received on several patrons as well as an ill food worker.

This outbreak of Norovirus GII was most likely caused by the consumption of salad served by the restaurant in April 2009. The onsets of reported illnesses were chronologically clustered indicating a common point source. The data analysis implicated the salad that was served by the restaurant as the vehicle that was the most probable source of illness (OR 3.75; 95% CI 1.2-11.6, p=0.0231). Positive stool results in both the food handler and the ill patrons also support this conclusion.

Two Linked Gastrointestinal Outbreaks of Confirmed Norovirus Associated with a Church Supper, Lafayette County, April 2009

On April 20, 2009, the Lafayette County Health Department (CHD) was contacted by an attendee of a church supper who reported that 23 attendees developed gastrointestinal (GI) illness following the supper. The event was held on April 19 and approximately 35 parishioners were in attendance. A buffet with hot dogs, nacho cheese, chips, brownies, and drinks was served. Of the approximately 35 individuals who attended the event, 20 were interviewed, 16 were ill, and four were not. Four of the 16 ill attendees were classified as having secondary illnesses. The following symptoms were reported (n=16) among the ill: nausea (94%); diarrhea (94%); abdominal cramps (75%); fatigue (69%); sweating (69%); vomiting (56%); chills (44%); fever (33%); headache (31%); muscle aches (25%); and dizziness (13%). A mean incubation period of 34 hours and a 27-hour mean duration of illness was reported. Two people were hospitalized. Two stool specimens were submitted to the Bureau of Laboratories in Jacksonville and both tested positive for Norovirus GII.

It is not clear whether this outbreak was foodborne, transmitted person to person, or both. One parent reported that her child had an episode of vomiting in the church parking lot on their way into the church. The mother changed her shirt, washed her child in the church bathroom, and then went through the buffet line at the church supper.

A second GI outbreak was identified on April 29, 2009 linked to a nearby Suwannee County restaurant where an attendee of the Lafayette County church supper who subsequently became ill was employed as a food server. The server returned to work one day after experiencing GI illness. The illness cluster included six restaurant patrons from two separate households who developed GI illness after dining at the restaurant. The patrons dined on a day when the ill food server prepared food. Symptoms of all six patrons and the food server were consistent with norovirus. A joint inspection with the Suwannee CHD and the Department of Business and Professional Regulation was conducted. Seven of the restaurant's 10 employees were ill around the same time with similar GI illness. Educational information on the importance of staying home while ill was provided to the restaurant manager and staff.

Norovirus Outbreak during a Religious Tour Event, Orange County, April 2009
On April 13, 2009, the Orange County Health Department (CHD) Epidemiology Program was notified by two separate guests at a local resort of a cluster of gastrointestinal (GI) illness with onset beginning on April 9. Both guests were part of a religion-based tour group that was staying at the hotel for the duration of their religious holiday from April 7 to April 17. A company that specializes in the distribution of specialized foods ran the tour group. The company made prior arrangements with the hotel to set up two mobile kitchens and two refrigerated trucks adjacent to the hotel food preparation and set-up areas within hotel ballrooms. All food items, except fresh produce, were shipped in by the company in refrigerated trucks. The hotel staff prepared all meals during the group's two-week stay under the supervision of company staff to ensure the items were prepared in accordance with their religious specifications. Tour group participants ate only the meals prepared through this process during their stay.

Fifty-three completed questionnaires were received from tour group participants; a response rate of approximately 21%. Seventeen cases of GI illness were identified. Three of the cases reported being seen at a local emergency room. None were hospitalized. Ages ranged from 3 to 79 years old with a median of 38 years. Women represented 58.8% of the group. Onset dates ranged from April 9 to April 12 and duration of illness ranged from 5 to 96 hours with a median of 36 hours. Frequently reported symptoms include watery diarrhea, nausea, vomiting, and fatigue.

Four food workers of 65 interviewed were identified as having a GI illness with onset on or after April 10. One food worker reported experiencing GI illness on March 27 and another reported GI illness in family members from March 26 through March 29. Stool samples were positive for Norovirus GII from two food workers and five event attendees.

Analysis of the group meals from April 7 to April 9 identified one meal, a children's buffet dinner on April 8 (RR=2.85, 95% CI 1.28-6.34), as significant. This meal was attended by 11 of the 17 cases. The incubation period for these 11 people ranged from 16 to 101 hours with a median of 35 hours. No other meals were statistically significantly associated with illness. Food-specific analysis for this meal did not yield any statistically significant food items.

Outbreak at a Local Country Club, Broward County, June 2009
The Broward County Health Department (CHD) was notified on June 9, 2009 of a possible outbreak of gastrointestinal illness in four men from two separate groups who became ill approximately 36 hours following a lunch at a local country club on June 3, 2009. Symptoms included watery diarrhea, vomiting, abdominal cramps, fever (no temperatures taken), headache, chills, weakness, and fatigue. The initial report stated that one of the ill people

had passed away on June 8, 2009 and the hospital had detected gram-negative bacteria in the blood. The Broward CHD Epidemiology Team performed an investigation. Twenty-one people from 12 separate groups were reported to have been ill after consuming food from the country club with onset dates ranging from June 2 to June 12. Eighteen people were interviewed and reported ill. Ten employees from the country club were also reported to have been ill (two kitchen staff, two wait staff, two banquet staff, two sales staff, one bar staff, and one management staff) from May 27 to June 7.

Based on the environmental and epidemiological data collected, the specific vehicle of transmission was not identified. The reported illnesses were spread out over a 10-day period indicating a propagated outbreak such as from person-to-person transmission, fomite transmission, and/or an ill food worker(s) contaminating multiple food items. All people who reported being ill had consumed food from the country club within the 48 hours prior to illness, but no common food item(s) were reported. Norovirus GI was detected in three clinical samples collected from cases from three separate groups. Norovirus GII was detected in a food service employee.

Pertussis

Pertussis Outbreak in a Private Elementary School, Sarasota County, December 2008 to March 2009

On February 13, 2009, a clinical case of pertussis in an unvaccinated 10-year-old was reported to the Sarasota County Health Department (CHD) by a local pediatrician. The child attended a private school and the school's nurse reported several students and staff with a cough illness. The school nurse provided a line listing of students and teachers with symptoms of cough illness. A standardized questionnaire was developed to determine if ill people met the case definition for pertussis. For the purposes of this investigation, the case definitions were as follows:

- Confirmed: A case that is culture-positive and in which an acute cough illness of any duration is present; or a case that meets the clinical case definition and is confirmed by positive PCR; or a case that meets the clinical case definition and is epi-linked directly to a case confirmed by either culture of PCR in a student, teacher, or parent/sibling of a student that attends school A.
- Probable: A case that meets the clinical case definition but is not laboratory confirmed, and not epi-linked to a laboratory-confirmed case in a student, teacher, or parent/sibling of a student that attends school A.
- Suspected: A student of the affected school with cough illness of any duration along with one of the following; post-tussive vomiting, fits of coughing, or inspiratory whoop.

During the investigation, nasopharyngeal swabs were obtained from four ill people classified as suspected cases, and sent to the Bureau of Laboratory for *B. pertussis* PCR and culture. In addition, a small number of people underwent testing at private labs

In total, there were 21 cases identified (15 confirmed and six probable). Cases ranged in age from eight months to 49 years. Mean and median age of the cases was 15 and 10 years, respectively. There were 16 children less than 11 years old and five adults. Three of the adults are teachers (Pre-K, K, and fourth grade). PCR confirmation was received for four cases, two of which were also culture-confirmed. All but one child had received age-appropriate vaccinations. None of the adult cases had received the recommended adult TDaP booster.

During the investigation process numerous close contacts were identified who were candidates for prophylaxis. Most were able to go to their private physicians to receive prophylaxis. Some received prescriptions for prophylaxis from Sarasota CHD. Additionally, several potentially infectious cases were identified during the investigation. These cases were excluded from the school setting and asked to self isolate until receiving five days of effective treatment.

A provider notification was sent to hospitals, walk-in clinics, primary care doctors, and pediatricians with details of the outbreak along with proper testing and treatment advice. Additionally, a press release was distributed to media partners. Sarasota CHD staff had numerous meetings with the school's board of directors and parent groups to build partnerships and answer questions about pertussis.

Pertussis Outbreak, Sarasota County, July 2009 to September 2009

On August 10, 2009, Sarasota County Health Department (CHD) received a report of a clinical case of pertussis in a 12-year-old, with a history of one dose of DTaP. Initial contact with the parents of the case revealed a large extended family with 39 members in four households, most with no or partial pertussis vaccinations, and numerous members exhibiting symptoms. Close contacts were referred to their primary care physician to be evaluated for treatment or prophylaxis. Initial interviews revealed limited close contact with other individuals. The family reported attending church regularly.

Over the next few weeks, family friends began contacting the Sarasota CHD to inquire about symptoms of pertussis. It was then evident that many social and church events had been omitted from the initial interview. The investigation eventually revealed an outbreak of pertussis among several families with social contact based on attending the same church. The pastor of the church was contacted to discuss pertussis prevention. The church had approximately 110 attendees. The pastor was asked to discuss pertussis with church attendees and refer symptomatic attendees to the Sarasota CHD. The church declined an offer from the Sarasota CHD to visit the church and discuss pertussis.

In summary, there were 25 confirmed pertussis cases from nine families reported during the outbreak. Two cases were PCR confirmed, one of which was also culture confirmed. The age of the cases ranged from 2 to 54 years old. The mean and median ages were 10.5 years and 13 years, respectively. Three cases occurred among adults. The majority of the symptomatic individuals had no or partial vaccination.

In this outbreak, the resistance of the individual families and church to providing accurate contact information delayed timely intervention. Interventions included isolation of infectious individuals through five days of effective treatment, prophylaxis of household/high-risk contacts, and continued education.

Summary of the Santa Rosa Pertussis Outbreak 2009

Santa Rosa County has been experiencing a community-based outbreak of pertussis since the spring of 2009. In total, 80 cases of pertussis, 64 confirmed and 16 probable, were reported to the Santa Rosa County Health Department (CHD) during 2009 compared to only five cases for 2008. Although no definitive source for the community-wide increase in pertussis cases has been identified, outbreaks and clusters of disease have been recognized in daycares, assisted living facilities, elementary schools, and high schools. In addition, cases have been reported in fully vaccinated school aged children. Of the 80 cases, 19 were PCR positive and five were culture confirmed. The secondary attack rate among close contacts and household contacts was high. Education on mode of transmission, letters to primary care providers and school administrators, post exposure chemoprophylaxis and vaccination campaigns were used to manage the response. Included below are reports on three of the clusters of disease identified during 2009.

In February 2009, a local pediatrician reported a case of pertussis to Santa Rosa CHD in a 16-year-old with a positive PCR result and clinical symptoms consistent with the disease. The case presented with cough, apnea, and post-tussive vomiting that had worsened over the previous two weeks. The onset of the catarrhal stage was February 5, 2009 and cough on February 10. A swab was taken on February 10 and sent to a private lab for PCR testing. When the positive PCR result was received on February 23, the patient was started on Zithromax. Investigation of this case revealed that the case's father was also ill with an onset date of February 16, 2009. The father was tested on February 23, 2009 at the Santa Rosa CHD, a 12-year-old sibling and mother were both asymptomatic. All household members were started on Zithromax on February 23. Other close contacts were identified and started on prophylaxis. During the time period from the onset of the catarrhal stage and the initiation of treatment, the case had attended a local high school (last day of attendance was February 19), attended a local science fair, high school dance, had a birthday party where several individuals stayed the night, and several church functions.

On May 21, 2009 four separate clusters of pertussis, were reported to the SRCHD. These clusters consisted of 11 confirmed cases of which three were lab confirmed and eight were epidemiologically linked. The earliest onset date of the cases was April 3, 2009 and the latest was May 2, 2009. The age range of cases was 1½ to 19 years of age. Cases attended two different high schools and two different elementary schools in the community. All of the cases had been appropriately immunized for their age. Two of the clusters have epidemiologic links to cases in Escambia County. All 11 cases and close contacts (n=28) were started on appropriate antimicrobial therapy. To help elicit additional case finding, letters were sent home to those students that were in the same classroom with confirmed cases, a blast fax regarding the increase in the number of confirmed cases was sent to local providers and asked for their assistance in identifying other potential cases, and a press release regarding the outbreak was issued.

On May 29, 2009, a local infection control practitioner reported to Santa Rosa CHD a possible case of *Bordatella pertussis* in an employee of an assisted living facility (ALF). The report indicated that a 38-year-old female presented to an emergency room with a persistent cough of over three weeks with associated paroxysms. The patient had been taking amoxicillin for a week prior to the notification of the CHD, as a result of a previous diagnosis of bronchitis. The hospital lab confirmed *B. pertussis* by PCR, and both the Escambia Health Department and Santa Rosa Health Department were notified. The case had reportedly worked at two different ALFs that were owned by the same group while symptomatic. One was in Escambia County and one in Santa Rosa County. A total of six employees, three residents, and three secondary household contacts presented with cough illnesses in the Santa Rosa ALF, and six employees and one secondary household contact at the Escambia ALF.

Rabies

Rabid Baby Raccoon, Clay County, August 2009

On Wednesday August 5, 2009, the Clay County Health Department (CHD) received notification of a raccoon bite. Believing an unknown animal may have bitten their five-month-old raccoon, the owner took the animal to the local veterinarian's office where the owner worked as a veterinary technician. The owner of the raccoon was not a licensed animal rehabilitator and, therefore, was not allowed to possess the animal as a pet. The raccoon bit another veterinary technician while it was being handled at the office. Animal control was notified and the animal's brain was sent for testing at the Bureau of Laboratories in Jacksonville. The raccoon tested negative for rabies. Clay CHD consulted with Bureau of Environmental Public Health Medicine, and the regional Captive Wildlife Investigator with the Florida Fish and Wildlife Conservation Commission (FWC). The veterinary office was contacted and Clay CHD and Clay County Animal Control took the opportunity to educate staff regarding wildlife rehabilitation and pre-exposure prophylaxis for high-risk animal workers such as veterinary staff. Clay CHD also educated the raccoon owner and was able to prevent unnecessary rabies post-exposure prophylaxis administration in this case. Education provided to the veterinary practice also included accurate information regarding appropriate management of abandoned or injured wildlife.

Bat Exposure in Africa: International Rabies Assessment, Lake County, August 2009

On Monday, August 10, 2009, the Lake County Health Department (CHD) Epidemiology Department received a phone call from a local physician requesting continuation of care for rabies post-exposure prophylaxis (PEP) for nine patients. These individuals were part of a medical missionary group of 18 people who were exposed to a bat in their sleeping quarters in Burkina Faso, West Africa. The exposure took place August 3, when one of the missionaries woke to find a bat flying in the small room where all group members were sleeping. One person was believed to have been scratched on the arm by the bat; the others did not report any known bites or scratches. No one in the group had received rabies pre-exposure vaccination prior to travel. Members of the group were from six states: Florida (9), California (4), Indiana (2), Virginia (1), Kentucky (1), and Michigan (1). The person who was scratched traveled to the capital city, Ouagadougou, where wound cleaning and rabies PEP with human rabies immunoglobin (HRIG) and Verorab rabies vaccine (intra-muscular) was initiated on August 3. The first dose of rabies vaccine was administered to the remaining 17 missionaries on August 7.

