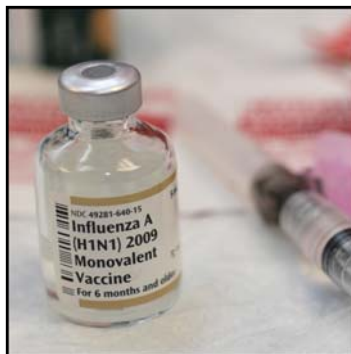


2006-2010 Communicable Disease Surveillance Report

Division of Epidemiology and Data Services
January 2012



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CAMBRIDGE PUBLIC HEALTH DEPARTMENT



Cambridge Health Alliance

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Introduction

Under Massachusetts law, approximately 80 communicable diseases are reportable by health care providers and laboratories to local boards of health in Massachusetts (see appendix for list of reportable communicable diseases). In addition, food poisoning and toxicity, any case of unusual illness, and any cluster or outbreak of illness, including but not limited to foodborne illness are also reportable by law.

State and local public health departments monitor communicable disease cases in order to ensure proper identification and follow-up of cases, detect and respond to unusual occurrences of diseases, identify trends over time, and evaluate the effectiveness of disease prevention and control efforts.¹ Cambridge Public Health Department (CPHD) public health nurses and epidemiologists ensure that ill persons receive appropriate treatment and education; identify contacts who need vaccines, treatment, quarantine, or education; investigate outbreaks and limit disease transmission; eliminate environmental hazards; and close premises where spread has occurred.² Disease investigation requires collaboration with the state health department and with businesses, schools and universities, and other organizations as needed.

Communicable disease case reports come to the public health department's attention through the Massachusetts Virtual Epidemiologic Network (MAVEN), a web-based communicable disease surveillance system, which has the ability to accept electronic laboratory reports. CPHD received an average of 329 communicable disease case reports (including confirmed, probable, suspect, contact, and revoked cases) among Cambridge residents annually during 2006–2010. CPHD public health nurses and epidemiologists conduct follow up on an average of 187 communicable disease reports per year. The department does not routinely follow up on reported cases of hepatitis B (chronic), hepatitis C (chronic), Lyme disease, and varicella because these diseases are handled by the Massachusetts Department of Public Health (MDPH) and do not require follow up by local boards of health unless requested by MDPH.

This report does not include data on Cambridge residents diagnosed with tuberculosis (TB), sexually transmitted infections (STIs), and human immunodeficiency virus (HIV), which are reported directly to the state health department. CPHD public health nurses do conduct follow up on tuberculosis cases and staff the TB Clinic at the Cambridge Hospital. CPHD does not currently use MAVEN for TB surveillance, but receives TB data from the state. For more information, see *Cambridge Surveillance Report on Active Tuberculosis, 2006–2010*.

Defining a Human Case

The Centers for Disease Control and Prevention (CDC), in collaboration with the Council of State and Territorial Epidemiologists publishes case definitions for public health surveillance for the nationally notifiable diseases. These case definitions provide uniform criteria for reporting cases. The case status for most diseases is determined as follows¹:

- A **confirmed case** is one in which the clinical case description is met and the laboratory confirmation requirement is met.
- A **probable case** is one in which the clinical case description is met and it is epidemiologically linked to a confirmed case or there is laboratory data but it does not meet the laboratory confirmed criteria.
- A **suspect case** is one in which the clinical case description is met.

Some cases are revoked if they do not meet the suspect, probably, or confirmed case definition. Some cases also require further investigation of contacts.

Special Highlight: Influenza and the H1N1 Response

Routine Influenza Surveillance

The goal of influenza surveillance is to provide epidemiologic information about seasonal influenza and any unique or new strains that may be circulating, to detect change in severity or age distribution, and to help the CDC monitor changes in the virus to help develop a vaccine for the following year.³ Since most people are not tested for the flu, the Massachusetts Department of Public Health (MDPH) maintains a multi-pronged approach to influenza surveillance. Three important types of influenza surveillance are:

