



EPI MONTHLY REPORT



MIAMI-DADE COUNTY HEALTH DEPARTMENT
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Community Viral Load and HIV Infection Prevention

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Viral load, also known as viral burden or viral titer, is a measure of the severity of a viral infection, and can be calculated by estimating the amount of virus in the bloodstream of a person [1]. Viral load is typically reported as copies of Human immunodeficiency virus (HIV) in a milliliter (mL) of blood. Between 2000 and 2009, several studies stated that early use of antiretroviral medications among HIV infected people decreased the level of viremia and viral shedding of HIV. Studies also showed that antiretroviral medications reduced infectiousness or eliminated the transmission of the virus [2-5].

The earliest use of “community viral load” occurred in 2008 at the Conference of Retroviruses and Opportunistic Infections by Ronald Stall. Community viral load (CVL) is a term that refers to the overall level of HIV virus in a predefined geographic/social network of people. Stall explained that community viral load may be reduced by offering medical care and prevention services to unknown positives and men not in treatment [6].

In 2009, Wood et al. published a longitudinal study of community plasma HIV-1 RNA concentrations and incidence of HIV-1 among injecting drug users from 1996-2007 in Canada. The study found an association between CVL and the community HIV incidence rate and predicted HIV incidence independent of unsafe sexual behaviors and sharing used syringes [7]. During recent years, the City of San Francisco, Washington DC and New York, et al, Department of Public Health documented their experiences of offering early antiretroviral treatment to HIV patients and reported an overall decline in their CVL [8-12].

Growing evidence suggests that earlier antiretroviral therapy (ART) may be beneficial to reduce the probability of HIV infection transmission through the lowering of CVL. HIV plasma viral load testing has become more than just a clinical tool to monitor treatment response at the individual level. Increasingly, individual HIV plasma viral load testing is being reported to public health agencies and is used to inform epidemiological surveillance and monitor the presence of the virus collectively using techniques to measure CVL [13].

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Studies have found that having a low viral load greatly decreases the risk that you will pass HIV to someone else through sexual contact (Figure-1 & 2) [3, 14]. But having a low viral load does not guarantee that you won't transmit HIV to someone else (Tab-1). Even when the viral load in your blood is undetectable, HIV can still exist in semen, vaginal and rectal fluids, breast milk, and other parts of your body [15]. This study suggests that the steps of preventing HIV transmission and protecting your partner should be taken by using condoms consistently and correctly for all sexual contact, even when your viral load is undetectable.

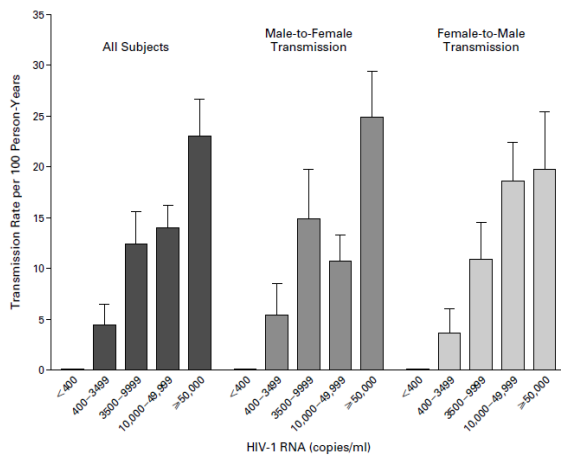


Figure 1. Mean (+SE) Rate of Heterosexual Transmission of HIV-1 among 415 Couples, According to the Sex and the Serum HIV-1 RNA Level of the HIV-1-Positive Partner. At base line, among the 415 couples, 228 male partners and 187 female partners were HIV-1-positive. The limit of detection of the assay was 400 HIV-1 RNA copies per milliliter. For partners with fewer than 400 HIV-1 RNA copies per milliliter, there were zero transmissions.

Quinn et al NEJM 2000

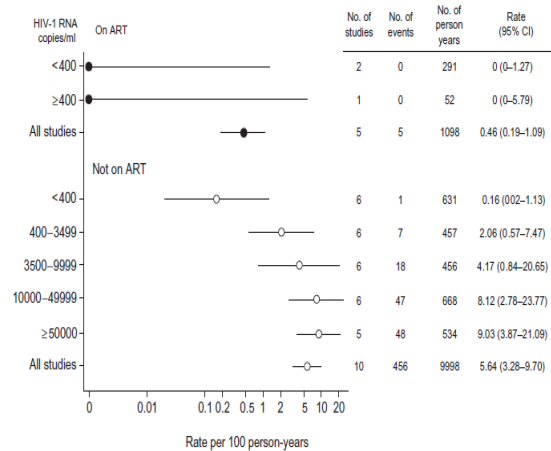


Fig. 2. Forest plot of summary HIV transmission rates, per 100 person-years, according to use of antiretroviral therapy and plasma viral load. ART, antiretroviral therapy; CI, confidence interval; the meta-analysis of couples where the HIV-infected partner received ART included two studies with viral load data [10,11] and three studies without viral load data [18,23,24]; the meta-analysis of couples with the HIV-infected partner not receiving ART included seven studies with viral load data in at least one category [9,10,11-14,17] and three studies without viral load data [21,23,24]. Note that not all studies with viral load data contributed to all viral load strata.

