

Bureau of Infectious Disease and Laboratory Sciences

HIV-Hepatitis Coinfection Report

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# Bureau of Infectious Disease and Laboratory Sciences

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### Requests for additional data

<http://www.mass.gov/eohhs/gov/departments/dph/programs/id/isis/> surveillance‐data‐request .ht ml

### Acknowledgments

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#### Massachusetts Department of Public Health

#### Bureau of Infectious Disease and Laboratory Sciences

**Division of Epidemiology and Immunization**

##### HIV-Hepatitis Coinfection Report

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# Summary

# Background

# This report was prepared as part of a demonstration project in cooperation with the Centers for Disease Control and Prevention (CDC) exploring how viral hepatitis and HIV surveillance data might be matched by state and local health departments. Seventeen jurisdictions (fifteen states and two cities) participated in the project, including the Massachusetts Department of Public Health (MDPH). Using a consistent methodology, jurisdictions matched their HIV surveillance data to their hepatitis B virus (HBV) and hepatitis C virus (HCV) infection surveillance data using identifiers, including first name, last name, date of birth, and Social Security number. In Massachusetts, all confirmed and probable HBV and HCV cases (both acute and chronic) reported since 2007 were included in the analysis. (HBV data as of August 17, 2016 and HCV data as of August 19, 2016.) All diagnoses of HIV infection reported as of September 30, 2016 were included in the analysis. This report contains results for Massachusetts only. A publication that includes data from all seventeen sites is forthcoming.

# Results

# Of the 21,243 Massachusetts residents living with HIV infection at the end of 2014, 1.6% (337) were identified as coinfected with HBV and 7.4% (1,572) with HCV since 2007. Of the15,190 persons reported with HBV infection since 2007, 2.6% (395) were reported with HIV infection. Of the 67,767 persons reported with HCV infection since 2007, 2.8% (1,904) were reported with HIV infection. A greater proportion of persons coinfected with HIV and HBV were black/African American compared to those with HIV monoinfection. Persons who injected drugs represented a greater proportion of those coinfected with HIV and HCV compared to those with HIV infection only. These results represent the number of infections reported within a specific timeframe. Those who were never reported (or were reported with HBV or HCV before 2007) are not represented in these data.

Conclusions

There is a significant population coinfected with HIV and viral hepatitis in Massachusetts. The HIV/HBV coinfected population and the HIV/HCV coinfected population differ from each other and from the population with HIV monoinfection in terms of demographic and risk factors. Matching of hepatitis surveillance data and HIV surveillance data can inform intervention strategies, and matches will continue to be routinely performed at MDPH.