- **Laboratory testing for influenza:** Laboratories in Massachusetts report all positive influenza tests to MDPH, which helps track the distribution and types of influenza circulating in the state. Because the majority of cases are not tested, the number of laboratory confirmed cases does not reflect the overall incidence in influenza.⁴
- **Testing at the Hinton State Laboratory Institute:** The William A. Hinton State Laboratory Institute (HSLI) performs confirmatory testing, typing, and subtyping of influenza. Representative samples are then sent to the CDC for antigenic characterization, genetic analysis, and sensitivity to FDA-approved drugs.⁴
- **Sentinel Provider Surveillance Network:** During the regular flu season, participating health care provider offices report weekly the percent of influenza-like illness (ILI) among their patients. The provider offices, called “sentinel sites,” include outpatient clinical settings such as doctors’ offices, school health services, and community health services. ILI is defined as an illness with fever above 100.01° F, *and* a cough or sore throat. Because most people are not tested for influenza, ILI is used as a marker for influenza but may include illness caused by other viruses.³

Emergence of H1N1 and the Local Response

The 2009-2010 flu season was an important one for the city of Cambridge, the Commonwealth of Massachusetts, and the international community. Pandemic Influenza A (H1N1) emerged and had a large impact on the flu season and the Cambridge Public Health Department (CPHD). One of the earliest cases of H1N1 in Massachusetts occurred in a Cambridge university student in April, 2009.

Among Cambridge residents, the number of laboratory confirmed or probable cases of influenza was higher in 2009 than in previous years. While this may have been due to an actual increase in influenza burden related to H1N1, it could also have been due to increased testing by providers, or the public may have sought care and testing more frequently than normal.

In response to the emergence of H1N1, new surveillance systems were developed and old ones were ramped up. During the 2009-2010 academic year, a school surveillance system was implemented as part of a collaborative effort of the public health department, public schools, private school, preschools, and universities in Cambridge. CPHD’s Division of Epidemiology and Data Services produced and reviewed weekly absenteeism and ILI surveillance reports. These school surveillance efforts are continuing during the 2011-2012 school year in order to monitor all communicable diseases, to identify any potential emergent health issues in the schools and universities, and to help interpret trends in student absenteeism data.