Attia et al. AIDS 2009

Viral load in infected partner	Sexual exposure route	Expected value	Lower bound	Upper bound
5 copies per mL	Female-to-male	164	56	471
	Male-to-female	326	111	920
	Male-to-male	2823	1060	6191
10 copies per mL	Female-to-male	215	80	564
	Male-to-female	425	159	1096
	Male-to-male	3524	1477	6871
50 copies per mL	Female-to-male	398	181	854
	Male-to-female	781	359	1635
	Male-to-male	5565	3059	8325
400 copies per mL	Female-to-male	872	517	1441
	Male-to-female	1669	1007	2674
	Male-to-male	8391	6543	9557

Table 2: Expected number of HIV seroconversions out of 10 000 serodiscordant couples in a hypothetical population over 1000 acts per partnership, with lower and upper uncertainty bounds

Tab 1. The risk of HIV transmission in heterosexual partnerships in the presence of effective treatment is low but non-zero and the transmission risk in male homosexual partnerships is high over repeated exposures.

Wilson et al, Lancet 2008

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According to a MediaTakeOut.com survey, Miami is Ranked #1 of the Top 25 cities in the United States with the highest HIV rates in 2011. In Miami-Dade County, there were 4,073 reported HIV cases between 2009 and 2011 that accounted for almost 25% of all cases in Florida. However, the incidence rate per 100,000 population has decreased from 100 in 2000 to 57.3 in 2011, and the HIV/AIDS mortality rate per 100,000 population declined to 9.1 in 2011 from 21.3 in 2000. Additionally, HIV infection dropped from the 7th leading cause of death in 2000 to the 12th leading cause in 2011. Despite this decrease, HIV disease remains a major public health problem in Miami-Dade County.

Providing early treatment for new HIV infected individuals and actively monitoring CVL, may help reduce the number of new HIV infections. A limitation of utilizing viral load to reduce HIV infection is that only 34% of recent viral load and CD4 information is available for public health use for 2011 reported cases. Within the past five years, the percentage of viral load data available has not changed. In addition, the availability of data varied by race/ethnicity which may reflect health care accessibility. Individuals classified as Black or Hispanic were less likely to have viral load data available. Reporting viral load and CD4 counts is a critical first step in calculating CVL—a key action step called for in the National HIV/AIDS Strategy [16]. The following steps may help improve viral load availability among HIV cases in Miami-Dade County:

1. Improve communication between the laboratory, health care provider and public health surveillance unit.
2. Set up a linkage of dataset between the laboratory, health care provider and public health surveillance.
3. Enhance the quality control and assessment of HIV/AIDS surveillance.

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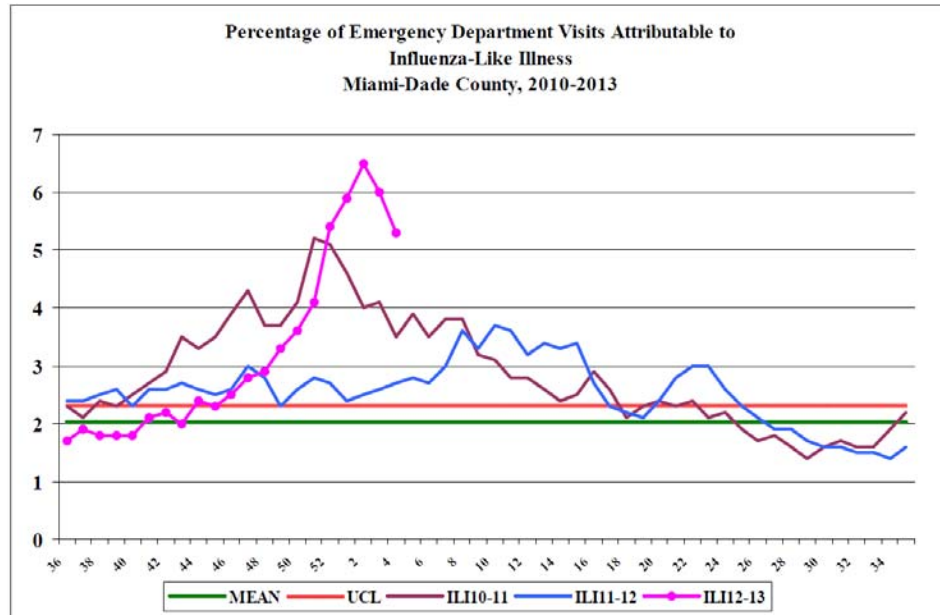
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Influenza-Like-Illness, All Age