The group was instructed to follow up with their respective health departments or physicians and complete rabies PEP following their return home. As a courtesy, Lake CHD collected patient contact information for group members located outside Florida, and forwarded this information through the state public health veterinarian's (SPHV) office to appropriate SPHVs (none were previously aware of the cases). The SPHV office staff also consulted with the Centers for Disease Control and Prevention (CDC) Special Pathogens Branch regarding risk for Ebola and Marburg virus and were advised to monitor the patients for fever for 21 days as a precaution, since Ebola virus was present in countries nearby. Lake CHD periodically monitored patient status via phone calls and during patients' rabies PEP appointments. Patients were also advised of the possibility that rabies PEP may not be protective against all rabies-like viruses present in that region of Africa. Patients were told to notify their healthcare provider and Lake CHD if signs of sustained fever or other potential symptoms of rabies develop, with illness most likely to develop within three months of exposure. One patient questioned whether proper cold chain integrity had been maintained for HRIG and vaccine provided in Burkina Faso; as a result, rabies titers were recommended, particularly for a patient who had purchased all four doses of vaccine in Burkina Faso. Lake CHD coordinated sample collection and submission; all patients' rabies neutralizing antibody titration (RFFIT) titers following four doses of rabies vaccine were 1:1100 or higher (greater than 1:5 is considered adequate).

For more information about this investigation, please see
Matthews, S., L. Siegenthaler, D. Stanek, "Bat Exposure in Africa: International Rabies Assessment" Epi Update, 2009; October,
http://www.doh.state.fl.us/disease_ctrl/epi/October2009EpiUpdate.pdf

Rocky Mountain Spotted Fever

Locally-Acquired Rocky Mountain Spotted Fever Case, Sarasota County, September 2009
On September 24, 2009, a local hospital reported to the Sarasota County Health Department (CHD) an individual who presented to the emergency department complaining of fever, chills, uncontrollable tremors, and a red rash. The individual's disease onset was September 19, with symptoms of a sudden fever, chills, and uncontrollable tremors. The individual's illness progressed over the next two days to include a red, macular rash covering the arms, legs, and abdomen. Initial laboratory results detected IgG antibodies to *R. rickettsii*.

The Bureau of Laboratories (BOL) performed confirmatory laboratory testing via immunofluorescence assay (IFA) and identified IgG antibody titer (1:256) reactive with *R. rickettsii* antigen in the acute serum. The Sarasota CHD collected a convalescent sample on October 14 and sent it to the BOL. The convalescent sample was tested via IFA and yielded an IgG antibody titer (1:512) reactive with *R. rickettsii*.

The clinical and laboratory evidence met the case definition for a probable Rocky Mountain spotted fever (RMSF) case. The case was interviewed and denied travel outside of the county in the 30 days before symptoms occurred or recent tick bites. In the two weeks prior to illness onset, the patient spent time trimming trees and working in tall grass around his house, which is most likely his source of exposure to an infected tick. During the interview the case was informed of potential exposures and educated on methods to reduce and prevent the likelihood of future tick exposures. The last Florida-acquired case of RMSF reported in Sarasota County in 2005.

Salmonellosis

***Salmonella* E1 Muenster Cluster, Miami-Dade County, February 2009**
On February 17, 2009, the Office of Epidemiology, Disease Control, and Immunization Services (EDC-IS) of the Miami-Dade County Health Department was notified by the Bureau of Epidemiology of a cluster of eight cases of *Salmonella* E1 confirmed through pulsed-field gel electrophoresis (PFGE). The cases ranged in age from 2 to 59 years. The main symptoms were fever/chills, diarrhea, and abdominal pain. Onsets of illness occurred between mid-December 2008 and late January 2009. Upon an epidemiological investigation, two separate possible outbreaks were identified for two of the confirmed cases. For the remaining six confirmed cases, no associations with other cases were found.

One outbreak was at a Hialeah party where a family of three and a neighbor became ill and the other outbreak was a barbecue at which nine out of 12 attendees were ill. In the second suspected outbreak, a case was a food worker. In this outbreak, the nine who were ill, as well as the three who did not develop symptoms, reported consumption of meat and soft cheeses. Incubation for the ill was approximately one day. Cheese samples, collected at the facilities where they were bought, were negative for *Salmonella.* The epidemiological investigation revealed that all suspected cases exhibited symptoms consistent with *Salmonella* infection.

Outside of the two clusters, no epidemiological link was identified between all original eight cases of the *Salmonella* EI PFGE cluster. This may be due to the amount of time elapsed between the onset of illness and when the PFGE cluster was reported to the EDC-IS, so recall bias may have played a role.

Salmonella Outbreak Associated with a Restaurant, Broward County, June 2009

On May 21, 2009, the Broward County Health Department (CHD) received a complaint regarding a group of seven diners, with three reporting becoming ill approximately 34 hours after eating at a local restaurant in Hollywood, FL. Over the next two weeks, five confirmed cases of *Salmonella* group D1 (non-typhoid) were reported to the Broward CHD, as well as an additional foodborne illness complaint. All reported consumption of food from the same restaurant during the same weekend in the initial complaint.

Investigation revealed that fourteen people from seven separate groups had become ill with gastrointestinal symptoms after eating at the implicated restaurant. Multiple food items were consumed by the 14 ill individuals during meals at the implicated restaurant on May 15 and May 16. No other common exposures, aside from the restaurant, were noted. Diners who were not ill could not be interviewed. Seven stool samples were collected. All tested positive for *Salmonella* serogroup D1. Four of the isolates were sent to the Bureau of Laboratories in Jacksonville and sub-typed as *Salmonella Berta.* Three isolates had indistinguishable PFGE patterns, which suggests that the outbreak originated from the same source and further supports the hypothesis that the restaurant was the source of this outbreak. Eight food workers reported similar illnesses with onsets ranging from May 1 to May 21; however, none tested positive for *Salmonella* (none of the employees were exhibiting symptoms at the time the samples were collected).

Scombroid

Scombroid Poisoning, Hillsborough County, March 2009

A physician with a local university notified the Hillsborough County Health Department on March 6, 2009 of three students who presented to the university health clinic with severe allergic symptoms, including flushing and tingling, within one hour of consuming sushi rolls. All three students were diagnosed with scombroid poisoning and responded well to antihistamine treatment. The tuna sushi rolls were consumed on campus at the student dining facility.

An environmental field visit was made to the university student dining facility and the frozen tuna sushi rolls were placed under a stop-sale order. The sushi preparation procedures were examined and all of the food temperatures, sanitation procedures, and employee hygiene practices were determined to be satisfactory. The frozen product was collected and shipped to the Florida Department of Agriculture and Consumer Services laboratory for analysis. High histamine levels ranging from 2058 ppm to 3507 ppm were identified.

Trace-back information identified that the same seafood distributor based in California had provided product to the university facility and to a food service outlet in Pinellas County also implicated in a second cluster of scombroid cases. The tuna product originated from Indonesia.

Shigellosis

Probable Foodborne Shigellosis Outbreak Associated with a Funeral Reception, Orange County, May 2009
During the routine case investigation of a confirmed shigellosis case, the Orange County Health Department (CHD) learned that the case had recently held a funeral reception at her home and a number of attendees had also become ill. The funeral reception was held on May 12, 2009 in a private home with approximately 60 guests. Food items and beverages were provided in a self-serve, buffet style. Food platters were prepared by a local supermarket. Additionally, some homemade food items were brought by guests.

Thirteen of the 35 interviewed reported illness. Two of the thirteen people reporting illness were laboratory confirmed through stool cultures as *Shigella sonnei* (subgroup D). One of the confirmed cases was the initial case reported to the Orange CHD and the other was confirmed by the Delaware Department of Health. One secondary laboratory-confirmed case with an onset date of May 19, 2009 was also identified. The secondary case did not attend any funeral-related activities, but was a contact of ill attendees and reportedly ate food left over from the event at the reception location.

Women represented 69% of the cases. Cases ranged in age from 11 to 71 years of age with an average age of 46.8 years. The most frequently noted symptoms were nausea, diarrhea, abdominal pain and cramping, fever, and fatigue. The reported illness onset dates ranged from May 13 through May 15. The average incubation period was 50.5-hours with a range of 31.0- to 76.0 hours. Duration of illness was from 1 to 14 days with an average of 5.5 days.

This cluster of *Shigella* illness appears to be associated with the consumption of food at the funeral reception meal on May 12, 2009. However, the foods consumed had many different sources, including a supermarket and various individuals. It is possible that people attending the event contaminated many of the food items. Ten of the ill attendees consumed food from the assorted dessert tray. This food item may have been a possible source of illness for the majority of those who were ill, but the data do not demonstrate that this item is statistically significant. Some people, particularly three who reported that they did not consume food, may have acquired the disease via person-to-person contact with a symptomatic or non-symptomatic person.

Streptococcus pneumoniae

***Streptococcus pneumoniae* Detected in ESSENCE, Pinellas County, March 2009**
The Pinellas County Health Department (CHD) uses the ESSENCE system to perform surveillance on emergency department (ED) visits occurring in the county. ESSENCE is reviewed daily, including weekends and holidays, to detect any situation in which public health action may be required. During the week of March 8, 2009, routine queries conducted in

ESSENCE found events that had not been reported immediately to the Pinellas CHD. The ESSENCE queries used to detect these events were free-text queries that use the list of reportable diseases and conditions in Florida.

Information from various EDs indicated that a cluster of four patients visited on March 8 with chief complaints of either “unspecified exposure” or “exposure to bacterial meningitis”. Pinellas CHD followed up with the hospital and found that two of the exposed patients were paramedics and two were firefighters, all of whom reported exposure to bacterial meningitis. The paramedics were exposed while transporting a patient with suspected bacterial meningitis. This patient, a 20-year-old man, later died. The laboratory report for the deceased patient indicated that there was no growth for *Neisseria meningitidis*; however, the cultures (cerebrospinal fluid and blood) were positive for drug-resistant *Streptococcus pneumoniae*. A blood culture was sent to the Bureau of Laboratories and drug-resistant *Streptococcus pneumoniae* was isolated. Ciprofloxacin was provided to the paramedics as prophylaxis.

The firefighters were exposed to a different patient that was admitted to the hospital with suspected meningococcal meningitis. The medical record for the second patient, a 30-year-old-male, indicated urine and CSF cultures were done. Neither yielded bacterial growth. The final diagnosis was viral meningitis with headache. Before the diagnosis was confirmed, the firefighters were provided with Cipro as prophylaxis, which is not effective against viral pathogens.

The second confirmed case of drug-resistant *Streptococcus pneumoniae* was detected in a 32-year-old male who visited the ED on March 10 with chief complaints of pneumonia and meningitis. Based on information provided by the hospital, the patient reported left ear and sinus pain. He was treated and discharged but later returned to the ED with worsening ear pain. Upon further evaluation, the patient was admitted to the intensive care unit for monitoring. Blood and CSF cultures were positive for drug-resistant *Streptococcus pneumoniae*.

The ESSENCE system allowed the Pinellas CHD to learn of events within 24 hours of occurrence, before they were reported by the facility to the CHD. This illustrates one of the many benefits that ESSENCE provides as an early warning system, as it allowed the CHD to respond in a timelier manner than if they relied solely on the facility to report the cases to them.

West Nile Virus

West Nile Virus Case, Miami-Dade County, September 2009

In September 2009, the Miami-Dade County Health Department (CHD) was notified of a case of West Nile virus (WNV), the first in four years. The patient was a 61-year-old man with a history of diabetes, hypertension, and borderline renal insufficiency who developed progressive weakness, fatigue, fever, and headache starting on August 28, 2009. The clinical picture worsened after three days with altered mental status, confusion, and misuse of correct words in sentences. His wife immediately brought him to an urgent care center close to their home and after evaluation by the center’s physician was immediately transferred to a local hospital. Upon arrival at the hospital, his temperature was 103.7º F and his condition had not improved. He was transferred to the intensive care unit and was given supportive care. He was given doses of vancomycin and ceftriaxone while awaiting results on a cerebrospinal fluid (CSF) specimen. A rapid test for both influenza A and B was negative, and additional swabs were sent for RT-

PCR testing for 2009 influenza A H1N1. Results on the CSF specimen ruled out bacterial meningitis, and viral meningitis was considered with enterovirus or WNV as possible etiologies. A CSF specimen was tested for WNV IgM and for RNA for enterovirus.

A positive IgM for WNV was reported on September 10, 2009. After positive labs were obtained, the hospital reported the case to Miami-Dade CHD. Additional samples were sent to the Bureau of Laboratories (BOL) for confirmation. The local mosquito control office was notified of the patient's residential zip code, but the patient was unable to provide any additional details regarding areas of exposure due to his continued altered mental status. The patient gradually improved and was discharged on September 13 to a rehabilitation center. The patient was discharged to his home on September 30 with about a 30% residual muscle weakness for which he received home therapy over the next several weeks. His mental status returned to normal.

After recovery, the patient was interviewed about possible exposures. He worked as a security guard where he was exposed to mosquitoes on a night about four to five days prior to developing symptoms. He works at the same location consistently, guarding a parking lot at a medical clinic, and mentioned there is a large area of bushes at the rear of the lot. During his patrols, he recalled a large number of mosquitoes active in and around the bushes. He denied a travel history except for a three-day trip to Georgia in either March or April 2009, but did not recall any mosquito bites during that trip.

On October 5, 2009, the BOL in Tampa confirmed the positive IgM for WNV, and mosquito control was notified a second time of the location of his job as a potential location for intervention. At that time, Miami-Dade County issued a mosquito-borne illness advisory and did not remove it until December 2009.

First West Nile Virus Case, Clay County, October 2009

On October 1, 2009, Clay County Health Department (CHD) was notified of a positive human case of West Nile Virus (WNV). Investigation began immediately. The patient, a 39-year-old white man, was admitted to a local hospital. He had a three to four day history of headaches, diffuse muscle pains, neck pain, fever, nausea, progressing weakness, and shortness of breath. His condition worsened with paralysis and he was placed in the intensive care unit (ICU). WNV IgM enzyme-linked immunosorbent assay was positive on cerebrospinal fluid on September 21 and blood serum on September 30. Tests were done at the Bureau of Laboratories.

The man had traveled outside of the state of Florida during the two weeks prior to onset of illness and recalled receiving numerous mosquito bites while traveling near Dallas. The area where he camped and hiked near Dallas had recently reported cases of WNV. The time frame for exposure and onset of symptoms suggest that exposure occurred in Texas. He also traveled to Oklahoma and Georgia. There had been 12 WNV cases reported in Dallas County, TX and two in Oklahoma County, OK in 2009 at the time of this investigation. The man was released to a rehabilitation center after a long stay in the ICU. Mosquito exposure prevention and WNV information was sent by the Clay CHD to family, local media, schools, businesses, and housing areas. Active surveillance did not identify any more confirmed or probable cases.

Section 7

Recently Published Papers & Reports

Included below are selected publications by the Florida Department of Health (FDOH) that appeared in peer-reviewed journals during the calendar year of 2009. The complete title, abstract, and reference are included. The publications are ordered by last name of the first author, regardless of whether or not that author is an FDOH employee. FDOH employee names appear in bold. Abstracts and titles are re-printed in the same format that they appeared in their respective journals.

Updated Guidelines for the Use of Nucleic Acid Amplification Tests in the Diagnosis of Tuberculosis

Guidelines for the use of nucleic acid amplification (NAA) tests for the diagnosis of tuberculosis (TB) were published in 1996 and updated in 2000. Since then, NAA testing has become a routine procedure in many settings because NAA tests can reliably detect *Mycobacterium tuberculosis* bacteria in specimens 1 or more weeks earlier than culture. Earlier laboratory confirmation of TB can lead to earlier treatment initiation, improved patient outcomes, increased opportunities to interrupt transmission, and more effective public health interventions. Because of the increasing use of NAA tests and the potential impact on patient care and public health, in June 2008, CDC and the Association of Public Health Laboratories (APHL) convened a panel of clinicians, laboratorians, and TB control officials to assess existing guidelines and make recommendations for using NAA tests for laboratory confirmation of TB. On the basis of the panel's report and consultations with the Advisory Council for the Elimination of TB (ACET),* CDC recommends that NAA testing be performed on at least one respiratory specimen from each patient with signs and symptoms of pulmonary TB for whom a diagnosis of TB is being considered but has not yet been established, and for whom the test result would alter case management or TB control activities, such as contact investigations. These guidelines update the previously published guidelines.