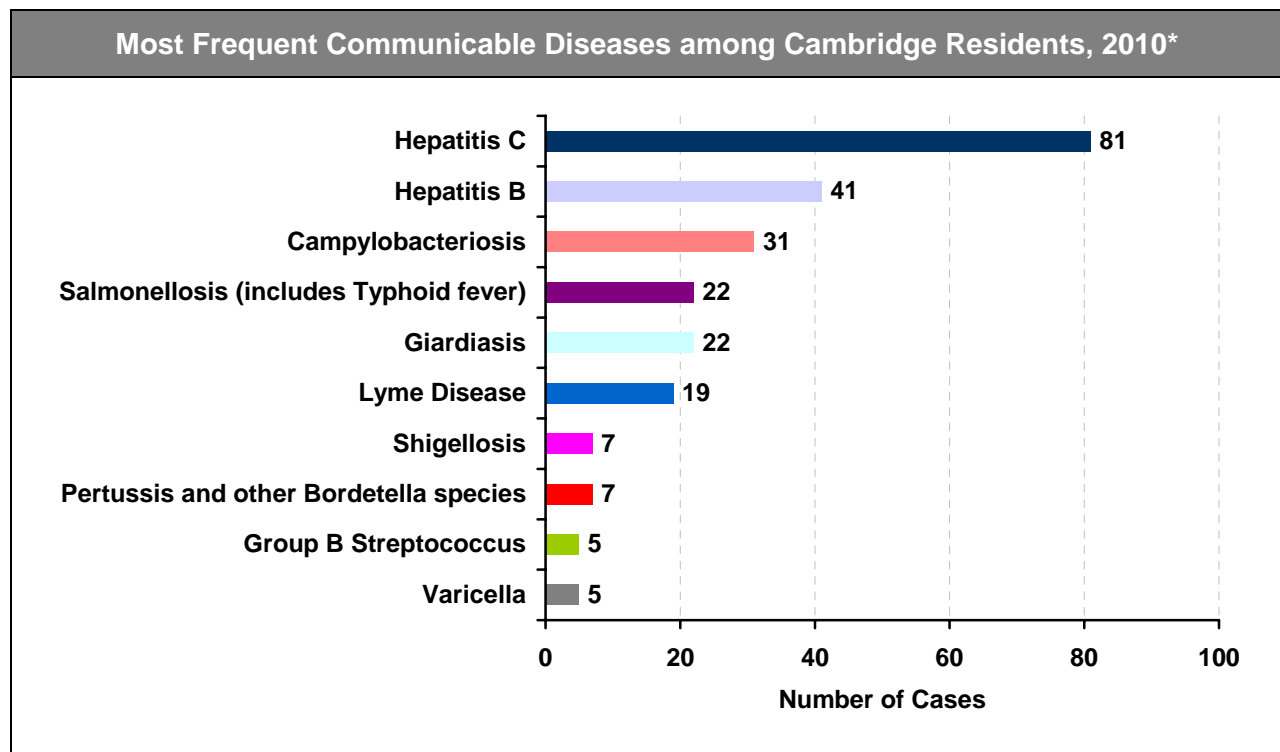
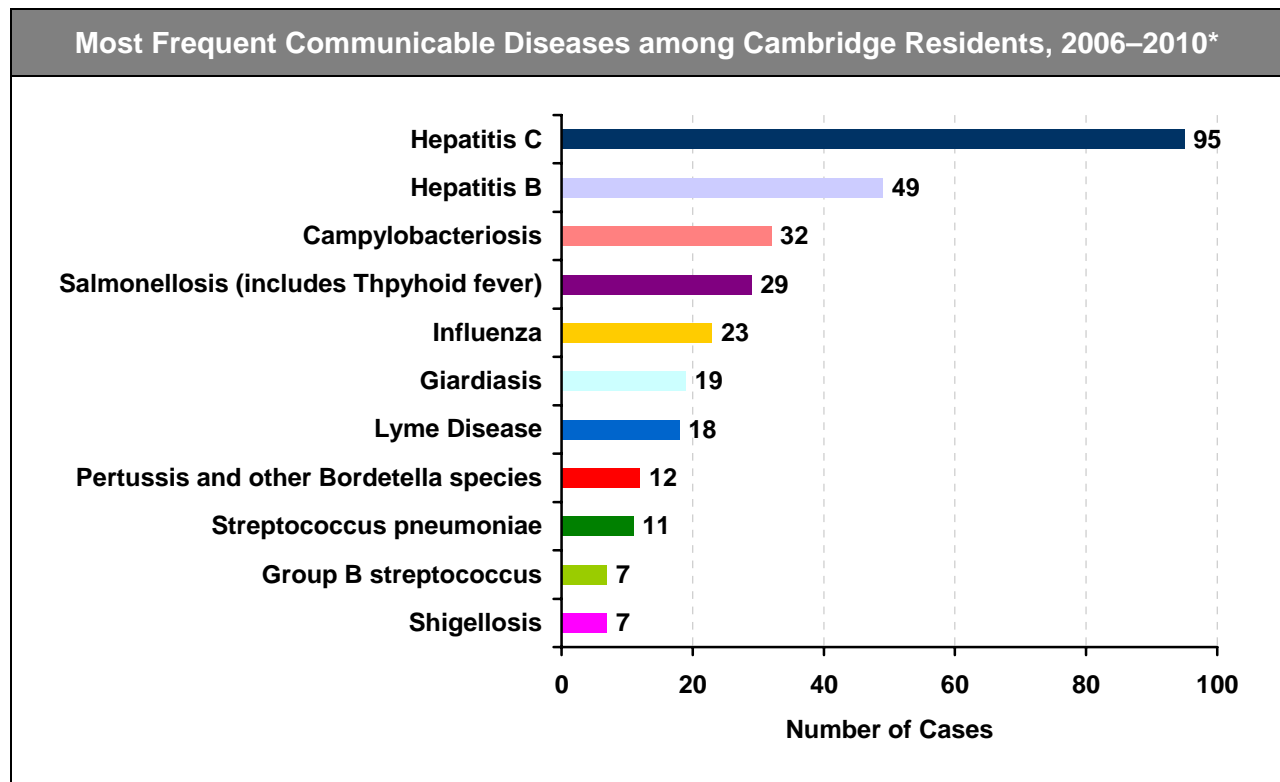
Communicable Disease Case Count