**Number and percentage of HIV and viral hepatitis coinfections among persons living with diagnosed HIV infection, by race/ethnicity, age, sex, transmission category, and timing of coinfection, MA, 2014**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *HIV without HBV*  | *HIV/HBV coinfections* | *HIV without HCV*  | *HIV/HCV coinfections* |
| *Characteristica* | *N (column %)* | *N (column %)* | *N (column %)* | *N (column %)* |
|  |  |  |  |  |
| *Race/Ethnicity* |  |  |  |  |
| American Indian/Alaska Native | 24 (0.1%) | <5 (<1.5%) | 23 (0.1%) | <5 (<0.3%) |
| Asian | 371 (1.8%) | 18 (5.3%) | 368 (1.9%) | 21 (1.3%) |
| Black/African American | 5,955 (28.5%) | 136 (40.4%) | 5,764 (29.3%) | 327 (20.8%) |
| Hispanic/Latinob | 5,423 (25.9%) | 73 (21.7%) | 4,933 (25.1%) | 563 (35.8%) |
| Multiple Races | 239 (1.1%) | <5 (<1.5%) | 211 (1.1%) | 31 (2.0%) |
| Native Hawaiian/Other Pacific Islander | 6 (0.0%) | 0 (0.0%) | 6 (0.0%) | 0 (0.0%) |
| Unknown | <5 (0.0%) | 0 (0.0%) | <5 (0.0%) | 0 (0.0%) |
| White | 8,885 (42.5%) | 106 (31.5%) | 8,363 (42.5%) | 628 (40.0%) |
| *Age Groupc* |  |  |  |  |
| < 13 | 359 (1.7%) | 0 (0.0%) | 352 (1.8%) | 0 (0.0%) |
| 13–29 | 5,596 (26.8%) | 16 (4.8%) | 5,299 (26.9%) | 101 (6.4%) |
| 30–39 | 7,840 (37.5%) | 75 (22.3%) | 7,361 (37.4%) | 262 (16.7%) |
| 40–49 | 5,051 (24.2%) | 130 (38.6%) | 4,718 (24.0%) | 557 (35.4%) |
| 50–64 | 1,887 (9.0%) | 103 (30.6%) | 1,768 (9.0%) | 619 (39.4%) |
| 65+ | 173 (0.8%) | 13 (3.9%) | 173 (0.9%) | 33 (2.1%) |
| Unknown | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| *Sexd* |  |  |  |  |
| Male | 15,020 (71.9%) | 257 (76.3%) | 14,139 (71.9%) | 1,138 (72.4%) |
| Female | 5,886 (28.2%) | 80 (23.7%) | 5,532 (28.1%) | 434 (27.6%) |
| Unknown | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| *Sexd and HIV Transmission Categorye* |  |  |  |  |
| Male–IDU | 2,471 (11.8%) | 45 (13.4%) | 1,966 (10.0%) | 550 (35.0%) |
| Male–MSM | 8,203 (39.2%) | 123 (36.5%) | 8,044 (40.9%) | 282 (17.9%) |
| Male–MSM/IDU | 856 (4.1%) | 18 (5.3%) | 722 (3.7%) | 152 (9.7%) |
| Male–Heterosexualf | 869 (4.2%) | 14 (4.2%) | 844 (4.3%) | 39 (2.5%) |
| Male–Other/Unknowng | 2,621 (12.5%) | 57 (16.9%) | 2,563 (13.0%) | 115 (7.3%) |
| Female–IDU | 1,277 (6.1%) | 24 (7.1%) | 1,036 (5.3%) | 265 (16.9%) |
| Female–Heterosexualf | 2,158 (10.3%) | 21 (6.2%) | 2,097 (10.7%) | 82 (5.2%) |
| Female–Other/Unknowng | 2,451 (11.7%) | 35 (10.4%) | 2,399 (12.2%) | 87 (5.5%) |
| *Timing of Coinfection* |  |  |  |  |
| HIV Diagnosis Year Prior to Year Hepatitis Report | N/A | 217 (64.4%) | N/A | 1,249 (79.5%) |
| Same HIV Diagnosis Year and Year Hepatitis Report | N/A | 101 (30.0%) | N/A | 233 (14.8%) |
| HIV Diagnosis Year After Year Hepatitis Report | N/A | 19 (5.6%) | N/A | 90 (5.7%) |
|  |  |  |  |  |
| *Total* | 20,906 | 337 | 19,671 | 1,572 |
| **a** For coinfected cases, information comes first from the HIV surveillance system. If information was missing in the HIV surveillance system, information from the hepatitis surveillance system was used.b Hispanics/Latinos can be of any race.**c** For HIV cases without a hepatitis report, based on age at diagnosis of HIV. For coinfected cases, based on age at coinfection or second reported virus infection to the health department.**d** In the HIV surveillance system, sex indicates sex at birth. In the hepatitis surveillance system sex may indicate sex at birth, sex at time of hepatitis event, or current sex at time the data were extracted.e Data have not been statistically adjusted to account for unknown transmission categories.f Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.g Includes hemophilia, blood transfusion, or perinatal exposure, and persons with an unknown transmission category.HIV = human immunodeficiency virus; HBV = hepatitis B virus; HCV = hepatitis C virus; IDU = injection drug use; MSM= male-to-male sexual contact |

