

EpiNotes

Florida Department of Health - Hillsborough County Disease Surveillance Newsletter April 2014

Director

Douglas Holt, MD

813.307.8008

Medical Director (HIV, STD, EPI)

Charurut Somboonwit, MD

813.307.8008

Medical Director (TB, Refugee)

Beata Casanas, MD

813.307.8008

Community Health Director

Leslene Gordon, PhD, RD, LD/N

813.307.8015 x7107

Disease Control Director

Faye Coe, RN

813.307.8015 x6321

Environmental Administrator

Brian Miller, RS

813.307.8015 x5901

Epidemiology

Warren R. McDougale Jr., MPH

813.307.8010 Fax 813.276.2981

TO REPORT A DISEASE:

Epidemiology

813.307.8010

After Hours Emergency

813.307.8000

Food and Waterborne Illness

James Ashworth

813.307.8015 x5944 Fax 813.272.7242

HIV/AIDS Surveillance

Erica Botting

813.307.8011

Lead Poisoning

Cynthia O. Keeton

813.307.8015 x7108 Fax 813.272.6915

Sexually Transmitted Disease

Carlos Mercado

813.307.8015 x4501 Fax 813.307.8027

Tuberculosis

Chris Lutz

813.307.8015 x4758 Fax 813.975.2014

Epidemiology: Who we are and what we do

Mackenzie Tewell, MA, MPH, CPH



You would be hard pressed to find an epidemiologist who hasn't been asked: "Epidemiology...that's the study of skin, right?" While incorrect, it is not a bad guess. Epidemiology, by definition, is "the study of the distribution and determinants of health conditions or events among populations and the application of that study to control health problems." While every health department operates a little differently, the purpose of our office is to monitor and control the spread of diseases and illnesses that have the potential to impact a number of people in our community. Moreover, on a daily basis we must consider that due to the rapid movement of individuals throughout our globe, no disease is too exotic or distant to pop up in our community.

Florida Department of Health-Hillsborough (FDOH-Hillsborough) Epidemiology programs engages in multiple forms of surveillance in order to find, investigate, control and prevent the spread of disease among Hillsborough County residents and visitors. This article will discuss how various types of surveillance work to paint a picture of the disease burden in the county, and provide an inside glimpse into how Hillsborough County epidemiologists spend their days.

On a day to day basis, passive surveillance keeps us busy. Positive labs for reportable conditions are received either electronically or via fax, and assigned to an epidemiologist for investigation.

Passive surveillance - public health surveillance in which data are sent to the health agency without prompting.

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Not all positive lab results meet FDOH case definition. Common reasons case definitions are not met include:

- Signs and symptoms corresponding to a condition are not present
- Laboratory testing were not completed within a required window of time
- Completed testing is incompatible with case definition requirements

In the beginning of an investigation, it is essential to obtain necessary information including demographics, additional supporting lab results, and any signs and symptoms of illness the individual is experiencing. This may include calls to a laboratory, provider's office, or hospital Infection Preventionists. Once it has been established that the illness meets FDOH case definition, a call is made to the individual with the disease for interviewing.

There are over 80 reportable diseases in Florida. In addition to the diseases in this list, the Epidemiology Program provides guidance on issues of public health concern, non-reportable diseases (e.g., MRSA, scabies) and diseases of unknown origin that are of public health significance. The list of Florida's reportable conditions and conditions is attached to this newsletter.

Through interviews, epidemiologists are looking to explore what type of exposure may have caused one to become infected with this illness, if they know anyone sick with similar symptoms both before and after their illness onset, and determine who, if anyone, may require prophylaxis when it is necessary. We also spend time educating the individual on the illness, what can be done to prevent it in the future, and answering any questions they might have. Oftentimes follow-up calls are made, particularly if the case is in what FDOH deems a "sensitive situation," which includes child care, schools, food handling, healthcare, or group living situations that are susceptible to outbreaks.