Number of Reportable Communicable Disease Cases Among Cambridge Residents by Year,* 2006–2010						
Disease	Year					2006-2010 Average
	2006	2007	2008	2009	2010	
Amebiasis	2	4	6	4	3	4
Babesiosis	0	1	0	1	0	0
Calicivirus/Norovirus	1	0	0	0	0	0
Campylobacteriosis	39	39	32	20	31	32
Cryptococcus neoformans	0	0	0	1	0	0
Cryptosporidiosis	0	1	2	2	0	1
Cyclosporiasis	0	0	1	0	0	0
Dengue Fever	2	0	0	0	0	0
Encephalitis	0	1	0	0	0	0
Enterovirus	0	0	2	0	0	0
Giardiasis	18	19	20	16	22	19
Group A streptococcus	2	6	3	2	2	3
Group B streptococcus	12	8	9	3	5	7
Haemophilus influenzae	2	1	0	0	0	1
Hepatitis A	3	1	4	4	2	3
Hepatitis B (includes acute and chronic)	50	59	42	53	41	49
Hepatitis C (includes acute and chronic)	99	99	103	95	81	95
Influenza	4	2	15	93	1	23
Invasive bacterial infection (other)	0	0	0	0	1	0
Legionellosis	3	2	0	1	0	1
Listeriosis	2	2	0	0	2	1
Lyme Disease	11	17	24	21	19	18
Malaria	0	1	2	5	2	2
Measles	1	0	1	0	0	0
Mumps	0	0	1	1	0	0
Pertussis and other Bordetella species	13	27	7	8	7	12
Salmonellosis (includes Typhoid fever)	28	46	28	20	22	29
Shiga toxin producing organism	2	3	5	2	1	3
Shigellosis	7	8	5	7	7	7
Streptococcus pneumoniae	15	14	16	8	4	11
Toxoplasmosis	0	0	0	1	0	0
Varicella	7	3	7	5	5	5
Vibriosis	0	0	0	1	1	0
Viral Meningitis (aseptic)	4	0	0	0	0	1
West Nile Virus Infection	0	0	1	0	0	0
Yersiniosis	2	1	0	0	0	1
Total number of cases	329	365	336	377	259	329

* Includes confirmed and probable case statuses for all diseases. Count is determined using event date (not the date of notification).

Note: Data for 2006 through 2010 are current as of 11/22/2011 and are subject to change. Five year averages may not total due to rounding. Numbers above do not include cases of tuberculosis (TB), sexually transmitted infections (STI), or human immunodeficiency virus (HIV), which are reported directly to the Massachusetts Department of Public Health. There is likely underreporting of hepatitis B⁵, Lyme disease⁶ and influenza⁴ as specific case criteria may not have been met.

Most Frequent Reportable Communicable Diseases



* Includes confirmed and probable case statuses for all diseases. Count is determined using event date (not the date of notification).
 Note: Data for 2006 through 2010 are current as of 11/22/2011 and are subject to change. Numbers above do not include cases of tuberculosis (TB), sexually transmitted infections (STI), or human immunodeficiency virus (HIV), which are reported directly to the Massachusetts Department of Public Health. There is likely underreporting of hepatitis B⁵, Lyme disease⁶ and influenza⁴ as specific case criteria may not have been met.

Most Frequent Communicable Diseases among Cambridge Residents (2006–2010)

The following disease descriptions are from the Massachusetts Department of Public Health fact sheets,⁷ unless otherwise noted.