Alland D, Bernardo J, Hanna B, Kaplan RL, Kawamura M, Liska S, Nivens C, **Salfinger M**, Seaworth B, Warshauer D, Wroblewski KE, Castro K, Diem L, Jereb J, LoBue P, Marks S, Mazurek J, Metchock B, Shinnick T, Vernon A. "Updated Guidelines for the Use of Nucleic Acid Amplification Tests in the Diagnosis of Tuberculosis." *MMWR* January 16, 2009 / Vol. 58(01):7-10.

Profile of time-dependent VEGF upregulation in human pulmonary endothelial cells, HPMEC-ST1.6R infected with DENV-1, -2, -3, and -4 viruses

In this study, the upregulated expression level of vascular endothelial growth factor (VEGF) in a pulmonary endothelial cell line (HPMEC-ST1.6R) infected with dengue virus serotypes 1, 2, 3, and 4 (DENV-1, -2, -3 and -4), was investigated. This cell line exhibits the major constitutive and inducible endothelial cell characteristics, as well as angiogenic response. Infection by all four DENV serotypes was confirmed by an observed cytopathic effect (CPE), as well as RT-PCR (reverse-transcription polymerase chain reaction) assays. As we had previously reported, the DENV-infected HPMEC-ST1.6R cells exhibited an elongated cytoplasmic morphology, possibly representing a response to VEGF and activation of angiogenesis. In this study, increase in VEGF expression level at designated time points of 0, 8, 24, 96 and 192 hours post-infection was investigated, using a microbead-based Bio-Plex immunoassay. Increased level of VEGF expression in infected-HPMEC-ST1.6R was detected at 8 hours post-infection. Interestingly, VEGF expression level began to decrease up to 96 hours post-infection, after which an upsurge of increased VEGF expression was detected at 192 hours post-infection. This profile of VEGF upregulated expression pattern associated with DENV infection appeared to be consistent among all four DENV-serotypes, and was not observed in mock-infected cells. In this study, the expression level of VEGF, a well-established vascular permeabilizing agent was shown to be elevated in a time-dependent manner, and exhibited a unique dual-response profile, in a DENV-infected endothelial cell. The experimental observation described here provided additional insights into potential mechanism for VEGF-mediated vascular leakage associated with DENV, and support the idea that there are potential applications of anti-VEGF therapeutic interventions for prevention of severe DENV infections.

Azizan A, Fitzpatrick K, Signorovitz A, Tanner R, Hernandez H, **Stark L**, Sweat M. “Profile of time-dependent VEGF upregulation in human pulmonary endothelial cells, HPMEC-ST1.6R infected with DENV-1, -2, -3, and -4 viruses.” *Virol J*. 2009 May 6;6:49.

Water Pipe Tobacco Smoking Among Middle and High School students

Objectives. We examined prevalence rates of water pipe tobacco smoking among young people as a first step in assessing the health implications of this form of tobacco use.
Methods. We examined water pipe use with data from the 2007 Florida Youth Tobacco Survey, which assessed tobacco-related beliefs, attitudes, and behaviors among the state’s middle and high school students.
Results. Four percent of middle school students and 11% of high school students reported ever having used a water pipe. Adolescent boys were significantly more likely than adolescent girls to use water pipes, and African American adolescents were significantly less likely than adolescents from other racial/ethnic backgrounds to do so. Those who indicated ever having tried cigarettes and those who reported positive attitudes toward the social nature of cigarette use were more likely to have tried water pipes.
Conclusions. Water pipe use appears to be widespread among middle and high school students. Further research is needed to assess the health risks associated with water pipe tobacco smoking as well as young people’s attitudes toward this form of tobacco use.

Barnett TE, Curbow BA, **Weitz JR, Johnson TM**, Smith-Simone, SY. “Water Pipe Tobacco Smoking Among Middle and High School students.” *American Journal of Public Health*, 2009, Vol. 99, No. 11, pp. 2014-2019.

Removal of species constraints in antibody detection

Serum antibodies from myriad species, particularly birds, can provide key information regarding the transmission and the expansion of the territory of emerging pathogens. Expedient antibody analysis is constrained by a lack of species-specific reagents, a deficiency potentially highlighted by the recent swine-origin influenza A virus (H1N1) outbreak. Available methodologies present difficulties that discourage thorough serologic monitoring of potential disease vectors or hosts. Rapid high-throughput procedures that combined serum amine labeling via biotinylation, contaminant removal, and microsphere-based immunoassays for antibodies to three arboviruses were developed. Agent-specific adaptations of this simple format should facilitate expanded surveillance and diagnostic capabilities regarding pathogens of human and veterinary importance.

Basile AJ, Biggerstaff BJ, Kosoy OL, Junna SR, Panella NA, Powers AM, **Stark LM**, Nemeth NM. "Removal of species constraints in antibody detection." *Clinical & Vaccine Immunology* 17(1): 56-61.

Legionella Positive Environmental Samples from a Hot Tub at a Local Resort Hotel, Orange County, December, 2008

Subsequent to notification of a confirmed case of Legionnaires' disease in a 60 year old male resident of England who was exposed to a hot tub at a hotel that had been epidemiologically implicated as a source for five cases of Legionnaires' disease in March of 2008 environmental samples were collected for analysis from the hot tub. Numerous chronic and continual sanitation deficiencies were well documented for the hot tub. Five of the six environmental samples collected for laboratory analysis were reported as positive for the presence of *Legionella pneumophila Gp 1.* The free chlorine level of the collected samples that were positive was less than or equal to 0.1 ppm upon receipt by the laboratory. The sixth sample was negative for *Legionella pneumophila Gp 1* and had a free chlorine level upon arrival of 0.2 ppm. Neutralization of the free chlorine level of the samples from 5.0 ppm at the time of collection to less than 0.1 ppm was accomplished by adding two sodium thiosulfate tablets to each 100 milliliter sample and 20 tablets to the 1 liter sample at the time of collection. Prior attempts to neutralize water samples with high chlorine residuals from hot tubs and swimming pools utilized a single tablet for 100 milliliter samples and 10 tablets for a 1 liter sample without success in lowering the free chlorine levels to less than 0.1 ppm. The sodium thiosulfate tablets are those found in the State of Florida approved routine water sample kits. The tablets that were added during all sample collections were 100mg each with 10mg sodium thiosulfate. The finding of *Legionella pneumophila Gp 1* in a hot tub indicates chronic low disinfection levels and insufficient maintenance practices that prevent the spread of communicable diseases.

Bodager D, Walsh D, Osias T, Overfield D. "Legionella Positive Environmental Samples from a Hot Tub at a Local Resort Hotel, Orange County, December, 2008*", Florida Journal of Environmental Health*, Spring, 2009, Issue 202, p.5-6.

Correlates of smoking quit attempts: Florida Tobacco Callback Survey, 2007

OBJECTIVE: The public health burden of tobacco-associated diseases in the USA remains high, in part because many people's attempts to quit are unsuccessful. This study examined factors associated with having lifetime or recent attempts to quit smoking among current smokers, based on a telephone survey of Florida adults. METHODS: Data from the 2007 telephone-based Florida Behavioral Risk Factor Surveillance System (BRFSS) and its follow-up survey, the Tobacco Callback Survey, were used to assess determinants of having ever attempted to quit smoking and attempted to quit smoking in the past 12 months. All analyses were conducted using SAS. RESULTS: Among 3,560 current smokers, 41.5% reported having tried to quit smoking in the past 12 months while 83.4% reported having ever tried to quit. Having a history of a tobacco-related medical condition was significantly associated with both recent (Adjusted Odds Ratio (AOR) 1.41 [Confidence Interval 1.19-1.65]) and lifetime quit attempts (AOR 1.43 [1.15-1.79]). Greater nicotine dependence and being advised by a physician to quit smoking were also positively associated with lifetime quit attempts. Receipt of healthcare provider advice to quit smoking in the past 12 months and a strong belief that quitting following a long history of regular smoking would not result in health benefits and belief that there are health benefits to quitting smoking were associated with lifetime quit attempts. CONCLUSION: Targeted smoking cessation interventions are needed for smokers with selected medical conditions and with high nicotine dependence. The importance of physician advice in encouraging individuals to quit is further highlighted.

Davila EP, Zhao W, Byrne M, Webb M, **Huang Y,** Arheart K, Dietz N, Caban-Martinez A, Parker D, Lee DJ. “Correlates of smoking quit attempts: Florida Tobacco Callback Survey, 2007.” *Tob Induc Dis*. 2009 Jun 29;5:10.

Cluster of Serogroup W135 Meningococci, Southeastern Florida, 2008–2009

Recently, 14 persons in southeastern Florida were identified with *Neisseria meningitidis* serogroup W135 invasive infections. All isolates tested had matching or near-matching pulsed-field gel electrophoresis patterns and belonged to the multilocus sequence type 11 clonal complex. The epidemiologic investigation suggested recent endemic transmission of this clonal complex in southeastern Florida.

Doyle T, Mejia-Echeverry A, Fiorella P, Leguen F, Livengood J, Kay R, Hopkins R. “Cluster of Serogroup W135 Meningococci, Southeastern Florida, 2008–2009” *Emerging Infectious Diseases*, Vol. 16, No. 1, January 2010.

Emergence of blaKPC-containing *Klebsiella pneumoniae* in a long-term acute care hospital: a new challenge to our healthcare system

OBJECTIVES: To characterize isolates of *Klebsiella pneumoniae* producing KPC carbapenemase (KPC-Kp) associated with an outbreak in a long-term acute care hospital (LTACH) in South Florida. METHODS: During 21 March to 20 April 2008, 241 K. pneumoniae isolates detected at Integrated Regional Laboratories (Ft. Lauderdale, FL) for which the ertapenem MICs were > or =4 mg/L were studied. PCR, cloning and sequence analysis were used to detect bla(KPC) and to characterize the beta-lactamase and outer membrane proteins (Omps). The expression level of KPC enzymes was studied by immunoblotting. Genetic relatedness of isolates was investigated with rep-PCR and PFGE. Clinical records of patients were investigated. RESULTS: Seven KPC-Kp strains were isolated from different patients located at a single LTACH, with a further three isolates being recovered from patients at different hospitals. All KPC-Kp isolates in patients from the LTACH and from one hospital patient were genetically related and shared PFGE patterns that clustered with known sequence type (ST) 258 strains. These strains were highly resistant to carbapenems (MICs > or = 32 mg/L) due to an increased level of KPC expression and loss of Omps. Rectal colonization was documented in all LTACH patients with KPC-Kp isolates. Treatment failures were common (crude mortality rate of 69%). Active surveillance and enhanced infection control practices terminated the KPC-Kp outbreak. CONCLUSIONS: The detection of KPC-Kp in an LTACH represents a serious infection control and therapeutic challenge in a new clinical setting. The speed at which the epidemic of KPC-Kp is spreading in our healthcare system mandates urgent action.

Endimiani A, **Depasquale JM**, Forero S, Perez F, Hujer AM, Roberts-Pollack D, **Fiorella PD**, **Pickens N**, Kitchel B, Casiano-Colón AE, Tenover FC, Bonomo RA. Emergence of blaKPC-containing *Klebsiella pneumoniae* in a long-term acute care hospital: a new challenge to our healthcare system. *J Antimicrob Chemother*. 2009 Nov;64(5):1102-10.

Self-rated depression and physician-diagnosed depression and anxiety in Florida adults: Behavioral Risk Factor Surveillance System, 2006

INTRODUCTION: Our purpose was to determine the prevalence and correlates of self-reported symptoms of depression and physician-diagnosed depression and anxiety in Florida adults by using the 2006 Florida Behavioral Risk Factor Surveillance System (BRFSS). METHODS: The BRFSS is an ongoing, state-based telephone health survey of noninstitutionalized adults that uses random-digit dialing. In 2006, an Anxiety and Depression Module was administered in Florida. Eight questions were used to examine current depression. Two additional questions assessed health care provider diagnosis of depressive and anxiety disorders. We used SUDAAN version 9.0 to evaluate the data to accommodate the complex sampling design. RESULTS: Approximately 9% of Florida adults experienced current depression; about 13% had had a diagnosis of depression in their lifetime and 11% had a diagnosis of anxiety in their lifetime. Approximately 44% of respondents with current depression had not had a diagnosis of depression. Current depression and lifetime diagnosis of depression and anxiety were independently associated with sociodemographic variables (being a woman, young, previously married or never married, or unemployed or unable to work), adverse health behaviors (current or former smoking, physical inactivity, or obesity), and chronic health conditions (history of a stroke, diabetes, or asthma). Although the prevalence of depression among non-Hispanic blacks and people with low education levels is higher, members of these groups are less likely than members of other sociodemographic groups to have had depression diagnosed by a physician. CONCLUSION: Depression and anxiety are associated with sociodemographic disadvantages and chronic conditions and risk factors. Knowing the prevalence of depression and anxiety, both self-rated and physician-diagnosed, is useful in identifying unmet mental health needs among subpopulations.

Fan AZ, Strine TW, **Huang Y**, **Murray MR**, Musingo S, Jiles R, Mokdad AH. “Self-rated depression and physician-diagnosed depression and anxiety in Florida adults: Behavioral Risk Factor Surveillance System, 2006.” *Prev Chronic Dis*. 2009 Jan;6(1):A10.

Improvement of a selective media for the isolation of *B. anthracis* from soils

To prove linkage between an environmental sample and an anthrax case, there must be isolates obtained from both that can be compared. Although *Bacillus anthracis* is easily isolated from powder samples, isolating it from soil is difficult because of the high bacterial count in it. Formulations of PLET were prepared, inoculated with *B. anthracis, B. cereus* and *B. thuringiensis* and examined for growth. Two hundred eighty-three isolates including 23 *B. anthracis* were placed onto one formulation while MICs against trimethoprim-sulfamethoxazole were determined. The media supported *B. anthracis* growth at 30 degrees C and inhibited almost all other bacterial growth, including closely-related species. Sensitivity for *B. anthracis* and selectivity against other Bacillus and against non-Bacillus were 96.8%, 100% and 97.2% respectively. Isolates that grew had MICs >4 and >76 microg mL(-1) against trimethoprim and sulfamethoxazole, respectively. Soils spiked with 10(2)*B. anthracis* spores and suspended in PLET broth yielded a 6-7 log(10) increase in *B. anthracis*. Other growth was inhibited. PLET supplemented with sulfamethoxazole (38 microg mL(-1)), trimethoprim (2 microg mL(-1)), polymyxin B (15,000 U L(-1)), and lysozyme (150,000 U L(-1)) can successfully select for B. *anthracis* and will facilitate agricultural, environmental and forensic investigations of *B. anthracis* isolates.

Luna VA, Gulledge J, Cannons AC, **Amuso PT**: Improvement of a selective media for the isolation of *B. anthracis* from soils. *J Microbiol Methods*. 2009 Dec;79(3):301-6.