FDOH epidemiologists take special measures with food handlers and health care workers with communicable diseases (e.g., salmonellosis, Hepatitis A, Norovirus, E. Coli). Oftentimes this means ensuring they are no longer symptomatic, and in some cases, arranging stool testing to prove they are no longer infectious. We also work with regulating bodies of these facilities including Department of Business and Professional Regulations (DBPR), Department of Agriculture and Consumer Services (DACS), Medical Quality Assurance (MQA) and the Agency for Health Care Administration (ACHA), to name a few.

Next, syndromic surveillance is also completed daily through the use of Electronic Surveillance System for the Early Notification of Community-based Epidemics, or ESSENCE-FL. This electronic surveillance program receives data from hospitals emergency departments, poison control centers, and urgent care centers in Florida and can search, analyze and visualize the data (through graphs, charts and tables) to identify missed reportable diseases or clusters of illness that may indicate

Syndromic surveillance - A system for early detection of outbreaks whereby health department staff, assisted by automated acquisition of data routinely collected for other purposes and computer generation of statistical signals, monitor disease indicators, particularly those associated with possible terrorism-related biologic and chemical agents, continually or at least daily to detect outbreaks earlier than would otherwise be possible with traditional public health methods.

an outbreak. ESSENCE-FL is near real-time surveillance, with visit data updated as frequently as every two hours. When visits of interest are discovered, FDOH-Hillsborough calls the facility to obtain more details regarding the individual's social and physical history, lab results, and contact information if necessary. The use of ESSENCE-FL has resulted in discoveries of unreported cases of varicella, pertussis, carbon monoxide, chemical exposures, Dengue Fever, and household outbreaks of illness, and allowed us to control rumors regarding infectious diseases from concerned citizens.

Hillsborough County has seen two outbreaks of shigellosis in elementary schools in the past year. It only takes a small number of the bacteria to cause illness, so it is important for symptomatic individuals to stay home from school or child care so others do not become infected. With cases of shigellosis, FDOH-Hillsborough requires exclusion from school until a child has received treatment or completes stool testing to demonstrate they are no longer infectious. FDOH-Hillsborough works closely with Hillsborough County School Health Services to ensure these students have met the criteria to return to school, as well as monitoring for additional cases of illness among students.

Both passive and syndromic surveillance can alert epidemiologists to the need to begin conducting active surveillance. Active surveillance is typically undertaken during an outbreak of illness.

Active surveillance - public health surveillance in which the health agency solicits reports.

Generally, active surveillance involves making calls to the ill individual, parents of sick children, or those who may have been in contact with an ill person. For example, enteric illnesses such as shigellosis or norovirus are common in elementary schools and child care settings, and active case finding allows for an accurate estimate of sick individuals and allows for epidemiologists to share educational information, exclusion recommendations, and potentially discover the original source of the outbreak.

Our jobs become most interesting when we receive reports of rare diseases or mystery illnesses. From time to time, medical providers or IPs will alert the Epidemiology Program to cases of illness that are undetermined, but believed to be a potential threat to public health. These may be diseases of unknown origin, or considered "rule out" cases, when physicians are trying to narrow down various possibilities of what is making someone ill. When an epidemiologist receives this type of call, the office turns into a think tank—all of the data are scoured, hypotheses are shared, questions are noted, and epidemiologists are assigned roles and responsibilities for the investigation. Even with each individual given a different area of focus, working together makes "solving the case" happen smoothly. For example, some team members focus on clinical aspects of disease to discover exact onset dates, signs and symptoms, and use these details to narrow down potential diseases to suggest to medical providers. Others are interviewing the ill individual or their family member to gain insight into their recent social history including travel, workplace setting and responsibility, social and household contacts, and other information that would meaningfully contribute to the investigation. Each new piece of information can alter the path of the investigation, so communication is essential. In the past, we have worked to

Sentinel surveillance - a surveillance system that uses a prearranged sample of sources (e.g., physicians, hospitals, or clinics) who have agreed to report all cases of one or more notifiable diseases.

evaluate and rule out cases of, mumps, measles, MERS-CoV, Hantavirus, and Ebola virus.