<u>Disease</u>	<u>Description</u>
Campylobacteriosis	A bacterial infection of the bowels of people and animals that can cause diarrhea. People can become infected from swallowing contaminated food or water.
Giardia	A parasite that can cause diarrhea. People can become infected from swallowing contaminated food or water.
Group B Streptococcus	A bacteria that causes illness in people of all ages. It can be passed from pregnant women to their newborns during birth and can lead to infections in the blood, lungs, and the membrane that covers the brain. In adults, it causes pneumonia, bloodstream infections, and skin infections. ⁸
Hepatitis B	A viral infection of the liver spread by blood or bodily fluids from an infected person. Most people recover from the disease, but some people develop a chronic infection. The severity of disease ranges from no symptoms or mild symptoms to liver disease or liver cancer.
Hepatitis C	A viral infection of the liver spread by blood or bodily fluids from an infected person. Most people will develop a chronic infection, and it can lead to cirrhosis and/or liver cancer.
Influenza	A viral infection that causes fever, sore throat, and cough.
Lyme disease	A bacteria spread when an infected deer tick bites a human or animal. Usually, the tick must be attached for at least 24 hours. Symptoms include rash and flu-like illness. Without medical treatment more serious problems can occur.
Pertussis	Also known as “whooping cough,” pertussis is spread through the air by infected people who are coughing or sneezing. The symptoms begin as a common cold and progress to uncontrolled coughing spells.
Salmonella	A bacterium that causes disease in the bowels of people and animals, and can spread to the blood and bone to cause more serious infections. It is typically spread by eating contaminated food that has not been properly handled, prepared, or cooked.
Shigellosis	A bacterial infection of the bowels of people and animals that can cause diarrhea. People can become infected from swallowing contaminated food or water.
Streptococcus pneumonia	A bacteria that can infect the lungs, blood, and the membrane that covers the brain. It is spread in the air by the coughs and sneezes of infected people.

References

- 1) Koo, Denise and Wharton, Melinda. “Case Definitions for Infectious Conditions Under Public Health Surveillance.” *MMWR*. 1997; 46 [No. RR-10].
- 2) Hall Baker, Patsy et al. “Summary of Notifiable Diseases---United States, 2008.” *MMWR*. 2010; 57 [No. RR1-94].
- 3) “Overview of Influenza Surveillance in the United States.” Centers for Disease Control and Prevention. 2011. November 22, 2011. <<http://www.cdc.gov/flu/weekly/overview.htm>>
- 4) “Massachusetts Department of Public Health Weekly Influenza Update May 26, 2011.” Massachusetts Executive Office of Health and Human Services. November 22, 2011. <<http://www.mass.gov/eohhs/docs/dph/cdc/flu/summary-2010-2011.doc> >
- 5) Viral Hepatitis Surveillance – United States, 2009. Centers for Disease Control and Prevention. January 4, 2012. <<http://www.cdc.gov/hepatitis/statistics/2009surveillance/Commentary.htm>>
- 6) “Lyme disease surveillance and available data.” Centers for Disease Control and Prevention. January 4, 2012. <<http://www.cdc.gov/lyme/stats/survfaq.html>>
- 7) Massachusetts Executive Office of Health and Human Services. 2011. Massachusetts Department of Public Health. November 22, 2011. <<http://www.mass.gov/eohhs/consumer/wellness/disease-prevention/communicable-diseases/factsheets.html>>
- 8) “About Group B Strep.” Centers for Disease Control and Prevention. January 4, 2012. <<http://www.cdc.gov/groupbstrep/about/index.html>>

Appendix: List of Massachusetts Reportable Communicable Diseases

Effective July 2008



COMMUNICABLE AND OTHER INFECTIOUS DISEASES REPORTABLE IN MASSACHUSETTS TO LOCAL BOARDS OF HEALTH

Note: If these diseases are initially reported to MDPH, local boards of health will be notified.

INITIATE INVESTIGATION IMMEDIATELY FOR BOTH SUSPECT AND CONFIRMED CASES AND NOTIFY MDPH!

Telephone: (617) 983-6800

● INITIATE INVESTIGATION AND COMPLETE CASE REPORT AS SOON AS POSSIBLE.

(This may include both suspect and confirmed cases.)