 **Number and percentage of HIV and viral hepatitis coinfections among persons with hepatitis B infection and hepatitis C infection, by race/ethnicity, age, sex, transmission category, and timing of coinfection, MA, cumulative 2007 through 2014**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *HBV without HIV diagnosis* | *HIV/HBV coinfections* | *HCV without HIV diagnosis* | *HIV/HCV coinfections* |
| *Characteristica* | *N (column %)* | *N (column %)* | *N (column %)* | *N (column %)* |
| *Race/Ethnicity* |  |  |  |  |
| American Indian/Alaska Native | 0 (0.0%) | <5 (<1.3%) | 167 (0.3%) | <5 (<0.3%) |
| Asian | 5,429 (36.7%) | 20 (5.1%) | 1,195 (1.8%) | 27 (1.4%) |
| Black/African American | 1,941 (13.1%) | 152 (38.5%) | 3,493 (5.3%) | 391 (20.5%) |
| Hispanic/Latinob | 823 (5.6%) | 87 (22.0%) | 5,435 (8.3%) | 658 (34.6%) |
| Multiple Races | 771 (5.2%) | <5 (<1.3%) | 1,933 (2.9%) | 34 (1.8%) |
| Native Hawaiian/Other Pacific Islander | 0 (0.0%) | 0 (0.0%) | 38 (0.1%) | 0 (0.0%) |
| Unknown | 3,757 (25.4%) | 0 (0.0%) | 20,275 (30.8%) | 0 (0.0%) |
| White | 2,074 (14.0%) | 130 (32.9%) | 33,327 (50.6%) | 792 (41.6%) |
| *Age Groupc* |  |  |  |  |
| < 13 | 122 (0.8%) | 0 (0.0%) | 299 (0.5%) | 0 (0.0%) |
| 13–29 | 3,081 (20.8%) | 20 (5.1%) | 16,027 (24.3%) | 118 (6.2%) |
| 30–39 | 4,109 (27.8%) | 85 (21.5%) | 12,797 (19.4%) | 297 (15.6%) |
| 40–49 | 3,075 (20.8%) | 152 (38.5%) | 12,953 (19.7%) | 676 (35.5%) |
| 50–64 | 3,121 (21.1%) | 122 (30.9%) | 19,178 (29.1%) | 764 (40.1%) |
| 65+ | 1,197 (8.1%) | 16 (4.1%) | 3,526 (5.4%) | 49 (2.6%) |
| Unknown | 90 (0.6%) | 0 (0.0%) | 1,083 (1.6%) | 0 (0.0%) |
| *Sexd* |  |  |  |  |
| Male | 8,122 (54.9%) | 302 (76.5%) | 38,489 (58.4%) | 1,377 (72.3%) |
| Female | 6,581 (44.5%) | 93 (23.5%) | 24,858 (37.7%) | 527 (27.7%) |
| Unknown | 92 (0.6%) | 0 (0.0%) | 2,516 (3.8%) | 0 (0.0%) |
| *Sexd and HIV Transmission Categorye* |  |  |  |  |
| Male–IDU | N/A | 58 (14.7%) | N/A | 666 (35.0%) |
| Male–MSM | N/A | 146 (37.0%) | N/A | 341 (17.9%) |
| Male–MSM/IDU | N/A | 19 (4.8%) | N/A | 185 (9.7%) |
| Male–Heterosexualf | N/A | 16 (4.1%) | N/A | 42 (2.2%) |
| Male–Other/Unknowng | N/A | 63 (16.0%) | N/A | 143 (7.5%) |
| Female–IDU | N/A | 34 (8.6%) | N/A | 331 (17.4%) |
| Female–Heterosexualf | N/A | 23 (5.8%) | N/A | 94 (4.9%) |
| Female–Other/Unknowng | N/A | 36 (9.1%) | N/A | 102 (5.4%) |
| *Timing of Coinfection* |  |  |  |  |
| HIV Diagnosis Year Prior to Year Hepatitis Report | N/A | 264 (66.8%) | N/A | 1,534 (80.6%) |
| Same HIV Diagnosis Year and Year Hepatitis Report | N/A | 111 (28.1%) | N/A | 270 (14.2%) |
| HIV Diagnosis Year After Year Hepatitis Report | N/A | 20 (5.1%) | N/A | 100 (5.3%) |
|  |  |  |  |  |
| *Total* | 14,795 | 395 | 65,863 | 1,904 |
| **a** For coinfected cases, information comes first from the HIV surveillance system. If information was missing in the HIV surveillance system, information from the hepatitis surveillance system was used.b Hispanics/Latinos can be of any race.**c** For hepatitis cases without an HIV diagnosis, based on age at diagnosis of hepatitis. For coinfected cases, based on age at coinfection or second reported virus infection to the health department.**d** In the HIV surveillance system, sex indicates sex at birth. In the hepatitis surveillance system sex may indicate sex at birth, sex at time of hepatitis event, or current sex at time the data were extractede Data have not been statistically adjusted to account for unknown transmission categories.f Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.g Includes hemophilia, blood transfusion, or perinatal exposure, and persons with an unknown transmission category.HIV = human immunodeficiency virus; HBV = hepatitis B virus; HCV = hepatitis C virus; IDU = injection drug use; MSM= male-to-male sexual contact |

# Technical notes

# Case classification: Past or Present HCV Infection

*Confirmed*:

* One or more of the following criteria (except in persons less than 18 months of age, for whom only criteria 3 would meet the case classification criteria):
	1. Antibodies to hepatitis C virus (anti-HCV) screening-test- positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay as defined by CDC, OR
	2. Hepatitis C Virus Recombinant Immunoblot Assay (HCV RIBA) positive, OR
	3. Nucleic Acid Test (NAT) for HCV RNA positive (including qualitative, quantitative, or genotype)