Finally, FDOH-Hillsborough has five health care providers enrolled in a sentinel flu surveillance system called ILINet. In exchange for five free influenza tests per week completed through the Florida Bureau of Public Health Laboratories, ILINet providers forward all information from patient visits related to influenza-like symptoms. The resulting data help FDOH-Hillsborough look at the total number of patients seen in one week's time in a particular clinic, and calculate what percentage were seen for influenza-like illnesses. In turn, Hillsborough County flu data are used to compare across counties within the state, and ultimately utilized by CDC to compare flu activity nationwide.

FDOH-Hillsborough epidemiologists work with both reportable and non-reportable illnesses, and are always available as a resource to medical providers and community members. We are able to provide guidance during outbreaks, letters to inform community members about illnesses they may have been exposed to, and general information on disease prevention, transmission, and treatment. We can be reached at (813) 307-8010.

Definitions obtained from <http://www.cdc.gov/excite/library/glossary.htm>.

Reportable Disease Surveillance Data

Disease Category	Annual Totals			3 Year Average	Year-to-date	
	2011	2012	2013		Mar 13	Mar 14
Vaccine Preventable Diseases						
Diphtheria	0	0	0	0.00	0	0
Measles	0	0	0	0.00	0	0
Mumps	1	0	0	0.33	0	0
Pertussis	31	119	96	82.00	11	14
Poliomyelitis	0	0	0	0.00	0	0
Rubella	0	0	0	0.00	0	0
Smallpox	0	0	0	0.00	0	0
Tetanus	0	0	0	0.00	0	0
Varicella	46	45	65	52.00	9	13
CNS Diseases & Bacteremias						
Creutzfeldt-Jakob Disease	0	3	1	1.33	0	1
Haemophilus influenzae (Invasive Disease)	16	8	14	12.67	4	3
In Children 5 Years or Younger	2	2	2	2.00	0	0
Listeriosis	3	1	5	3.00	0	0
Meningitis (Bacterial, Cryptococcal, Mycotic)	21	5	11	12.33	3	2
Meningococcal Disease	1	3	6	3.33	2	2
Staphylococcus aureus (VISA, VRSA)	1	1	1	1.00	0	0
Streptococcal Disease, Group A (Invasive Disease)	17	18	17	17.33	3	9
Streptococcus pneumoniae (Invasive Disease)	100	55	59	71.33	23	28
Drug Resistant	54	29	29	37.33	9	15
Drug Susceptible	46	26	30	34.00	14	13
Enteric Infections						
Campylobacteriosis*	120	105	133	119.33	21	33
Cholera	0	1	0	0.33	0	0
Cryptosporidiosis	38	77	59	58.00	4	7
Cyclospora	1	2	9	4.00	0	0
Escherichia coli, Shiga toxin-producing (STEC)**	24	22	30	25.33	3	5
Giardiasis†	81	54	56	63.67	17	15
Hemolytic Uremic Syndrome	0	1	2	1.00	0	0
Salmonellosis	349	331	304	328.00	40	47
Shigellosis	378	36	63	159.00	0	16
Typhoid Fever	0	0	0	0.00	0	0
Viral Hepatitis						
Hepatitis A	4	5	10	6.33	0	1
Hepatitis B (Acute)	26	39	56	40.33	10	15
Hepatitis C (Acute)	7	26	38	23.67	9	7
Hepatitis +HBsAg in Pregnant Women	50	38	31	39.67	3	9
Hepatitis D, E, G	0	1	0	0.33	0	0