Bladder cancer clusters in Florida: identifying populations at risk

PURPOSE: Modifiable risk factors for bladder cancer have been identified, ie tobacco and chemical exposure. We identified high risk bladder cancer areas and risk factors associated with bladder cancer clusters in Florida using individual and area based data. MATERIALS AND METHODS: Spatial modeling was applied to 23,266 early and advanced bladder cancer cases diagnosed between 1998 and 2002 in Florida to identify areas of excess bladder cancer risk. Multivariable regression was used to determine whether sociodemographic indicators, smoking history and proximity to known arsenic contaminated drinking water well sites were associated with bladder cancer diagnosis in a specific area (cluster). RESULTS: A total of 25 clusters were found to have a higher than expected bladder cancer rate, including 13 and 12 of early and late stage disease, respectively. Urban white patients were more likely to live in an advanced bladder cancer cluster. Advanced bladder cancer cluster membership was associated with living in close proximity to known arsenic contaminated drinking water wells. CONCLUSIONS: There are multiple areas of early and late stage bladder cancer clusters in Florida. Individuals in an advanced bladder cancer cluster tended to live close to arsenic contaminated wells. Increased evaluation of potentially contaminated well water is warranted in these high risk areas. Targeted bladder cancer public awareness campaigns, smoking cessation support and potentially targeted screening should also be considered in communities at increased risk for bladder cancer. Our analytical approach can also be used by others to systematically identify communities at high risk for bladder and other cancers.

Nieder AM, MacKinnon JA, **Fleming LE, Kearney G**, Hu JJ, Sherman RL, **Huang Y**, Lee DJ. Bladder Cancer Clusters in Florida: Identification of Populations at Risk. *J Urology* 2009;182(1):46-50.

Impact of a Mobile Van on Prenatal Care Utilization and Birth Outcomes in Miami-Dade County

The study aimed to determine if there was a difference in prenatal care utilization and birth outcomes among demographically similar women who used or did not use a mobile van for prenatal care. Mothers who utilized the mobile van at least one time for their prenatal care and delivered between August 2007 through September 2008 were considered the Mobile group (n = 182) and a Comparison group of the same size who delivered within the same time period was randomly matched by sociodemographic characteristics. Birth data was obtained from Florida Department of Health Office of Vital Statistics and from the mobile clinic's Health Management System (HMS) database. Nearly 95% of mothers in both groups were foreign born, with the majority from Mexico. The evaluation of prenatal care showed that there was a significant difference (P = 0.0006) in the trimester in which mothers began care. Both the Kessner (P = 0.0003) and Kotelchuck (\0.0001) Indices demonstrated a statistically significant difference in that more mothers in the Mobile group had adequate care. Birth weight distribution did not reveal a statistically significant difference (P = 0.0911) however the Mobile group did have a lower percentage of low birth weight infants (4.4% vs. 8.8%). There was a statistically significant difference in the amount of pre-term births (P = 0.0492) between the groups. The results suggest that a mobile van can be used to improve both early access to adequate prenatal care as well as birth outcomes such as prematurity.

O'Connell E, Zhang G, Leguen F, Prince J. "Impact of a Mobile Van on Prenatal Care Utilization and Birth Outcomes in Miami-Dade County." *Matern Child Health J*. 2009 Aug 15. [Epub ahead of print]

Correlations between microbial indicators, pathogens, and environmental factors in a subtropical estuary

The objective of this study was to evaluate whether indicator microbes and physical-chemical parameters were correlated with pathogens within a tidally influenced Estuary. Measurements included the analysis of physical-chemical parameters (pH, salinity, temperature, and turbidity), measurements of bacterial indicators (enterococci, fecal coliform, *Escherichia coli*, and total coliform), viral indicators (somatic and MS2 coliphage), viral pathogens (enterovirus by culture), and protozoan pathogens (Cryptosporidium and Giardia). All pathogen results were negative with the exception of one sample which tested positive for culturable reovirus (8.5MPN/100L). Notable physical-chemical parameters for this sample included low salinity (<1ppt) and high water temperature (31 degrees C). Indicator bacteria and indicator virus levels for this sample were within average values typically measured within the study site and were low in comparison with levels observed in other freshwater environments. Overall results suggest that high levels of bacterial and viral indicators were associated with low salinity sites.

Ortega C, Solo-Gabriele HM, Abdelzaher A, Wright M, Deng Y, **Stark LM**. Correlations between microbial indicators, pathogens, and environmental factors in a subtropical estuary. *Mar Pollut Bull*. 2009 Sep;58(9):1374-81.

Isolation of genotype V St. Louis encephalitis virus in Florida

We isolated and characterized St. Louis encephalitis virus (SLEV) from cloacal swabs of naturally exposed adult sentinel chickens in 2006. Phylogenetic analysis of SLEV strains isolated in Florida indicated that Brazilian SLEV circulated in 1972 and 2006; lineages were VA and VB.

Ottendorfer CL, Ambrose JH, White GS, Unnasch TR, **Stark LM**. Isolation of genotype V St. Louis encephalitis virus in Florida. *Emerg Infect Dis*. 2009 Apr;15(4):604-6.

Assessment of body mass index screening of elementary school children – Florida, 2007-2008

The prevalence of childhood obesity has increased substantially in the United States and is associated with chronic diseases. State level surveillance is needed to monitor trends and investigate risk factors. In addition, data that identify at-risk communities can be used to inform those communities regarding childhood obesity. Body mass index (BMI) screening of Florida school children has been performed since 2001 as part of growth and development screening services and conducted by school districts and county health departments. Aggregated BMI data, by grade and county, are reported annually to the Florida Department of Health (FDOH). In 2008, FDOH considered establishing a more extensive statewide BMI surveillance system. To begin planning for such a system, during February-March 2008, FDOH surveyed school health coordinators in Florida's 67 counties to assess qualities of BMI screening activities. Among 66 counties that provided complete surveys, 58 (88%) screened >or=75% of children in the first, third, and sixth grades, and 51 (77%) had written protocols or guidelines for measuring weight, height, or BMI. Nineteen counties (29%) were training >or=90% of their screeners, and 21 (32%) consistently used appropriate equipment for measuring height and weight. Thirty-one counties (47%) used appropriate electronic systems to calculate BMI percentile-for-age. BMI screening activities need improvement in policy and guideline development, training procedures, appropriate selection and use of equipment, and use of electronic data systems before Florida establishes a more extensive statewide surveillance system.

CDC. Assessment of body mass index screening of elementary school children – Florida, 2007-2008. *MMWR*. 2009 May 9;58(17):460-3. (Contributors: **Sohyun Park, Roger Evans, William Sappenfield, Margaret Oxamendi, and Carol Vickers**)

Reliability and validity of birth certificate prepregnancy weight and height among women enrolled in prenatal WIC program, Florida, 2005

To investigate the reliability and validity of weight, height, and body mass index (BMI) from birth certificates with directly measured values from the Women, Infants, and Children (WIC) Program. Florida birth certificate data were linked and compared with first trimester WIC data for women with a live birth during the last quarter of calendar year 2005 (n = 23,314 women). Mean differences for weight, height, and BMI were calculated by subtracting birth certificate values from WIC values. Reliability was estimated by Pearson's correlation. Validity was measured by sensitivity and specificity using WIC data as the reference. Overall mean differences plus or minus standard error (SE) were 1.93 +/- 0.04 kg for weight, -1.03 +/- 0.03 cm for height, and 1.07 +/- 0.02 kg/m(2) for BMI. Pearson's correlation ranged from 0.83 to 0.95, which indicates a strong positive association. Compared with other categories, women in the second weight group (56.7-65.8 kg), the highest height group (>/=167.6 cm), or BMI < 18.5 had the greatest mean differences for weight (2.2 +/- 0.08 kg), height (-2.4 +/- 0.05 cm), and BMI (1.5 +/- 0.06), respectively. Mean differences by maternal characteristics were similar, but statistically significant, likely in part from the large sample size. The sensitivity for birth certificate data was 77.3% (+/-1.42) for underweight (BMI < 18.5) and 76.4% (+/-0.51) for obesity (BMI >/= 30). Specificity was 96.8% (+/-0.12) for underweight and 97.5% (+/-0.12) for obesity. Birth certificate data had higher underweight prevalence (6 vs. 4%) and lower obesity prevalence (24 vs. 29%), compared with WIC data. Although birth certificate data overestimated underweight and underestimated obesity prevalence, the difference was minimal and has limited impact on the reliability and validity for population-based surveillance and research purposes related to recall or reporting bias.

Park S, Sappenfield WM, Bish C, Bensyl DM, **Goodman D, Menges J**. Reliability and validity of birth certificate prepregnancy weight and height among women enrolled in prenatal WIC program, Florida, 2005. *Matern Child Health J*. 2009 Nov 24. [Epub ahead of print]

Validation of ethnicity in cancer data: which Hispanics are we misclassifying?

The study of cancer in Hispanics in the United States has been hindered by misclassification of Hispanics as non-Hispanic and by the convenient practice of aggregating the diverse Hispanic subgroups into a general Hispanic category. The Hispanic Origin Identification Algorithm (HOIA) was developed to improve the identification of both the general Hispanic ethnicity and the specific Hispanic subgroup in cancer incidence data. Using an independent study of prostate cancer cases from South Florida as the "gold standard" and the Florida incident cancer registry data, we validated this algorithm and studied the characteristics of those Hispanics whose ethnicity was commonly missed in the cancer registry records. Overall, agreement between the gold standard information (derived from self-report) and HOIA derived ethnicity was 97%. For Hispanic subgroup, among a subset of subjects with known birthplace, the percent agreement was 98%. After HOIA, age-adjusted Hispanic cancer rates reflected an increase of 8% in males and 10% in females. Hispanics born in the United States were 4.6 times more likely to be misclassified as non-Hispanic than foreign-born Hispanics; black Hispanics 2.5 times more than whites; and women 1.3 times more than men. HOIA is a valid and effective tool for improving the accuracy of both general Hispanic ethnicity and Hispanic subgroup data in cancer registries. Improved procedures for identifying and recording ethnicity in health facilities are recommended, particularly focusing on improving the information gathered on Hispanics born in the United States, or who are black or female.

Pinheiro PS, Sherman R, **Fleming LE**, Gomez-Marin O, **Huang Y**, Lee DJ, Penedo FJ. "Validation of ethnicity in cancer data: which Hispanics are we misclassifying?" *J Registry Manag*. 2009 Summer;36(2):42-6.

Cancer incidence in first generation U.S. Hispanics: Cubans, Mexicans, Puerto Ricans, and new Latinos

BACKGROUND: The diversity among Hispanics/Latinos, defined by geographic origin (e.g., Mexico, Puerto Rico, Cuba), has been neglected when assessing cancer morbidity. For the first time in the United States, we estimated cancer rates for Cubans, Mexicans, Puerto Ricans, and other Latinos, and analyzed changes in cancer risk between Hispanics in their countries of origin, U.S. Hispanics in Florida, and non-Hispanic Whites in Florida. METHODS: Florida cancer registry (1999-2001) and the 2000 U.S. Census population data were used. The Hispanic Origin Identification Algorithm was applied to establish Hispanic ethnicity and subpopulation. RESULTS: The cancer rate of 537/100,000 person-years (95% confidence interval, 522.5-552.5) for Hispanic males in Florida was lower than Whites (601; 595.4-606.9). Among women, these rates were 376 (365.6-387.1) and 460 (455.6-465.4), respectively. Among Florida Hispanics, Puerto Ricans had the highest rates, followed by Cubans. Mexicans had the lowest rates. Rates for Hispanics in Florida were at least 40% higher than Hispanics in their countries of origin, as reported by the IARC. CONCLUSION: Substantial variability in cancer rates occurs among Hispanic subpopulations. Cubans, unlike other Hispanics, were comparable with Whites, especially for low rates of cervical and stomach cancers. Despite being overwhelmingly first generation in the U.S. mainland, Puerto Ricans and Cubans in Florida showed rates of colorectal, endometrial, and prostate cancers similar to Whites in Florida. Because rates are markedly lower in their countries of origin, the increased risk for cancer among Cubans, Mexicans, and Puerto Ricans who move to the United States should be further studied.

Pinheiro P, Sherman R, Trapido E, **Fleming LE, Huang Y**, Gomez Marin O, Lee DJ. Cancer incidence in first generation US Hispanics: Cubans, Mexicans , Puerto Ricans and New Latinos. *Cancer Epidemiology, Biomarkers & Prevention* 2009;18(8):2162-2169.

Acute lung injury outside of the ICU: incidence in respiratory isolation on a general ward

BACKGROUND: Epidemiologic investigations of acute lung injury (ALI) and ARDS have focused on mechanically ventilated patients in ICUs, and have reported high mortality rates. We sought to determine the incidence and lethality of these syndromes in the respiratory isolation areas of general wards, a non-ICU setting that often serves patients with acute lung processes.
METHODS: We prospectively studied all patients who were admitted to respiratory isolation rooms on the general wards of a large tertiary care hospital over a 1-year period. Patients were classified as having ALI or ARDS if they met consensus definitions for the syndromes. Characteristics and outcomes were compared to those of other patients who had been admitted to a respiratory isolation room with infiltrating lung disease but lacking bilateral infiltrates, hypoxemia, or both.
RESULTS: Of 715 patients admitted to respiratory isolation rooms on general wards, 474 (66%) had acute infiltrates. ALI criteria were met by 9% of patients (62 of 715 patients), with 2% of patients (15 of 715) satisfying the criteria for ARDS. Respiratory distress was present in 71% of ALI patients (44 of 62 patients) and 32% of patients (130 of 412 patients) with acute infiltrates who did not have ALI ($p < 0.001$). However, the 90-day survival rates (ALI patients, 88%; patients with acute infiltrates who did not have ALI, 90%) was similar between the two groups ($p > 0.50$).
CONCLUSIONS: ALI and ARDS may be frequent among patients who are admitted to

respiratory isolation beds outside of ICUs. Mortality rates are substantially lower than **those** typically reported from surveys of ventilated ICU patients with ALI and ARDS.

Quartin AA, Campos MA, Maldonado DA, **Askin D**, Cely CM, Schein RM. "Acute lung injury outside of the ICU: incidence in respiratory isolation on a general ward." *Chest.*, 2009, Vol. 135, No. 2, pp. 261-268.

Working to prevent lead poisoning in children: Getting the lead out

Introduction: A common environmental contaminant, lead is a naturally occurring metal with no known biological role in the body. Toxicity was recognized as early as 200 BC in Rome with lead-induced gout developing in individuals using drinking vessels made from lead or drinking wine sweetened with lead. In children, lead is a recognized neurotoxin and has been associated with impaired cognitive, motor, developmental and behavioral abilities. At very high levels, it can cause seizures, coma and death. Since lead poisoning is often insidious and asymptomatic, it frequently goes unrecognized. The Centers for Disease Control and Prevention (CDC) have progressively lowered the definition of elevated blood lead levels (BLL) over the years. The Healthy People Objectives for the Nation recommend the elimination of BLL $\geq$ 10 micrograms/ deciliter (ug/dl) by 2010 (1). However, no safe threshold has been determined regarding the potentially harmful effects on children.

Ragan, P, Turner, T. (2009) "Working to prevent lead poisoning in children: Getting the lead out." *J of the Am Acad of Phys As.* 22(7): 40-45.

Has the time come to discontinue proficiency testing? [Editorial]

DRUG SUSCEPTIBILITY proficiency testing provides only a snapshot of a laboratory's performance, begging the question: Are the results of proficiency testing relevant and beneficial to the laboratory and TB control program staff? Readers often confuse proficiency testing with external quality assessment. The World Health Organization (WHO), in its most recent guidelines for the programmatic management of drug-resistant tuberculosis (DR-TB), states that the Supranational Reference Laboratory (SRL) network should ensure drug susceptibility standards by establishing an external quality assurance system before the implementation of DR-TB control programs. At a minimum, external quality assurance should include 1) an initial assessment, 2) proficiency testing with an adequate number of coded isolates and 3) periodic checking of isolates obtained within the DR-TB control program.