During this period, there were 23,791 ED visits; among them 1,252 (5.3%) were ILI. At the same week of last year, 2.7% of ED visits were ILI.

PARTICIPATE IN INFLUENZA SENTINEL PROVIDER SURVEILLANCE

The Miami-Dade County Health Department NEEDS Influenza Sentinel Providers!!

Sentinel providers are key to the success of the Florida Department of Health's Influenza Surveillance System. Data reported by sentinel providers gives a picture of the influenza virus and ILI activity in the U.S. and Florida which can be used to guide prevention and control activities, vaccine strain selection, and patient care.

- Providers of any specialty, in any type of practice, are eligible to be sentinel providers.
- Most providers report that it takes **less than 30 minutes a week** to compile and report data on the total number of patients seen and the number of patients seen with influenza-like illness.
- Sentinel providers can submit specimens from a subset of patients to the state laboratory for virus isolation **free of charge**.

For more information, please contact
Lakisha Thomas at 305-470-5660.

TO REPORT ANY DISEASE AND FOR INFORMATION CALL:

Epidemiology, Disease Control & Immunization Services

Childhood Lead Poisoning

Prevention Program	305-470-6877
Hepatitis	305-470-5536
Immunizations or outbreaks	305-470-5660
HIV/AIDS Program	305-470-6999
STD Program	305-575-5430
Tuberculosis Program	305-575-5415
Immunization Service	305-470-5660
To make an appointment.....	786-845-0550

About the Epi Monthly Report

The Epi Monthly Report is a publication of the Miami-Dade County Health Department, Epidemiology, Disease Control & Immunization Services. The publication serves a primary audience of physicians, nurses, and public health professionals. Articles published in the Epi Monthly Report may focus on quantitative research and analysis, program updates, field investigations, or provider education. For more information or to submit an article, contact Esther Bell at (305) 470-6918.

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Miami-Dade County Monthly Report Select Reportable Disease/Conditions December 2012

Diseases/Conditions	2012 Current Month	2012 Year to Date	2011 Year to Date	2010 Year to Date
HIV/AIDS				
AIDS*	74	620	718	668
HIV	170	1262	1271	1252
STD				
Infectious Syphilis*	23	305	306	347
Chlamydia*	748	9380	8659	8639
Gonorrhea*	166	2283	2343	2440
TB				
Tuberculosis**	21	119	158	154
Epidemiology, Disease Control & Immunization Services				
Epidemiology				
Campylobacteriosis	16	335	408	186
Ciguatera Poisoning	4	23	19	13
Cryptosporidiosis	1	22	21	23
Cyclosporiasis	1	2	10	1
Dengue Fever	15	58	23	53
E. coli, O157:H7	1	3	16	16
E. coli, Non-O157	0	0	0	0
Encephalitis, West Nile Virus	0	0	0	0
Giardiasis, Acute	23	241	308	798
Influenza Novel Strain	0	0	0	20
Influenza, Pediatric Death	0	2	0	0
Legionellosis	1	19	19	12
Leptospirosis	1	1	0	1
Listeriosis	8	9	11	14
Lyme disease	1	13	5	6
Malaria	1	7	19	34
Meningitis (except aseptic)	4	26	35	20
Meningococcal Disease	1	17	16	18
Salmonellosis	35	594	596	485
Shigellosis	8	82	120	205
Streptococcus pneumoniae, Drug Resistant	8	72	92	140
Toxoplasmosis	0	4	0	1
Typhoid Fever	0	2	3	3
Vibriosis	10	13	7	14
West Nile Fever	0	1	1	0
Immunization Preventable Diseases				
Measles	0	0	0	0
Mumps	0	1	0	4
Pertussis	6	68	32	28
Rubella	0	0	0	0
Tetanus	1	1	0	0
Varicella	2	44	47	80
Hepatitis				
Hepatitis A	2	26	26	49
Hepatitis B (Acute)	1	19	9	27
Lead				
Lead Poisoning	15	110	133	240

*Data is provisional at the county level and is subject to edit checks by state and federal agencies.

** Data on tuberculosis are provisional at the county level.