Reportable Disease Surveillance Data

Disease Category	Annual Totals			3 Year Average	Year-to-date	
	2011	2012	2013		Mar 13	Mar 14
Vectorborne, Zoonoses						
Dengue	4	5	4	4.33	2	2
Eastern Equine Encephalitis††	0	0	1	0.33	1	0
Ehrlichiosis/Anaplasmosis	0	0	1	0.33	1	0
Leptospirosis	0	0	0	0.00	0	0
Lyme Disease	7	9	12	9.33	0	1
Malaria	7	7	8	7.33	1	3
Plague	0	0	0	0.00	0	0
Psittacosis	0	0	0	0.00	0	0
Q Fever (Acute and Chronic)	0	0	0	0.00	0	0
Rabies (Animal)	2	5	6	4.33	1	1
Rabies (Human)	0	0	0	0.00	0	0
Rocky Mountain Spotted Fever	0	1	1	0.67	0	0
St. Louis Encephalitis††	0	0	0	0.00	0	0
Toxoplasmosis	1	1	1	1.00	1	2
Trichinellosis	0	0	0	0.00	0	0
Tularemia	0	0	0	0.00	0	0
Typhus Fever (Epidemic and Endemic)	2	0	0	0.67	0	0
Venezuelan Equine Encephalitis††	0	0	0	0.00	0	0
West Nile Virus††	0	1	0	0.33	0	0
Western Equine Encephalitis††	0	0	0	0.00	0	0
Yellow Fever	0	0	0	0.00	0	0
Others						
Anthrax	0	0	0	0.00	0	0
Botulism, Foodborne	0	0	0	0.00	0	0
Botulism, Infant	0	0	0	0.00	0	0
Brucellosis	1	0	0	0.33	0	0
Glanders	0	0	0	0.00	0	0
Hansen's Disease (Leprosy)	0	2	2	1.33	0	0
Hantavirus Infection	0	0	0	0.00	0	0
Legionellosis	12	8	18	12.67	0	2
Melioidosis	0	0	0	0.00	0	0
Vibriosis	8	14	13	11.67	0	1

Reportable Disease Surveillance Data

Disease Category	Annual Totals			3 Year Average	Year-to-date	
	2011	2012	2013		Mar 13	Mar 14
Chemicals/Poisoning						
Arsenic	0	0	0	0.00	0	0
Carbon Monoxide	13	4	4	7.00	0	0
Lead	193	330	329	284.00	21	125
Mercury	0	0	0	0.00	0	0
Pesticide	15	4	4	7.67	1	1
Influenza						
Influenza, Pediatric Associated Mortality	0	0	1	0.33	1	1
Influenza, Novel or Pandemic Strain	7	0	0	2.33	0	0
HIV/AIDS						
AIDS	192	172	231	198.33	56	42
HIV Infection	318	327	403	349.33	101	106
STDs						
Chlamydia	7288	7124	7220	7210.67	1614	1474
Gonorrhea	2343	2160	2023	2175.33	480	360
Syphilis, Congenital	3	6	3	4.00	1	0
Syphilis, Latent	134	129	189	150.67	32	32
Syphilis, Early	91	117	124	110.67	30	33
Syphilis, Infectious	124	155	156	145.00	36	47
Tuberculosis						
TB	46	51	54	50.33	11	6
Food and Waterborne Illness Outbreaks						
Food and Waterborne Cases	13	74	73	53.33	6	0
Food and Waterborne Outbreaks	3	4	4	3.67	1	0



Florida Department of Health – Hillsborough County

Division of Community Health • Office of Epidemiology

P.O. Box 5135

Tampa, FL 33675-5135

PHONE: (813) 307-8010 • FAX: (813) 276-2981 **After Hours Reporting All Diseases – (813) 307-8000**

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.” The DOH 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...”

Reportable Diseases/Conditions in Florida Practitioner* Guide 11/24/08

*Reporting requirements for laboratories differ. For specific information on disease reporting, consult Rule 64D-3, *Florida Administrative Code (FAC)*.