In this issue, Shulgina and coauthors report on the 2005 expansion of a successful external quality assessment initiative of the Russian National Center for External Quality Assessment in Laboratory Medicine in collaboration with the Swedish Institute for Infectious Disease Control and the WHO.2 This is welcome news, as the Russian Federation reports multidrug resistance rates of 10–20% among new TB cases. Although only 42 of the more than 300 civilian and 90 prison system TB laboratories that perform first-line drug susceptibility testing (DST) were enrolled in the study's first phase, there were 150 enrolled in 2008. There are several take-home messages from this report for readers and policy makers:

- Participating laboratories had to adhere to international biosafety standards and pass an inspection.
- Testing results for isoniazid and rifampicin were more easily reproduced than those for ethambutol and streptomycin. This confirms findings from the WHO and the WHO Western Pacific Region.
- Laboratories participating in all three rounds showed higher proficiency than laboratories participating only once or twice.
- After each round of proficiency testing, the National Center called the laboratories to a meeting to discuss the results. As an added value, these meetings increased buy-in and on-going commitment from the attendees.

The group agreed that below 90% accuracy (ratio of the number of accurate results among all results) was an *unacceptable* level for isoniazid and rifampicin. Until recently, DST results were mainly used for surveillance purposes and policy decisions; therefore, quality was key and timeliness came second. In today's global environment with MDR- and XDRTB, DST results are increasingly used for real-time patient care. Therefore, quality must be coupled with a timely result. TB control programs and laboratory scientists should include monitoring of turnaround times (from date of specimen collection to date of reporting results) in the external quality assessment. Furthermore, proficiency testing isolates should be more fully characterized, including molecular analysis of drug resistance mutations in relevant genes such as *rpoB, katG, inhA*, etc., as well as determination of the minimal inhibitory concentration against compounds in question. This additional information can aid in resolving discrepant results and indicate future directions for proficiency testing. Coming back to the initial question, proficiency testing results will be increasingly useful to laboratory and program staff in future years. Dr. Shulgina and her co-authors are to be congratulated on the magnitude of their effort and on the transparency with which it is reported.

Salfinger M, Ahmedov S. Has the time come to discontinue proficiency testing? *Int J Tuberc Lung Dis*. 2009 Oct;13(10):1193.

"Mycobacterium canettii" **isolated from a human immunodeficiency virus-positive patient: first case recognized in the United States**

We report the first case of tuberculosis caused by "Mycobacterium canettii" recognized in the United States. The pathogen was isolated from the cerebrospinal fluid of a 30-year-old Sudanese refugee.

Somoskovi A, Dormandy J, Mayrer AR, Carter M, Hooper N, **Salfinger M**. "Mycobacterium canettii" isolated from a human immunodeficiency virus-positive patient: first case recognized in the United States. *J Clin Microbiol*. 2009 Jan;47(1):255-7.

An accelerated method for isolation of *Salmonella enterica* serotype Typhimurium from artificially contaminated foods, using a short preenrichment, immunomagnetic separation, and xylose-lysine-desoxycholate agar (6IX method)

Rapid isolation of *Salmonella* from food is essential for faster typing and source tracking in an outbreak. The objective of this study was to investigate a rapid isolation method that would augment the standard U.S. Food and Drug Administration's Bacteriological Analytical Manual (BAM) method. Food samples with low microbial load, including egg salad and ice cream, moderately high-microbial-load tomatoes, and high-microbial-load ground beef were intentionally inoculated with 2 to 48 CFU of *Salmonella enterica* serotype Typhimurium. The samples were preenriched in buffered peptone water for 6 h, and then selectively concentrated by immunomagnetic separation and plated for isolation on xylose-lysine-desoxycholate agar: the 6IX method. *Salmonella* Typhimurium was presumptively identified from approximately 97% of the low-microbial-load and moderately high-microbial-load samples by the 6IX method 2 days before the BAM standard method for isolation of Salmonella. In 49% of the beef samples, *Salmonella* Typhimurium was presumptively identified 1 or 2 days earlier by the 6IX method. Given the inocula used, our data clearly indicated that for most of the food samples tested, with the exception of ground beef, *Salmonella* Typhimurium could be isolated two laboratory days earlier with the 6IX method compared with the BAM method. In conclusion, this 6IX method may expedite *Salmonella* isolation and, therefore, has the potential to accelerate strain tracking for epidemiological analysis in a foodborne outbreak.

Tatavarthy A, Peak K, Veguilla W, Cutting T, Harwood VJ, Roberts J, **Amuso P**, Cattani J, Cannons A. An accelerated method for isolation of *Salmonella enterica* serotype Typhimurium from artificially contaminated foods, using a short preenrichment, immunomagnetic separation, and xylose-lysine-desoxycholate agar (6IX method). *J Food Prot.* 2009 Mar;72(3):583-90.

Patient-to-Patient Hepatitis C Virus Transmission in an Abdominal Organ Transplant Service

Background. De novo hepatitis C virus (HCV) infection among transplant patients is rarely recognized but can have severe consequences. We investigated the scope, source, and mode of HCV transmission within a transplant center after incident HCV infection was identified in 2 patients who had liver transplantation in late 2006.

Methods. Patients were interviewed, and transplant logs, medical records, and staff practices were reviewed to identify opportunities for HCV transmission. Infection via receipt of blood or organs was
evaluated. Molecular epidemiology was used to determine the relatedness between persons with incident and chronic HCV infection.

Results. HCV from infected blood or organ donors was ruled out. Among the 308 patients who underwent transplant in 2006, no additional incident HCV infections were identifed. Eighty-five (28%) had pre-transplant chronic HCV infection; 13 were considered possible HCV source patients based upon shared days on the inpatient unit, nursing assignment, or invasive procedures in common with incident HCV case-patients. Viral isolates from 1 HCV source patient and 1 incident case-patient were found to be highly related by quasi-species analysis, confirming patient-to-patient HCV transmission. Possible modes of transmission identified were the improper use of multidose vials, sharing of blood-contaminated glucometers, and touch contamination.

Conclusion. Sporadic transmission or endemic levels of HCV transmission might be overlooked in a setting with high HCV prevalence, such as liver transplant units, where multiple, repeated opportunities for patient-to-patient HCV transmission can occur. Surveillance through pre- and post-transplant screening is necessary to identify incident HCV infection in this setting. Constant, meticulous attention must be paid to maintaining aseptic technique and good infection control practices to eliminate HCV transmission opportunities.

Thompson ND, Hellinger WC, **Kay RS**, Cohen L, Ragan P, Voss RA, Xia G, Keating MR, Dickson RC, Hughes CB, Williams IT, Perz JF. (2009) "Patient-to-Patient Hepatitis C Virus Transmission in an Abdominal Organ Transplant Service." *Transplant Infectious Disease*, 11(4), pg 324-329.

A comprehensive evaluation of outcomes for inflammatory breast cancer

OBJECTIVE: Inflammatory breast cancer (IBC) remains the breast malignancy with the worst prognosis. We sought to determine the effects of race, socioeconomic status and treatment on outcomes for women with IBC. Study design The Florida cancer registry, inpatient and ambulatory data were queried for patients diagnosed from 1998 to 2002. RESULTS: A total of 935 patients with IBC were identified (1.5% of all breast cancers). Overall, 83.1% were Caucasian, 13.9% African American (AA), and 15.7% Hispanic. The mean age of diagnosis was 57 years old. AA patients presented at a younger age, with higher tumor grade, and were less likely to undergo surgical therapy than their Caucasian counterparts. Median survival time (MST) for the entire cohort was 32 months, while MST for AA patients was 20 months. Patients who received chemotherapy before surgery, surgery without chemotherapy, and surgery before chemotherapy demonstrated an independent, significantly improved outcome in comparison to patients who underwent chemotherapy without surgical extirpation. The administration of radiation therapy did not demonstrate an improvement in survival. By multivariate analysis, AA race (HR = 2.19) and failure to provide surgery (HR = 2.3) were independent predictors of worse prognosis. No effect of poverty or ethnicity on outcome was observed. CONCLUSIONS: IBC carries a poor prognosis for all patients with significantly worse outcomes for AA women. Multimodality therapy provided the best survival rates.

Yang R, Cheung MC, Hurley J, Byrne MM, **Huang Y**, Zimmers TA, Koniaris LG. "A comprehensive evaluation of outcomes for inflammatory breast cancer." *Breast Cancer Res Treat.* 2009 Oct;117(3):631-41.

Section 8

Summary of Cancer Data

Summary of Cancer Data, 2007

Cancer incidence data are collected, verified, and maintained by the Florida Cancer Data System (FCDS), Florida's statewide cancer registry. The FCDS is administered by the Florida Department of Health Bureau of Epidemiology and operated by the Sylvester Comprehensive Cancer Center at the University of Miami Leonard M. Miller School of Medicine.

The FCDS began operation with a pilot project for cancer registration in 1980 and commenced statewide collection of cancer incidence data from all Florida hospitals in 1981. The FCDS now collects incidence data from hospitals, freestanding ambulatory surgical centers, radiation therapy facilities, pathology laboratories, and private physician offices. Each facility, laboratory, and practitioner is required to report the FCDS within six months of each diagnosis and within six months of the date of each treatment. Consequently, there is an inherent time lag in the release of cancer registry data for surveillance activities.

During 2007, physicians diagnosed 103,075 primary cancers among Floridians, an average of 282 cases per day. Cancer occurs predominantly among older people as age is the top risk factor. Approximately 59% of the newly diagnosed cancers in 2007 occurred in persons age 65 and older; this age group accounts for 18% of Florida's population. The four most common cancers in Floridians were lung and bronchus (15,854 cases), prostate (15,151 cases), female breast (13,277 cases), and colorectal (10,001 cases), which accounted for 57% of all new cases in blacks, and 52% in whites. Fifty-three percent of new cancers were diagnosed in males. The number of new cancer cases in Florida's five most populous counties (Broward, Miami-Dade, Hillsborough, Palm Beach, and Pinellas) accounted for 39% of the new cancer cases in Florida in 2007.

Over the 27-year period from 1981 to 2007, males had a higher incidence (age-adjusted incidence rate) than females. Among blacks, the incidence among males was between 55% and 102% higher than that among females, depending on the cancer site of comparison. Among whites, the incidence among males was between 28% and 53% higher than that among females. White females had higher age-adjusted incidence rates than black females in all 27 years. The racial disparity varied between 10% and 27%. Black males had higher age-adjusted incidence rates than white males in all years, except in 1987, 1988, and 2006. The racial disparity between black and white males increased from 1989 until 1995; however, has steadily declined since 1996.

More information about the burden of cancer in Florida is provided in the *Florida Annual Cancer Report,* an epidemiological series, available on the department's web site at www.doh.state.fl.us/disease_ctrl/epi/cancer/CancerIndex.htm, or the FCDS web site at www.fcds.med.miami.edu.

Table 1. Number of New Cancer Cases by Sex and Race, Florida, 2007

	All Cancers	Lung & Bronchus	Prostate	Breast	Colorectal	Bladder	Head & Neck	Non-Hodgkin[1]	Melanoma	Ovary	Cervix
Florida[2]	103,075	15,854	15,151	13,277	10,001	4,820	4,031	3,975	3,964	1,416	880
Female	48,114	7,306	-	13,277	4,838	1,180	1,100	1,799	1,533	1,416	880
Male	54,862	8,523	15,151	-	5,147	3,634	2,928	2,172	2,430	-	0
Black	9,511	1,189	1,939	1,384	934	163	333	315	-	110	156
White	90,365	14,376	12,682	11,414	8,771	4,520	3,581	3,536	3,964	1,264	690
Black Female	4,162	405	-	1,226	530	57	92	147	-	117	159
White Female	41,236	6,769	-	11,203	4,270	1,041	968	1,635	1,342	1,315	719
Black Male	5,016	738	1,939	-	456	107	252	154	-	-	-
White Male	48,164	7,635	12,682	-	4,529	3,422	2,593	1,948	2,430	-	-

Source of data: Florida Cancer Data System

(1) Non-Hodgkin refers to Non-Hodgkin's lymphoma throughout this report.

(2) Florida incidence totals throughout this report include 1,502 new cancers in persons of "Other" races, 1,697 cases with unknown race, 90 cases with unknown or unspecified sex. Totals by sex include cases with unknown or Other race. Totals by race include cases with unknown sex.

Table 2. Number of New Cancer Cases by County, Florida, 2007

	All Cancers	Lung & Bronchus	Prostate	Breast	Colorectal	Bladder	Head & Neck	Non-Hodgkin	Melanoma	Ovary	Cervix
Florida	103,075	15,854	15,151	13,277	10,001	4,820	4,031	3,975	3,964	1,416	880
Alachua	1,063	155	171	136	110	41	60	31	36	12	12
Baker	124	30	14	14	15	^	^	^	^	^	^
Bay	932	166	140	126	79	35	49	32	36	12	16
Bradford	126	22	20	10	10	^	^	^	^	^	^
Brevard	3,868	645	542	439	364	217	167	134	154	62	15
Broward	8,942	1,260	1,140	1,264	840	386	323	368	360	136	109
Calhoun	76	16	^	^	15	^	^	^	^	^	^
Charlotte	1,453	253	274	155	102	91	51	46	65	^	^
Citrus	1,295	232	229	151	122	71	40	48	60	19	14
Clay	846	146	128	125	81	35	34	21	30	17	^
Collier	2,150	323	429	240	169	129	81	92	114	32	14
Columbia	329	61	38	37	44	10	22	12	13	^	^
Miami-Dade	11,037	1,285	1,729	1,530	1,209	397	441	453	188	175	137
DeSoto	176	24	35	26	19	10	^	^	^	^	^
Dixie	94	23	10	15	^	^	^	^	^	^	^
Duval	4,180	672	589	609	401	181	169	159	137	54	40
Escambia	1,568	274	241	202	138	63	62	56	51	18	15
Flagler	612	106	74	80	58	25	19	34	17	^	^
Franklin	50	^	^	^	^	^	^	^	^	^	^
Gadsden	226	32	30	42	24	^	^	14	^	^	^
Gilchrist	98	17	^	16	^	^	^	^	^	^	^
Glades	58	12	13	^	^	^	^	^	^	^	^
Gulf	83	15	11	11	10	^	^	^	^	^	^
Hamilton	74	13	10	^	14	^	^	^	^	^	^
Hardee	85	12	19	^	^	^	^	^	^	^	^

^ Statistics for cells with fewer than 10 cases are not displayed.
Source of data: Florida Cancer Data System

Table 2. (Continued) Number of New Cancer Cases by County, Florida, 2007

	All Cancers	Lung & Bronchus	Prostate	Breast	Colorectal	Bladder	Head & Neck	Non-Hodgkin	Melanoma	Ovary	Cervix
Hendry	139	24	22	18	11	^	^	^	11	^	^
Hernando	1,309	256	190	143	119	71	63	48	50	13	^
Highlands	790	130	125	72	85	32	42	23	49	^	^
Hillsborough	5,463	766	738	730	569	214	246	225	206	78	50
Holmes	102	24	14	11	11	^	^	^	^	^	^
Indian River	1,031	181	123	133	112	50	35	40	58	14	^
Jackson	283	55	49	35	33	^	^	^	^	^	^
Jefferson	75	16	10	15	^	^	^	^	^	^	^
Lafayette	25	^	^	^	^	^	^	^	^	^	^
Lake	2,375	359	446	268	230	125	78	80	112	33	18
Lee	3,639	562	674	383	331	212	153	146	169	38	24
Leon	906	133	156	139	78	19	34	27	39	24	^
Levy	240	53	44	25	29	13	14	^	^	^	^
Liberty	31	^	^	^	^	^	^	^	^	^	^
Madison	104	21	18	11	10	^	^	^	^	^	^
Manatee	1,952	310	310	249	203	110	82	71	73	24	14
Marion	2,475	439	427	306	247	111	93	92	84	39	13
Martin	1,106	183	177	134	79	73	52	28	47	15	^
Monroe	386	66	48	56	35	11	20	13	17	^	^
Nassau	391	62	65	62	34	17	23	11	13	^	^
Okaloosa	988	151	133	138	97	55	34	39	44	10	10
Okeechobee	227	53	24	29	26	10	^	^	^	^	^
Orange	4,289	574	573	617	419	163	166	196	152	63	52
Osceola	1,014	144	144	127	103	36	29	41	34	21	14
Palm Beach	8,260	1,176	1,042	1,026	732	437	283	367	408	111	59
Pasco	3,014	523	448	354	293	171	131	114	120	40	20