*Probable*:

1. Rapid HCV antibody positive test, OR
2. Anti-HCV screening-test-positive that has not been verified by a more specific assay or has unknown signal to cut-off ratio (regardless of ALT results and acute hepatitis C status)

Case classification: Acute HCV Infection

*Confirmed*:

* Clinically compatible presentation\* not known to have chronic HCV with 1 or more of the following:
	1. Anti-HCV screening-test-positive with a signal to cut-off ratio

predictive of a true positive as determined for the particular assay as defined by CDC, OR

* 1. HCV RIBA positive, OR
	2. NAT for HCV RNA positive (including qualitative, quantitative, or genotype)

AND, if done meets the following two criteria†:

* + 1. IgM anti-HAV negative AND
		2. IgM anti-HBV negative

\* - A documented negative HCV antibody laboratory result followed within 6 months by a positive test result (as described above) does NOT require an acute clinical presentation to meet the confirmed case definition

† - From 2007-2013, cases meeting the acute case definition, but missing a negative HAV & HBV result had to be classified as *Suspect*. The case definition change in 2013 eliminated this requirement.

*Suspect*:

1. A documented negative HCV antibody laboratory test result followed within 6-12 months by a positive test result (as described above) does NOT require an acute clinical

presentation to meet the suspect case definition.

1. Low level viremia (<100,000 IU/mL) not known to have chronic HCV

The year into which a case is categorized is based upon the case’s “Event Date”, which can be calculated from the following case characteristics, in decreasing order of specificity, dependent on availability of information: symptom onset date, specimen collection date, diagnosis date, or case creation date.

**Case classification: Chronic HBV Infection**

*Confirmed:*

* IgM antibodies to hepatitis B core antigen (IgM anti-HBc) negative AND a positive result on one of the following tests: hepatitis B surface antigen (HBsAg), hepatitis B e antigen (HBeAg), or nucleic acid test for hepatitis B virus DNA (including qualitative, quantitative and genotype testing), OR
* HBsAg positive or nucleic acid test for hepatitis B virus DNA (including qualitative, quantitative and genotype testing), or HBeAg positive two times at least 6 months apart (Any combination of these tests performed 6 months apart is acceptable.)

*Probable*:

A case with a single HBsAg positive or HBV DNA positive (including qualitative, quantitative and genotype testing), or HBeAg positive lab result when no IgM anti-HBc results are available

**Case classification: Acute HBV Infection**

Clinical Presentation: An acute illness with a discrete onset of symptoms consistent with acute hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain) and either a) jaundice or b) elevated serum alanine aminotransferase levels > 100 IU/L

*Confirmed:*

Clinically compatible case\* not known to have chronic hepatitis B and

1. HBsAg positive, AND
2. IgM antibody to hepatitis B core antigen (IgM anti– HBc) positive, if done

\* A documented negative hepatitis B surface antigen (HBsAg) laboratory test result within 6 months prior to a positive test (either HBsAg, Hepatitis B “e” antigen (HBeAg), or hepatitis B virus nucleic acid testing (HBV NAT) including genotype) result does NOT require an acute clinical presentation to meet the surveillance case definition.

*Suspect*:

Positive IgM antibody to hepatitis B core antigen (IgM anti-HBc) that does not meet the clinical definition

The year into which a case is categorized is based upon the case’s “Event Date”, which can be calculated from the following case characteristics, in decreasing order of specificity, dependent on availability of information: symptom onset date, specimen collection date, diagnosis date, or case creation date.

Case classification: HIV infection

Clinical description: HIV (human immunodeficiency virus) is a retrovirus with two serologically and geographically distinct species: HIV-1 and HIV-2. It is spread via person-to-person transmission through: sexual contact, the use of HIV-contaminated needles and syringes, vertical transmission from mother to infant, or the transfusion of contaminated blood or its components. HIV attacks the body’s immune system, making the person more likely to get infections or infection-related cancers. These opportunistic infections or cancers take advantage of the weakened immune system and signal that the person has AIDS (acquired immunodeficiency syndrome), the advanced stage of HIV infection.

Case Classification

*Confirmed:* Positive HIV-1, Positive HIV-2, or Positive (Undifferentiated) HIV result from a differentiating immunoassay, Western Blot, IFA, or culture; Positive/Detected Qualitative HIV NAT (DNA or RNA); Quantitative HIV NAT (detectable viral load assay) or physician verified diagnosis.