AIDS, HIV – (813) 307-8011 DO NOT FAX	<ul style="list-style-type: none"> • Cryptosporidiosis 	<ul style="list-style-type: none"> ! Ricin toxicity
<ul style="list-style-type: none"> + Acquired Immune Deficiency Syndrome (AIDS) 	<ul style="list-style-type: none"> • Cyclosporiasis 	<ul style="list-style-type: none"> • Rocky Mountain spotted fever
<ul style="list-style-type: none"> + Human Immunodeficiency Virus (HIV) infection (all, and including neonates born to an infected woman, exposed newborn) 	<ul style="list-style-type: none"> • Dengue 	<ul style="list-style-type: none"> ! Rubella (including congenital)
STD – (813) 307- 8022 Fax (813) 307-8027	<ul style="list-style-type: none"> ! Diphtheria 	<ul style="list-style-type: none"> • St. Louis encephalitis (SLE) virus disease (neuroinvasive and non-neuroinvasive)
<ul style="list-style-type: none"> • Chancroid 	<ul style="list-style-type: none"> • Eastern equine encephalitis virus disease (neuroinvasive and non-neuroinvasive) 	<ul style="list-style-type: none"> • Salmonellosis
<ul style="list-style-type: none"> • Chlamydia 	<ul style="list-style-type: none"> • Ehrlichiosis 	<ul style="list-style-type: none"> • Saxitoxin poisoning (including paralytic shellfish poisoning)(PSP)
<ul style="list-style-type: none"> • Gonorrhea 	<ul style="list-style-type: none"> • Encephalitis, other (non-arboviral) 	<ul style="list-style-type: none"> ! Severe Acute Respiratory Syndrome-associated Coronavirus (SARS-CoV) disease
<ul style="list-style-type: none"> • Granuloma inguinale 	<p>Enteric disease due to: <i>Escherichia coli</i>, O157:H7 <i>Escherichia coli</i>, other pathogenic <i>E. coli</i> including entero- toxigenic, invasive, pathogenic, hemorrhagic, aggregative strains and shiga toxin positive strains</p>	<ul style="list-style-type: none"> • Shigellosis
<ul style="list-style-type: none"> • Herpes Simplex Virus (HSV) (in infants up to 60 days old with disseminated infection with involvement of liver, encephalitis and infections limited to skin, eyes and mouth; anogenital in children ≤ 12 years old) 	<ul style="list-style-type: none"> • Giardiasis (acute) 	<ul style="list-style-type: none"> ! Smallpox
<ul style="list-style-type: none"> • Human papilloma virus (HPV) (associated laryngeal papillomas or recurrent respiratory papillomatosis in children ≤ 6 years old; anogenital in children ≤ 12 years) 	<ul style="list-style-type: none"> ! Glanders 	<ul style="list-style-type: none"> • <i>Staphylococcus aureus</i> (infection with intermediate or full resistance to vancomycin, VISA, VRSA)
<ul style="list-style-type: none"> • Lymphogranuloma venereum (LGV) 	<ul style="list-style-type: none"> ! Haemophilus influenzae (meningitis and invasive disease) 	<ul style="list-style-type: none"> • <i>Staphylococcus enterotoxin B</i> (disease due to)
<ul style="list-style-type: none"> • Syphilis 	<ul style="list-style-type: none"> • Hansen's disease (Leprosy) 	<ul style="list-style-type: none"> • Streptococcal disease (invasive, Group A)
<ul style="list-style-type: none"> • Syphilis (in pregnant women and neonates) 	<ul style="list-style-type: none"> • Hantavirus infection 	<ul style="list-style-type: none"> • <i>Streptococcus pneumoniae</i> (invasive disease)
TB CONTROL – (813) 307-8015 x 4758 Fax- (813) 975-2014	<ul style="list-style-type: none"> • Hemolytic uremic syndrome 	<ul style="list-style-type: none"> • Tetanus
<ul style="list-style-type: none"> • Tuberculosis (TB) 	<ul style="list-style-type: none"> • Hepatitis A 	<ul style="list-style-type: none"> • Toxoplasmosis (acute)
CANCER – Tumor Registry Database	<ul style="list-style-type: none"> • Hepatitis B, C, D, E, and G 	<ul style="list-style-type: none"> • Trichinellosis (Trichinosis)
<ul style="list-style-type: none"> + Cancer (except non-melanoma skin cancer, and including benign and borderline intracranial and CNS tumors) 	<ul style="list-style-type: none"> • Hepatitis B surface antigen (HBsAg) (positive in a pregnant woman or a child up to 24 months old) 	<ul style="list-style-type: none"> ! Tularemia
EPIDEMIOLOGY – (813) 307-8010 Fax (813) 276-2981	<ul style="list-style-type: none"> ! Influenza due to novel or pandemic strains 	<ul style="list-style-type: none"> • Typhoid fever