^ Statistics for cells with fewer than 10 cases are not displayed.
Source of data: Florida Cancer Data System

Table 2. (Continued) Number of New Cancer Cases by County, Florida, 2007

	All Cancers	Lung & Bronchus	Prostate	Breast	Colorectal	Bladder	Head & Neck	Non-Hodgkin	Melanoma	Ovary	Cervix
Pinellas	6,122	1,018	814	865	575	336	234	219	246	81	33
Polk	3,626	595	495	371	407	137	109	145	183	56	25
Putnam	500	107	73	53	45	24	27	20	18	10	^
Saint Johns	943	150	127	149	73	40	31	38	41	10	12
Saint Lucie	1,461	248	197	155	149	71	34	46	70	12	16
Santa Rosa	725	125	95	103	62	44	32	22	36	11	^
Sarasota	2,940	455	553	375	270	154	87	104	126	35	13
Seminole	1,731	209	261	251	169	75	65	77	85	19	12
Sumter	740	113	159	90	59	53	23	29	20	^	^
Suwannee	243	42	26	25	32	14	18	12	^	^	^
Taylor	105	24	18	10	10	^	10	^	^	^	^
Union	208	38	17	12	16	^	25	11	^	^	^
Volusia	3,107	562	340	414	325	166	132	109	100	46	26
Wakulla	125	24	22	17	12	^	^	^	^	^	^
Walton	235	48	20	37	24	^	^	^	11	^	^
Washington	105	23	18	10	13	^	^	^	^	^	^

^ Statistics for cells with fewer than 10 cases are not displayed.
Source of data: Florida Cancer Data System

Table 3. Age-Adjusted Incidence Rates[1] by Sex and Race, Florida, 2007

	All Cancers			Lung & Bronchus			Prostate			Breast			Colorectal			Bladder		
	Rate	CI		Rate	CI		Rate	CI		Rate	CI		Rate	CI		Rate	CI	
Florida[2]	441.2	438.5	444.0	64.8	63.8	65.8	136.2	134.0	138.4	110.8	108.8	112.7	41.8	40.9	42.6	19.5	18.9	20.0
Female	387.4	383.8	391.0	54.3	53.0	55.6				110.8	108.8	112.7	36.5	35.4	37.6	8.5	8.0	9.0
Male	512.0	507.6	516.3	78.0	76.4	79.7	136.2	134.0	138.4				48.2	46.9	49.6	33.7	32.6	34.8
Black	426.7	417.8	435.7	56.4	53.1	59.9	206.0	196.4	216.1	103.7	98.2	109.5	43.3	40.4	46.3	8.6	7.3	10.1
White	436.7	433.7	439.6	65.3	64.2	66.4	126.3	124.1	128.5	109.5	107.4	111.6	40.8	40.0	41.7	20.2	19.6	20.8
Black Female	350.7	340.3	361.4	36.7	33.3	40.3				103.7	98.2	109.5	38.4	35.0	42.2	4.8	3.6	6.3
White Female	387.4	383.5	391.3	55.9	54.5	57.3				109.5	107.4	111.6	35.7	34.5	36.8	8.8	8.3	9.4
Black Male	535.4	519.6	551.6	84.4	78.1	91.3	206.0	196.4	216.1				50.1	45.3	55.4	14.6	11.7	17.9
White Male	501.7	497.2	506.3	77.0	75.3	78.8	126.3	124.1	128.5				47.1	45.7	48.5	34.6	33.5	35.8

Source of data: Florida Cancer Data System

(1) Rates are expressed as number of cases per 100,000 population per year, adjusted to the 2000 U.S. standard population.
(2) Florida incidence rates throughout this report include 1,502 new cancers in persons of “Other” races, 1,697 cases with unknown race and 90 cases with unknown or unspecified sex. Rates calculated by sex include cases with unknown or other race. Rates by race include cases with unknown sex and age.

Table 3. (Continued) Age-Adjusted Incidence Rates(1) by Sex and Race, Florida, 2007

	All Cancers			Head & Neck			Non-Hodgkin			Melanoma			Ovary			Cervix		
	Rate	CI		Rate	CI		Rate	CI		Rate	CI		Rate	CI		Rate	CI	
Florida(2)	441.2	438.5	444.0	17.4	16.8	17.9	17.4	16.8	17.9	20.5	19.8	21.1	11.7	11.0	12.3	8.9	8.3	9.5
Female	387.4	383.8	391.0	8.8	8.2	9.3	14.3	13.6	15.0	16.0	15.1	16.8	11.7	11.0	12.3	8.9	8.3	9.5
Male	512.0	507.6	516.3	27.3	26.3	28.3	21.0	20.1	21.9	26.4	25.3	27.5						
Black	426.7	417.8	435.7	14.1	12.6	15.8	13.3	11.8	14.9				8.3	6.8	10.1	11.4	9.7	13.4
White	436.7	433.7	439.6	17.6	17.0	18.2	17.4	16.8	18.0	20.5	19.8	21.1	11.9	11.2	12.6	8.6	7.9	9.3
Black Female	350.7	340.3	361.4	6.1	4.8	7.7	12.5	10.6	14.6				8.3	6.8	10.1	11.4	9.7	13.4
White Female	387.4	383.5	391.3	8.9	8.4	9.5	14.1	13.4	14.9	16.0	15.1	16.8	11.9	11.2	12.6	8.6	7.9	9.3
Black Male	535.4	519.6	551.6	24.9	21.7	28.6	14.1	11.8	16.8									
White Male	501.7	497.2	506.3	27.4	26.3	28.5	21.2	20.3	22.2	26.4	25.3	27.5						

Source of data: Florida Cancer Data System
(1) Rates are expressed as number of cases per 100,000 population per year, adjusted to the 2000 U.S. standard population.
(2) Florida incidence rates throughout this report include 1,502 new cancers in persons of "Other" races, 1,697 cases with unknown race and 90 cases with unknown or unspecified sex. Rates calculated by sex include cases with unknown or other race. Rates by race include cases with unknown sex and age.

Table 4. Age-Adjusted Incidence Rates [1] by County, Florida, 2007

	All Cancers			Lung & Bronchus			Prostate			Breast			Colorectal		
	Rate	CI		Rate	CI		Rate	CI		Rate	CI		Rate	CI	
Florida	441.2	438.5	444.0	64.8	63.8	65.8	136.2	134.0	138.4	110.8	108.8	112.7	41.8	40.9	42.6
Alachua	519.3	488.2	552.0	79.4	67.3	93.1	184.6	157.5	215.6	119.8	100.3	142.4	54.5	44.7	65.9
Baker	552.2	457.8	662.6	129.2	86.7	188.3	132.3	70.7	253.4	126.8	68.9	216.4	71.5	39.5	121.4
Bay	511.6	478.9	546.2	89.3	76.1	104.4	163.2	136.6	194.5	127.3	105.8	152.7	43.4	34.2	54.5
Bradford	405.3	337.3	485.0	69.9	43.7	108.7	128.8	78.4	204.9	65.5	29.8	135.5	32.1	15.4	62.2
Brevard	525.3	508.5	542.7	82.2	75.9	89.0	151.5	139.0	165.2	116.1	105.1	128.2	49.0	43.9	54.6
Broward	403.5	395.1	412.1	55.6	52.6	58.8	112.0	105.6	118.8	109.0	102.9	115.3	36.8	34.3	39.4
Calhoun	462.9	364.2	585.9	95.9	54.8	163.5	^	^	^	^	^	^	90.0	50.1	156.5
Charlotte	447.7	421.5	476.0	70.3	61.2	81.4	157.2	138.7	179.7	103.1	84.4	126.7	28.0	22.4	35.8
Citrus	484.5	454.2	517.6	78.1	67.6	91.4	162.2	140.9	189.1	117.5	96.0	145.2	42.7	34.7	53.8
Clay	508.3	474.0	544.7	89.9	75.7	106.3	165.7	137.4	198.9	132.8	110.2	159.2	49.3	39.0	61.7
Collier	399.8	381.7	418.7	54.6	48.6	61.6	153.4	138.9	169.6	93.1	80.5	107.7	30.6	25.9	36.2
Columbia	440.6	393.7	492.2	80.3	61.2	104.2	103.4	72.9	144.7	90.3	63.3	128.0	56.7	41.1	77.2
Miami-Dade	414.8	407.0	422.6	47.7	45.1	50.4	143.6	136.9	150.6	107.0	101.6	112.5	45.1	42.6	47.8
DeSoto	370.5	315.9	433.4	50.4	31.7	78.1	139.3	96.6	198.7	123.2	77.4	193.1	40.5	23.9	66.2
Dixie	402.2	322.1	501.3	91.6	57.8	145.4	76.7	36.4	159.3	156.1	80.9	287.3	^	^	^
Duval	520.1	504.3	536.4	85.7	79.2	92.5	167.0	153.5	181.6	136.7	125.9	148.2	50.4	45.5	55.6
Escambia	468.3	445.3	492.3	81.9	72.4	92.3	157.4	138.0	179.1	110.3	95.4	127.2	41.4	34.7	49.1
Flagler	481.2	438.7	529.2	76.7	61.7	97.7	115.2	89.2	153.6	125.0	94.9	167.9	43.1	31.9	60.8
Franklin	305.0	223.2	420.5	^	^	^	^	^	^	^	^	^	^	^	^
Gadsden	456.5	398.3	521.4	65.1	44.4	93.0	133.6	89.4	194.0	153.6	110.1	209.9	46.2	29.5	69.9
Gilchrist	502.3	406.2	618.8	87.2	50.5	146.4	^	^	^	155.1	87.7	266.6	^	^	^
Glades	339.0	254.6	452.6	65.9	33.5	131.8	141.4	73.9	274.4	^	^	^	^	^	^
Gulf	443.0	352.1	556.3	79.9	44.6	140.4	109.3	54.3	214.2	113.5	56.1	228.0	53.5	25.5	107.9
Hamilton	511.0	399.8	646.9	87.5	46.1	155.4	144.0	67.7	290.9	^	^	^	96.1	52.0	167.0
Hardee	264.5	210.7	329.6	37.1	19.1	67.5	121.4	72.9	192.6	^	^	^	^	^	^
Hendry	384.5	322.8	455.1	68.3	43.7	102.4	122.7	76.2	192.2	96.8	57.1	156.1	30.8	15.3	56.0
Hernando	489.4	459.4	521.7	83.2	72.8	96.0	129.2	111.1	152.0	114.0	93.1	140.2	43.3	35.0	54.2
Highlands	420.4	385.6	459.3	61.5	50.1	77.0	119.8	99.2	148.5	80.1	58.3	111.6	47.1	35.8	63.0
Hillsborough	454.2	442.2	466.6	63.7	59.3	68.5	131.0	121.6	141.0	114.7	106.4	123.5	47.6	43.7	51.7
Holmes	423.5	344.6	518.2	104.3	66.6	159.3	118.8	64.3	208.6	89.1	44.2	173.4	44.0	21.9	84.0
Indian River	450.9	421.3	482.9	72.0	61.3	85.2	107.1	88.7	130.6	122.5	100.1	150.4	49.1	39.8	61.0
Jackson	505.9	448.2	570.1	98.2	73.8	129.5	188.7	139.0	252.5	113.9	78.8	162.9	59.9	41.1	85.8
Jefferson	434.6	340.6	552.3	93.3	52.9	159.8	127.0	60.1	251.0	162.6	89.7	289.4	^	^	^
Lafayette	309.4	199.4	465.5	^	^	^	^	^	^	^	^	^	^	^	^
Lake	518.6	495.9	542.5	71.2	63.7	80.0	186.9	169.5	206.7	119.8	104.3	137.9	50.1	43.2	58.3
Lee	426.6	411.9	441.8	60.6	55.5	66.2	154.7	143.1	167.5	93.5	83.6	104.7	37.5	33.3	42.2
Leon	428.8	400.5	458.7	66.5	55.4	79.3	161.1	135.6	191.2	113.9	95.4	135.3	38.9	30.5	49.1
Levy	385.1	336.1	442.0	84.4	62.9	114.6	134.8	97.7	190.3	74.9	47.0	121.0	53.6	34.5	82.6
Liberty	454.7	306.0	660.4	^	^	^	^	^	^	^	^	^	^	^	^
Madison	480.7	392.1	585.6	96.8	59.8	151.0	187.5	110.8	300.6	92.5	44.3	181.3	45.5	21.7	87.4
Manatee	406.8	387.8	426.8	60.2	53.4	68.0	130.9	116.6	147.3	104.9	91.2	120.8	40.6	34.9	47.4
Marion	491.1	470.6	512.7	80.4	72.8	89.0	170.8	154.7	189.1	121.6	107.0	138.3	47.9	41.7	55.1
Martin	436.6	409.3	466.0	65.3	55.9	77.0	142.6	122.1	167.6	107.3	88.1	131.5	31.7	24.6	41.2
Monroe	372.0	334.5	413.6	58.1	44.6	75.9	87.3	63.2	120.6	102.9	77.2	137.6	35.9	24.7	51.8
Nassau	493.2	444.7	546.3	77.9	59.4	101.2	163.9	125.7	214.2	147.4	112.7	191.5	42.8	29.4	61.2
Okaloosa	508.8	477.4	541.9	78.3	66.3	92.1	142.4	119.0	170.2	133.7	112.2	158.6	50.4	40.8	61.8
Okeechobee	455.9	396.6	523.4	99.5	74.0	133.3	92.0	58.6	141.2	118.4	77.3	181.2	56.4	35.9	86.3
Orange	436.7	423.5	450.2	60.6	55.7	65.9	127.3	116.8	138.6	113.3	104.4	122.7	43.4	39.3	47.9
Osceola	426.1	400.0	453.7	60.1	50.6	71.1	125.9	105.9	149.2	97.9	81.4	117.2	43.0	35.0	52.4
Palm Beach	418.5	409.1	428.1	55.2	52.1	58.6	115.1	108.2	122.5	104.0	97.3	111.2	34.9	32.4	37.8
Pasco	468.1	449.7	487.2	71.9	65.5	79.0	134.9	122.4	149.1	118.3	104.7	133.7	43.1	37.9	49.2
Pinellas	421.6	410.6	432.8	65.8	61.7	70.2	118.6	110.5	127.2	116.4	108.3	125.2	36.4	33.3	39.7
Polk	497.2	480.6	514.4	75.1	69.2	81.7	138.2	126.2	151.4	101.7	91.1	113.5	55.2	49.8	61.2
Putnam	482.0	439.4	528.7	99.9	81.5	122.9	138.9	108.6	178.1	105.0	77.2	142.4	42.6	30.9	59.0
Saint Johns	463.8	433.9	495.8	70.1	59.3	83.1	125.2	104.2	150.6	142.8	119.8	170.1	33.5	26.3	43.0
Saint Lucie	446.5	422.7	471.6	70.3	61.6	80.4	119.4	103.1	138.5	95.5	80.0	114.0	43.6	36.7	52.0
Santa Rosa	472.9	438.4	509.7	80.7	66.9	96.9	121.3	97.4	151.4	125.0	101.7	152.9	42.8	32.6	55.5
Sarasota	420.2	403.0	438.2	59.2	53.5	65.9	156.7	143.6	171.6	110.8	98.3	125.4	37.8	32.8	43.7
Seminole	406.9	387.6	427.0	50.9	44.1	58.5	131.0	114.9	149.0	104.4	91.7	118.5	40.4	34.4	47.2
Sumter	490.9	453.0	533.2	77.2	62.5	96.8	203.4	172.2	243.4	131.9	101.0	174.8	36.4	27.3	50.7
Suwannee	450.6	394.4	514.9	78.7	56.3	110.1	98.1	63.8	150.9	88.6	56.6	139.6	57.7	39.1	85.5
Taylor	418.9	341.7	510.5	91.5	58.4	139.6	146.2	86.1	246.8	72.2	34.6	149.9	44.4	20.9	84.7
Union	1298.3	1122.9	1499.3	255.9	179.5	360.5	200.2	113.3	371.1	211.0	108.2	378.9	113.6	63.8	193.9
Volusia	429.0	413.4	445.2	71.3	65.5	77.8	95.2	85.3	106.4	113.0	101.7	125.6	44.4	39.5	49.9
Wakulla	418.6	347.0	502.9	81.3	51.8	124.7	147.4	89.7	242.4	113.4	65.5	189.3	42.7	21.7	78.6
Walton	319.1	278.2	365.9	63.0	46.0	86.3	52.1	31.3	85.6	105.3	72.4	152.2	33.7	21.1	53.0
Washington	362.2	295.1	443.2	74.9	47.3	117.2	129.8	76.8	211.4	59.1	27.9	129.2	41.1	21.9	75.8