Confidential Fax: (617) 983-6813

- Amebiasis (*Entamoeba histolytica*)
- Anaplasmosis (*Anaplasma phagocytophilum*)
- ☞ Any case of an unusual illness
- ☞ Any cluster/outbreak of illness, including but not limited to foodborne illness
- ☞ Anthrax (*Bacillus anthracis*)
- Babesiosis (*Babesia* sp.)
- ☞ Botulism (*Clostridium botulinum*)
- ☞ Brucellosis (*Brucella* sp.)
- Campylobacteriosis (*Campylobacter* sp.)
- Chagas disease (*Trypanosoma cruzi*)
- Cholera (*Vibrio cholerae*)
- Creutzfeldt-Jakob disease (CJD) and variant CJD
- Cryptococcosis (*Cryptococcus neoformans*)
- Cryptosporidiosis (*Cryptosporidium* sp.)
- Cyclosporiasis (*Cyclospora cayentanensis*)
- Dengue
- ☞ Diphtheria (*Corynebacterium diphtheriae*)
- ☞ Eastern equine encephalitis
- Ehrlichiosis (*Ehrlichia* sp.)
- Encephalitis, any cause
- *Escherichia coli* O157:H7, and other shiga-toxin producing *E. coli*
- Food poisoning and toxicity (includes poisoning by ciguatera, scombrototoxin, mushroom toxin, tetrodotoxin, paralytic shellfish and amnesic shellfish)
- Giardiasis (*Giardia* sp.)
- Glanders (*Burkholderia mallei*)
- ☞ Group A streptococcus, invasive
- Group B streptococcus, invasive
- ☞ *Haemophilus influenzae*, invasive
- Hansen's disease (leprosy)
- ☞ Hantavirus
- ☞ Hemolytic uremic syndrome
- ☞ Hepatitis A (IgM+ only)
- Hepatitis B
- Hepatitis C
- Hepatitis – infectious, not otherwise specified
- Influenza
- ☞ Influenza A virus, novel
- ☞ Influenza, pediatric deaths (<18 years)
- Legionellosis (*Legionella* sp.)
- Leptospirosis (*Leptospira* sp.)
- Listeriosis (*Listeria* sp.)
- Lyme disease (*Borrelia burgdorferi*)
- Lymphocytic choriomeningitis
- Malaria (*Plasmodium falciparum*, *P. malariae*, *P. vivax*, *P. ovale*)
- ☞ Measles
- Melioidosis (*Burkholderia pseudomallei*)
- ☞ Meningitis, bacterial, community acquired
- Meningitis, viral (aseptic), and other infectious (non-bacterial)
- ☞ Meningococcal disease, invasive (*Neisseria meningitidis*)
- ☞ Monkeypox or other orthopox virus
- Mumps
- Norovirus
- Pertussis (*Bordetella pertussis*)
- ☞ Plague (*Yersinia pestis*)
- Pneumococcal disease, invasive (*Streptococcus pneumoniae*)
- ☞ Polio
- Psittacosis (*Chlamydia psittaci*)
- Q fever (*Coxiella burnetii*)
- ☞ Rabies in humans
- Reye syndrome
- ☞ Rheumatic fever
- Rickettsialpox (*Rickettsia akari*)
- Rocky Mountain spotted fever (*Rickettsia rickettsii*)
- Rubella
- Salmonellosis (*Salmonella* sp., non typhi)
- ☞ Severe acute respiratory syndrome (SARS)
- Shiga-toxin producing organisms
- Shigellosis (*Shigella* sp.)
- ☞ Smallpox
- ☞ Tetanus (*Clostridium tetani*)
- Toxic shock syndrome
- Toxoplasmosis (*Toxoplasma* sp.)
- Trichinosis (*Trichinella* sp.)
- ☞ Tularemia (*Francisella tularensis*)
- ☞ Typhoid fever (*Salmonella typhi*)
- Typhus (*Rickettsia prowazekii*)
- Varicella (chickenpox)
- Vibriosis (*Vibrio* sp.)
- ☞ Viral hemorrhagic fevers
- ☞ West Nile
- Yellow fever
- Yersiniosis (*Yersinia* sp.)

Important Note: During outbreaks, MDPH and local boards of health may request that other diseases be reportable immediately.

105 CMR 300.000 Reportable Diseases, Surveillance, and Isolation and Quarantine Requirements, 2nd Edition, August 2009