<ul style="list-style-type: none"> ! Any disease outbreak 	<ul style="list-style-type: none"> ! Influenza-associated pediatric mortality (in persons < 18 years) 	<ul style="list-style-type: none"> ! Typhus fever (disease due to <i>Rickettsia prowazekii</i> infection)
<ul style="list-style-type: none"> ! Any case, cluster of cases, or outbreak of a disease or condition found in the general community or any defined setting such as a hospital, school or other institution, not listed below that is of urgent public health significance. This includes those indicative of person to person spread, zoonotic spread, the presence of an environmental, food or waterborne source of exposure and those that result from a deliberate act of terrorism. 	<ul style="list-style-type: none"> • Lead Poisoning (blood lead level ≥ 10µg/dL); additional reporting requirements exist for hand held and/or on-site blood lead testing technology, see 64D-3 FAC 	<ul style="list-style-type: none"> • Typhus fever (disease due to <i>Rickettsia typhi</i>, <i>R. felis</i> infection)
<ul style="list-style-type: none"> • Amebic encephalitis 	<ul style="list-style-type: none"> • Legionellosis 	<ul style="list-style-type: none"> ! Vaccinia disease
<ul style="list-style-type: none"> • Anaplasmosis 	<ul style="list-style-type: none"> • Leptospirosis 	<ul style="list-style-type: none"> • Varicella (Chickenpox)
<ul style="list-style-type: none"> ! Anthrax 	<ul style="list-style-type: none"> • Listeriosis 	<ul style="list-style-type: none"> • Varicella mortality
<ul style="list-style-type: none"> • Arsenic poisoning 	<ul style="list-style-type: none"> • Lyme disease 	<ul style="list-style-type: none"> ! Venezuelan equine encephalitis virus disease (neuroinvasive and non-neuroinvasive)
<ul style="list-style-type: none"> ! Botulism (foodborne, wound, unspecified, other) 	<ul style="list-style-type: none"> • Malaria 	<ul style="list-style-type: none"> • Vibriosis (Vibrio infections)
<ul style="list-style-type: none"> • Botulism (infant) 	<ul style="list-style-type: none"> ! Measles (Rubeola) 	<ul style="list-style-type: none"> ! Viral hemorrhagic fevers (Ebola, Marburg, Lassa, Machupo)
<ul style="list-style-type: none"> ! Brucellosis 	<ul style="list-style-type: none"> ! Melioidosis 	<ul style="list-style-type: none"> • West Nile virus disease (neuroinvasive and non-neuroinvasive)
<ul style="list-style-type: none"> • California serogroup virus (neuroinvasive and non-neuroinvasive disease) 	<ul style="list-style-type: none"> • Meningitis (bacterial, cryptococcal, mycotic) 	<ul style="list-style-type: none"> • Western equine encephalitis virus disease (neuroinvasive and non-neuroinvasive)
<ul style="list-style-type: none"> • Campylobacteriosis 	<ul style="list-style-type: none"> ! Meningococcal disease (includes meningitis and meningococemia) 	<ul style="list-style-type: none"> ! Yellow fever
<ul style="list-style-type: none"> • Carbon monoxide poisoning 	<ul style="list-style-type: none"> • Mercury poisoning 	
<ul style="list-style-type: none"> ! Cholera 	<ul style="list-style-type: none"> • Mumps 	
<ul style="list-style-type: none"> • Ciguatera fish poisoning (Ciguatera) 	<ul style="list-style-type: none"> • Neurotoxic shellfish poisoning 	
<ul style="list-style-type: none"> • Congenital anomalies 	<ul style="list-style-type: none"> • Pertussis 	
<ul style="list-style-type: none"> • Creutzfeldt-Jakob disease (CJD) 	<ul style="list-style-type: none"> • Pesticide-related illness and injury 	
	<ul style="list-style-type: none"> ! Plague 	
	<ul style="list-style-type: none"> ! Poliomyelitis, paralytic and non-paralytic 	
	<ul style="list-style-type: none"> • Psittacosis (Ornithosis) 	
	<ul style="list-style-type: none"> • Q Fever 	
	<ul style="list-style-type: none"> • Rabies (human, animal) 	
	<ul style="list-style-type: none"> ! Rabies (possible exposure) 	

! = Report immediately 24/7 by phone upon initial suspicion or laboratory test order

☎ = Report immediately 24/7 by phone

• = Report next business day

+ = Other reporting timeframe