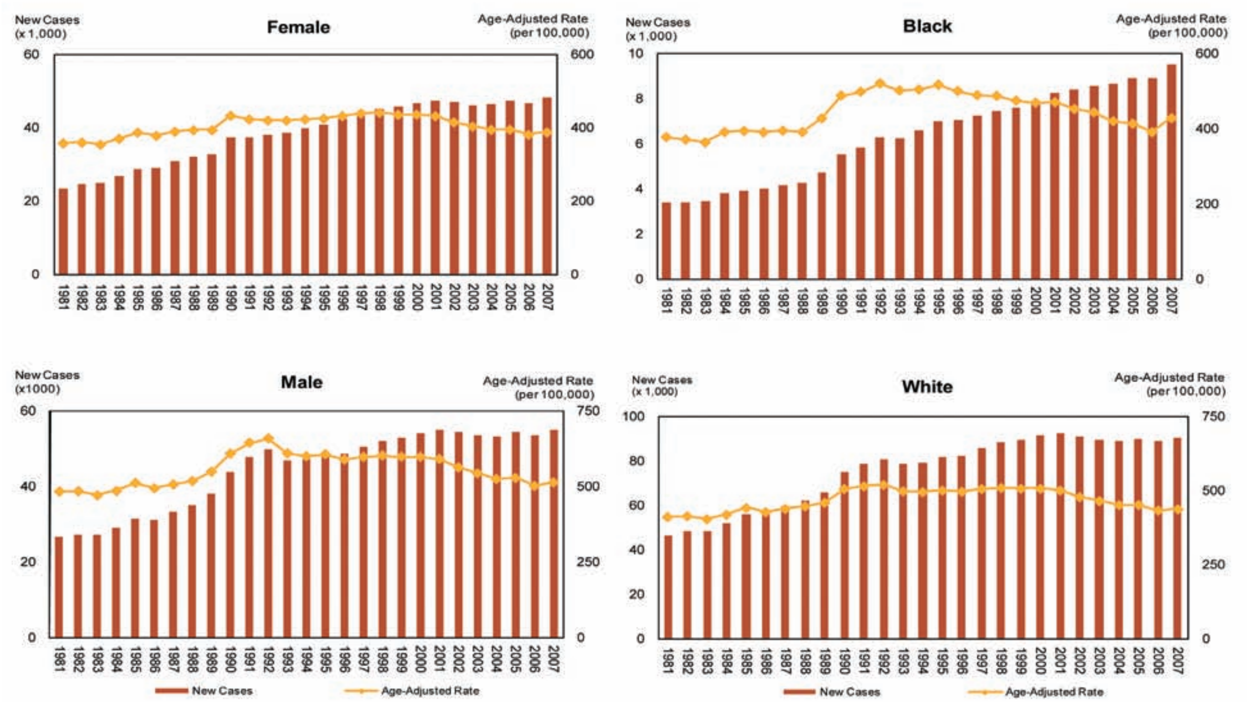
[1] Rates are expressed as number of cases per 100,000 population per year, adjusted to the 2000 U.S. standard population.
^ Statistics for cells with fewer than 10 cases are not displayed.

Table 4 (Continued). Age-Adjusted Incidence Rates [(1)] by County, Florida, 2007

	Bladder			Head & Neck			Non-Hodgkin			Melanoma			Ovary			Cervix		
	Rate	CI		Rate	CI		Rate	CI		Rate	CI		Rate	CI		Rate	CI	
Florida	19.5	18.9	20.0	17.4	16.8	17.9	17.4	16.8	17.9	20.5	19.8	21.1	11.7	11.0	12.3	8.9	8.3	9.5
Alachua	20.8	14.9	28.4	28.6	21.8	37.1	15.3	10.4	22.0	21.5	14.9	30.4	9.7	5.0	17.7	10.6	5.4	19.1
Baker	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Bay	19.9	13.8	28.1	26.0	19.1	34.8	18.6	12.7	26.6	23.3	16.2	32.8	12.5	6.3	23.2	18.9	10.6	31.8
Bradford	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Brevard	28.1	24.5	32.4	23.5	20.0	27.6	18.2	15.2	21.8	24.0	20.2	28.6	17.5	13.2	23.1	5.4	2.9	9.5
Broward	16.5	14.9	18.3	14.6	13.1	16.4	16.8	15.1	18.6	20.2	18.1	22.6	11.7	9.8	13.9	10.5	8.6	12.7
Calhoun	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Charlotte	24.6	19.5	32.1	17.8	12.6	25.7	12.8	9.0	19.1	24.7	17.8	34.5	^	^	^	^	^	^
Citrus	20.7	16.2	28.5	16.0	10.9	24.5	18.1	12.7	26.9	28.5	20.2	40.6	12.4	6.8	25.9	24.1	12.2	44.6
Clay	22.3	15.4	31.4	19.6	13.5	27.9	12.5	7.7	19.5	19.7	13.1	28.6	19.1	11.0	31.4	^	^	^
Collier	20.4	17.0	24.7	15.6	12.2	20.1	18.8	14.8	23.9	25.1	20.2	31.1	14.1	9.1	21.6	9.1	4.7	16.4
Columbia	12.8	6.1	24.9	30.7	19.0	47.6	16.7	8.5	30.3	21.4	11.2	38.5	^	^	^	^	^	^
Miami-Dade	14.8	13.4	16.3	16.3	14.8	17.9	17.1	15.6	18.8	8.8	7.5	10.1	11.9	10.2	13.9	10.1	8.4	12.0
DeSoto	21.4	9.9	42.9	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Dixie	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Duval	23.4	20.1	27.1	20.4	17.4	23.8	19.4	16.5	22.7	23.3	19.5	27.7	12.1	9.1	15.9	9.4	6.7	12.8
Escambia	18.5	14.2	23.8	18.6	14.3	24.1	16.7	12.6	21.9	20.2	15.0	27.0	10.0	5.9	16.5	10.1	5.6	17.2
Flagler	15.6	10.0	28.4	15.2	8.7	29.1	28.1	18.1	45.2	14.5	7.9	29.9	^	^	^	^	^	^
Franklin	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Gadsden	^	^	^	^	^	^	28.6	15.5	49.1	^	^	^	^	^	^	^	^	^
Gilchrist	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Glades	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Gulf	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Hamilton	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Hardee	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Hendry	^	^	^	^	^	^	^	^	^	34.9	17.3	63.5	^	^	^	^	^	^
Hernando	23.3	17.9	31.3	23.6	17.6	32.3	19.3	13.3	28.1	21.3	14.7	31.1	10.1	4.4	22.5	^	^	^
Highlands	14.4	9.5	24.3	22.8	15.5	34.9	16.3	9.2	28.8	26.0	17.9	39.9	^	^	^	^	^	^
Hillsborough	17.6	15.3	20.2	19.9	17.5	22.6	18.8	16.4	21.5	21.0	18.2	24.1	12.1	9.5	15.2	8.3	6.2	11.1
Holmes	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Indian River	17.9	13.2	25.3	17.6	11.7	26.6	15.6	10.8	23.3	28.0	20.2	39.3	13.3	6.5	26.8	^	^	^
Jackson	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Jefferson	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Lafayette	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Lake	23.9	19.8	29.4	19.0	14.7	24.7	18.8	14.4	24.6	28.2	22.4	35.7	16.4	10.6	25.4	13.1	7.4	22.4
Lee	22.6	19.6	26.2	18.4	15.5	22.0	17.2	14.3	20.7	23.2	19.5	27.7	8.9	6.1	13.0	9.3	5.8	14.5
Leon	9.7	5.8	15.5	16.3	11.2	23.3	12.4	8.0	18.5	23.7	16.7	33.0	19.5	12.3	29.8	^	^	^
Levy	19.7	10.5	38.9	22.6	12.2	42.9	^	^	^	^	^	^	^	^	^	^	^	^
Liberty	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Madison	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Manatee	20.1	16.4	24.9	17.4	13.6	22.3	14.6	11.1	19.1	18.6	14.2	24.3	8.6	5.2	14.4	8.1	4.2	14.7
Marion	19.0	15.6	23.5	20.3	16.1	25.7	17.6	14.0	22.4	19.9	15.4	25.8	15.1	10.3	22.4	8.2	4.1	15.5
Martin	23.9	18.7	31.5	23.5	17.3	32.3	11.4	7.3	18.1	22.7	15.9	32.5	14.5	7.1	28.4	^	^	^
Monroe	10.9	5.3	21.7	18.1	10.9	30.1	12.5	6.4	23.8	19.1	10.9	33.0	^	^	^	^	^	^
Nassau	21.8	12.6	36.2	27.8	17.5	43.2	14.1	6.9	26.8	18.2	9.5	32.8	^	^	^	^	^	^
Okaloosa	28.8	21.7	37.8	17.5	12.1	24.7	20.4	14.4	28.1	24.9	18.0	33.8	9.8	4.7	18.8	10.2	4.9	19.4
Okeechobee	18.8	9.0	38.3	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Orange	17.8	15.1	20.8	16.3	13.9	19.1	20.4	17.6	23.5	19.3	16.3	22.7	11.5	8.9	14.9	9.6	7.1	12.7
Osceola	16.4	11.5	22.9	12.4	8.2	18.1	17.6	12.5	24.1	16.2	11.2	23.1	17.1	10.5	26.8	11.7	6.3	20.3
Palm Beach	20.0	18.1	22.1	14.9	13.2	16.9	19.1	17.1	21.3	24.8	22.3	27.7	11.6	9.3	14.3	7.6	5.7	10.1
Pasco	22.8	19.3	27.1	21.6	17.8	26.5	18.2	14.5	22.8	22.5	18.1	28.0	10.5	7.3	15.6	9.4	5.4	15.8
Pinellas	20.9	18.7	23.5	16.7	14.6	19.2	15.3	13.2	17.7	21.1	18.3	24.3	10.3	8.0	13.2	6.0	4.1	8.8
Polk	17.2	14.4	20.6	15.5	12.6	18.9	19.8	16.6	23.6	31.0	26.4	36.3	16.1	11.9	21.6	9.6	6.0	14.6
Putnam	21.2	13.5	33.7	28.2	18.3	43.2	20.9	12.6	34.4	20.0	11.4	34.9	18.2	8.6	38.7	^	^	^
Saint Johns	19.3	13.7	27.2	15.0	10.1	22.3	21.3	14.8	30.2	22.3	15.8	31.4	9.4	4.3	19.9	15.1	7.4	28.5
Saint Lucie	20.5	15.8	26.6	10.8	7.3	15.9	14.6	10.5	20.3	23.6	18.0	31.0	7.9	3.8	15.8	14.4	8.0	24.5
Santa Rosa	29.0	20.9	39.6	19.5	13.2	28.2	13.7	8.5	21.5	26.5	18.4	37.4	13.9	6.8	26.1	^	^	^
Sarasota	18.3	15.4	22.2	13.8	10.8	17.9	16.1	12.7	20.6	21.4	17.0	27.0	9.2	6.0	14.8	5.6	2.7	11.2
Seminole	19.4	15.2	24.5	15.3	11.7	19.7	18.3	14.4	23.0	22.1	17.6	27.5	8.1	4.8	12.9	5.3	2.7	9.5
Sumter	32.8	24.2	46.7	17.1	10.3	29.9	17.4	11.3	29.2	16.6	8.8	31.9	^	^	^	^	^	^
Suwannee	24.7	13.5	45.7	32.7	19.3	55.7	22.6	11.3	44.0	^	^	^	^	^	^	^	^	^
Taylor	^	^	^	41.5	19.6	79.7	^	^	^	^	^	^	^	^	^	^	^	^
Union	^	^	^	141.9	91.2	220.1	67.3	32.1	133.5	^	^	^	^	^	^	^	^	^
Volusia	20.8	17.7	24.5	18.0	15.0	21.7	15.5	12.6	19.1	16.3	13.0	20.3	12.8	9.1	17.9	9.1	5.7	14.1
Wakulla	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^
Walton	^	^	^	^	^	^	^	^	^	16.3	7.8	32.9	^	^	^	^	^	^
Washington	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^

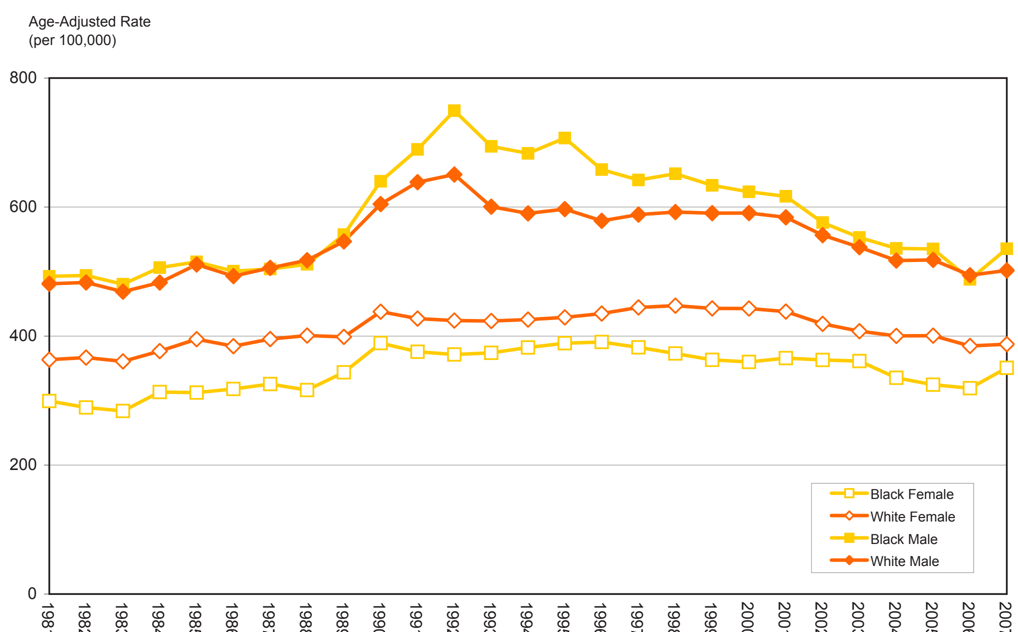
(1) Rates are expressed as number of cases per 100,000 population per year, adjusted to the 2000 U.S. standard population.
^ Statistics for cells with fewer than 10 cases are not displayed.

Figure 1. New Cases and Age-Adjusted Incidence Rates for All Cancers by Sex and by Race, Florida, 1981-2007



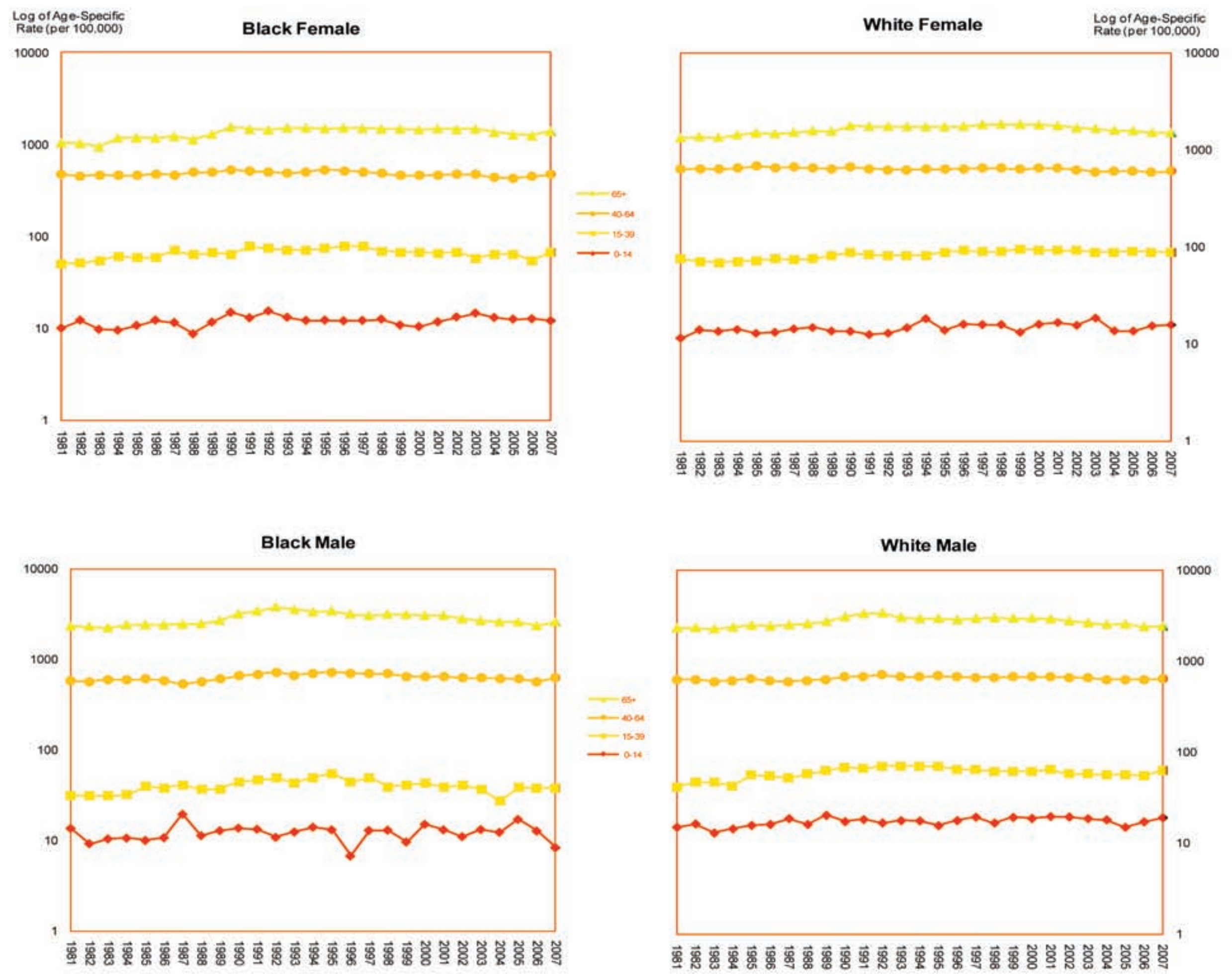
Source of data: Florida Cancer Data System

Figure 2. Age-Adjusted Incidence Rates for All Cancers by Sex and by Race, Florida, 1981-2007



Source of data: Florida Cancer Data System

Figure 3. Age-Specific Incidence Rates for All Cancers by Sex, Race, and Age Gropu, Florida, 1981-2007



Source of data: Florida Cancer Data System

Section 9

Laboratory Status Report

The Bureau of Laboratories (BOL)

The Bureau of Laboratories (BOL) – a network of five laboratories located in Jacksonville, Lantana, Miami, Pensacola, and Miami – provides population-based, diagnostic, screening, monitoring, reference, emergency, and research laboratory services, as well as collects epidemiologic (demographic) information to support the core public health functions of the Florida Department of Health (FDOH). Technical services, based on evolving community requirements, include screening and confirmation tests for biological and chemical threats and disease outbreak investigations. Agents tested for include a wide variety of viral, bacterial, and parasitic pathogens, such as mosquito- and arthropod-borne viruses, animal rabies, intestinal parasites, sexually transmitted diseases, tuberculosis, and human immunodeficiency virus (HIV). The Bureau also provides training to healthcare providers and laboratory scientists; tests samples from potable, environmental, and recreational water sources, pollution spills, and suspected contaminated foods; and certifies environmental and water-testing laboratories. The BOL provides laboratory screening of all newborns in the state for 34 genetic disorders, which, without detection and early treatment, can lead to death or severe physical and/or mental disabilities.

The BOL supports all 67 county health departments (CHD), other FDOH programs, physicians, hospitals, and numerous state and federal agencies by providing public health diagnostic, screening, and reference laboratory services.

Electronic Laboratory Ordering (ELO) Roll-Out

The BOL has been using Electronic Laboratory Ordering (ELO) from CHDs in the LabWare laboratory information management system since August 2008. With ELO, the BOL has the ability to receive and process electronic laboratory orders from the internal FDOH health management system (HMS). ELO eliminates the need for CHDs to use paper laboratory requisitions to order laboratory tests from the BOL five-laboratory system. Benefits to the state include:

- improved data quality. Data re-entry is not required for electronic orders as all patient data, provider data, and test request data delivered from HMS is automatically entered into the specimen record in LabWare;
- faster turn-around time by eliminating data entry, a primary source of delay in reporting results;
- lower cost of operation, as BOL resources used for data entry could be eliminated or used elsewhere.

ELO was rolled out to all CHD HMS sites in phases and was completed at the end of October 2008.

Electronic Laboratory Reporting (ELR)

All laboratory results generated in LabWare, the BOL's laboratory information management system, are reported electronically through the FDOH Cloverleaf Integration Broker within one hour of completion for use by CHDs and FDOH surveillance systems. The Cloverleaf Integration Broker forwards the results to the CHDs' HMS, and places the results in a central database where they are accessed by the Bureau of Epidemiology's reportable disease management system (Merlin), the Bureau of Sexually Transmitted Diseases' client management system (PRISM), and HIV/AIDS state surveillance staff. In the HMS, the laboratory results are "posted" in the patient's record within hours of the time the laboratory issues them, significantly reducing turn-around times. Additionally, this electronic data transfer, through the Integration Broker, makes all laboratory results for reportable (and non-reportable) diseases available to the Bureau of Epidemiology in Merlin. This eliminates the need for manual entry of these laboratory data into the Merlin system where they can be reviewed by epidemiologists for public health action, outside of the clinical management setting. Likewise, results for sexually-transmitted diseases are electronically transferred to the PRISM system. With ELR, epidemiologists and disease intervention specialists have access to the results within hours of reporting and no longer have to wait for paper reports. ELR also improves the disease reporting process by eliminating the reliance on laboratory staff to manually sort through paper results and make decisions regarding which results should be copied and forwarded to the appropriate Bureau for follow-up.

The completion of the transition to LabWare and the roll out of ELO have created an exciting opportunity for the CHDs and the BOL to save both personnel and monetary resources during these difficult financial times through the discontinuation of paper reporting of results for tests ordered through the HMS. The BOL no longer prints, sorts and mails hard copies of these lab results via the U.S. Postal Service to CHD and FDOH surveillance programs, although this process still occurs for non-FDOH ordering partners such as hospitals. This reduces the costs of paper, mailing supplies, postage, and staff time, which is a significant savings to the FDOH. In addition, the CHDs can avoid costs by eliminating the need to sort and file the incoming paper reports and the Bureaus of Epidemiology and Sexually Transmitted Diseases can avoid time and labor costs associated with manually entering data into their respective systems.

CDC Influenza Electronic Data Exchange Interoperability Partnership Project

BOL received $729,970 for the Centers for Disease Control and Prevention (CDC) Influenza Electronic Data Exchange Interoperability Partnership Project, in cooperation with the Texas Department of State Health Services (TDSHS), to do the following:

- demonstrate an ability to share influenza surveillance laboratory test results from Florida's BOL to local, state, and cross-border international public health partners, as well as with the CDC;
- demonstrate an ability to share influenza surveillance laboratory test results from TDSHS to local, state, and cross-border international public health partners, as well as with the CDC;
- develop the ability to accept electronic orders for influenza reference tests and sharing electronic reference test results between partners and the CDC;
- demonstrate a capacity for inter-state and international cross-border laboratory test result and test order exchange that supports surge capacity among laboratories by partnering with the state of Texas; and
- develop a model multi-state cooperative data exchange strategy between Texas and Florida that incorporates national standards and best business practices.

2009 Influenza A H1N1 Virus

The 2009 influenza pandemic began at the end of April and by June 19, 2009, BOL had tested 4,784 specimens for the 2009 influenza A H1N1 of swine origin; 869 were positive. This was an overall positivity rate of 18%. In the beginning, the CDC was the only testing laboratory able to confirm the novel influenza virus nationwide, leading to diagnostic delays. Within a week, the CDC provided the state public health laboratories with novel test kits under an Emergency Use Authorization from the Food and Drug Administration (FDA), requiring that the testing be performed only with a brand new platform, the ABI 7500FAST DX real-time PCR instrument. Additional staff were quickly trained in the use of this instrument by CDC-trained personnel in Tampa and Jacksonville in order to use these kits according to requirements of the federal Clinical Laboratory Improvement Act. In addition, staff at the BOL in Tampa trained scientists from the BOL in Miami and the BOL in Pensacola on this new test platform, while also simultaneously testing specimens. In the beginning, the BOL was tasked with providing diagnostic testing for healthcare providers in the state as testing was not available in the commercial setting. The BOL also conducted all influenza surveillance testing for the Bureau of Epidemiology. For the previous two years, the CDC Cooperative Agreement funding supported 1.5 FTEs at all five BOL locations, as part of Florida's pandemic influenza readiness plan. In 2009, the funding had been eliminated. Not having these additional FTEs during the initial H1N1 response significantly reduced the BOL's testing capacity. However, the Lantana and Pensacola laboratories were able to take on additional testing for rabies, which is usually performed by the same staff as influenza testing, thus freeing up portions of their time for additional influenza tests.

It was not until mid-summer that a commercial test became available, enabling non-public health laboratories to perform diagnostic testing for 2009 influenza A H1N1. Although some diagnostic specimens continue to be submitted to the BOL, they were mostly from influenza-associated deaths, those with severe life threatening illness, outbreaks submitted by CHDs and from ILINet, the Florida influenza-like illness network of sentinel physicians. ILINet, in collaboration with the Bureau of Epidemiology, is designed to detect influenza virus strain changes.

Between April 25, 2009 and December 31, 2009, the BOL received 13,873 clinical samples for testing in response to the 2009 influenza pandemic. Of those specimens, 5,076 were positive for 2009 influenza A H1N1 influenza virus, 757 for seasonal influenza A, and 36 for influenza B. The Tampa and Jacksonville Laboratories continue to participate as collaborating laboratories for the World Health Organization Influenza Surveillance Network, accepting specimens from over 100 sentinel physicians in the state of Florida.

Revised Florida Guidelines for the Use of Nucleic Acid Amplification Testing for Tuberculosis (TB)

In January 2009, the CDC updated the guidelines for the use of nucleic acid amplification testing (NAAT) for TB. Since 1996, this test has been standard practice at the BOL, and now the CDC recommends the use of NAAT to become standard practice throughout the U.S. to ensure TB elimination. In collaboration with the Bureau of TB and Refugee Health and as a first in the Nation, the BOL recently rolled out the HAIN Genotype® MTBDR*plus*, a commercially available line probe assay that detects mutations associated with the majority of cases of rifampin (*rpoB*) and isoniazid (*KatG* and *inhA*) resistance, which is integral to the diagnosis and early detection of drug-resistant cases within our state. The HAIN test allows detection of multi-drug-resistant TB within one to two days instead of the traditional three to six weeks in highly infectious patients. This provides the FDOH with test results much faster, which enables caregivers to interrupt transmission of drug-resistant TB much earlier. This enhanced capability fosters more appropriate treatment regimens avoiding the mistake of initiating treatment with ineffective first-line drugs.

The increasing threat of multi-drug-resistant (MDR) and extensively drug-resistant (XDR) TB not only has a human price (more patients are dying of drug-resistant tuberculosis compared to patients with drug-susceptible TB), but also has an economic impact on healthcare. It is estimated that preventing a single case of MDR TB would save the U.S. healthcare system more than $250,000 and the average estimated hospitalization cost for treating a patient with XDR TB is $600,000, not including costs of outpatient care and related health interventions.

New 96-well Plate Method Development

A new 96-well plate method was developed for a Metabolic Toxins Panel (MTP) in urine by Liquid Chromatography/Tandem Mass Spectrometry. Staff scientists from the Chemical Terrorism Laboratory Response Network Level 1 Laboratory in Jacksonville (one of only ten laboratories nationwide designated for surge capacity by the CDC) converted the testing of MTP from a single-test analysis to a high-throughput method with results sent to the CDC Chemical Laboratory Response Network. This will greatly improve analysis response time for monofluroroacetate and monochloroacetate samples from a five-day to a two-day turn-around time.

Discontinuation of Clinical Chemistry and Hematology for A.G. Holley State Hospital

As of October 7, 2009, the BOL in Lantana discontinued clinical chemistry and hematology testing for A.G. Holley State Hospital. These specimens are now sent to LabCorp, the laboratory contracted by FDOH for these tests. Because of this, there is a slight delay in the turn-around times of the laboratory results, which was approved by A.G. Holley senior medical staff. However, staff from the BOL in Lantana continue to draw blood from patients. Staff will be shifted to other functions within the laboratory, including the send-outs of these specimens to LabCorp as a service to A.G. Holley State Hospital, and will record the results received into patient charts. This testing was discontinued at the BOL in Jacksonville and in Pensacola for the CHDs in the spring of 2008.

2009 Newborn Screening Morbidity Data

BOL in collaboration with FDOH Children's Medical Services manages the newborn screening program for Florida. The program screens for all disorders recommended by the March of Dimes and the American College of Medical Genetics as well as some with additional disorders, including cystic fibrosis, totaling 35 diseases and conditions.

Table 1. Newborn Screening Morbidity Counts, Florida 2009

Conditions	Count
Live Births	221,632
Confirmed Diagnosis by Florida Referral Centers	
Biotinidase Deficiency	0
Partial	6
Congenital Adrenal Hyperplasia	5
Congenital Hypothyroidism	68
Cystic Fibrosis	
2 mutations	23
1 mutation	10
Ultra-High IRT/No mutations	1
Galactosemia (G/G)	1
Variant	1
Sickle Cell	
Sickle Cell Anemia (SS)	130
Hemoglobin SC Disease (SC)	74
Sickle Beta Thalassemia (SA)	8
Disorders detected by Tandem Mass Spectronomy	32
Hearing Loss recognized through NBS Follow-Up Program	197