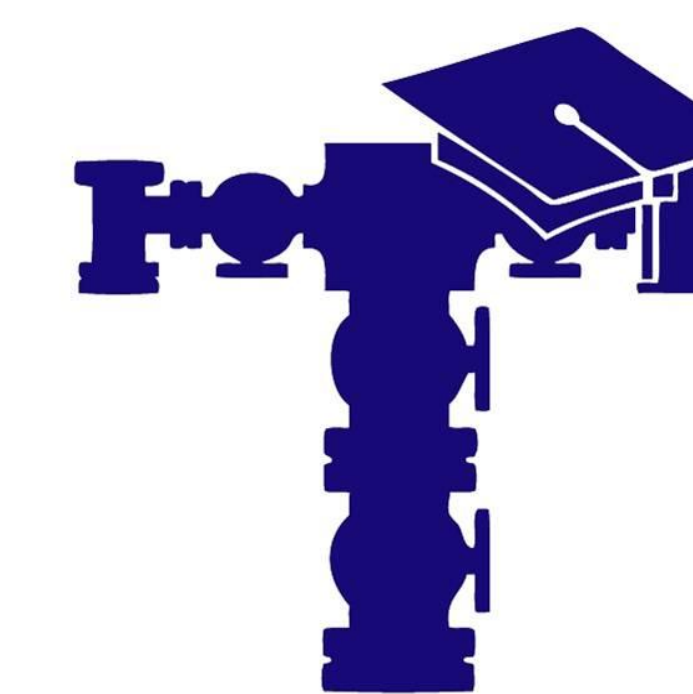


# Assessment of Need for Targeted Acute HIV Testing

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## Introduction

Studies focusing on missed diagnosis of Acute HIV infection suggest that undiagnosed patients frequently present to the Emergency Department (ED) with symptoms of viral syndrome before receiving a diagnosis of HIV. However, consistent diagnosis of Acute HIV infection is a significant problem within the medical community. During this early stage, viral load is at its highest and the patient is most infectious. Diagnoses during this early stage, often called “the window period”, would reduce further transmission. The window period typically lasts between 6-8 weeks. Routine antibody based screening methods, commonly used in the ED, frequently present a negative antibody screening during the window period due to the fact that, although the virus is actively replicating, antibodies are not present. During this stage of infection, the patient experiences symptoms of a viral infection. These symptoms include fever, muscle aches, rash, sore throat, nasal congestion, night sweats, and headache. Patients who seek medical help while in the window period will receive a negative antibody screening result. The misdiagnosis of HIV status poses two threats. Primarily, the patient will not receive appropriate treatment. Secondarily, there is a public health risk since these persons are sent back into the community without the knowledge that they can be spreading the virus to others.

## Abstract

**Background:** Acute HIV Infection (AHI) is a period with heightened infectiousness, meaning that individuals with AHI are at their most infectious during a time when, by routine HIV antibody test, they may believe themselves uninfected.<sup>1</sup> The proportion of HIV-infected individuals who are misdiagnosed will increase unless sensitive tests are used to mitigate the expected greater number of false-negative antibody test results during acute and early infecting.<sup>2</sup>

**Hypothesis:** We hypothesize that this is occurring in the LSUHSC ED, and there is a need for targeted Acute HIV screening in the ED. Antigen screening test, which tests for the actual virus, will increase detection of Acute HIV infection, and thus decrease transmission of the virus. LSUHSC utilizes Oraquick antibody assays for the purpose of HIV screening. We hypothesize that there have been a significant number of patients presented to the ED with symptoms of Acute HIV Infection but, due to limitations in testing methods, received a negative HIV test result.

**Methods:** Subject data will be collected via retrospective chart review. We will look at laboratory data collected from 1/1/2006 to 4/1/2012 to determine the number of patients that presented to the ED with symptoms of an acute viral syndrome, had a negative Oraquick, and were given a new diagnosis of HIV at a subsequent visit. The phase of the study being done as the summer research project will incorporate the visits from 4/15/2011 to 4/12/2012.

**Results:** 40% of the cohort were seen in the ED with viral symptoms prior to their (+) HIV test. Males, individuals who self-identify as Black, and patients between the ages of 20-40 are more likely to present to the ED with viral syndrome at some point prior to a positive HIV antibody test.

**Conclusions:** It can be inferred that the availability of antigen based testing during the “window period” will result in an increase in detection of Acute HIV infection, and thus a decrease in forward transmission of the virus in the New Orleans community.

<sup>1</sup> Remien RH, Higgins JA, Corrales J, Bauermeister J, Dubrow R, Bradley M, Steward WT, Seal DW, Sikkema KJ, Kerndt PR, Mayer KH, Truong HM, Casey CY, Ehrhardt, Morin SF. Lack of Understanding of Acute HIV Infection among Newly-Infected Persons—Implications for Prevention and Public Health: The NIMH Multisite Acute HIV Infection Study: II 2009 June 16. DOI: 10.1007/s10461-009-9581-7

<sup>2</sup> Steckler JD, Swenson PD, Coombs RW, Dragavon J, Thomas KK, Brennan CA, Devare SG, Wood RW, Golden MR. HIV Testing in a High-Incidence Population: Is Antibody Testing Alone Good Enough? CID 2009;49 August 1.

## Cohort Description

The cohort is patients who tested positive for HIV (reactive Oraquick positive Western blot from 3/1/2011 to 4/1/2012).  
n= 20

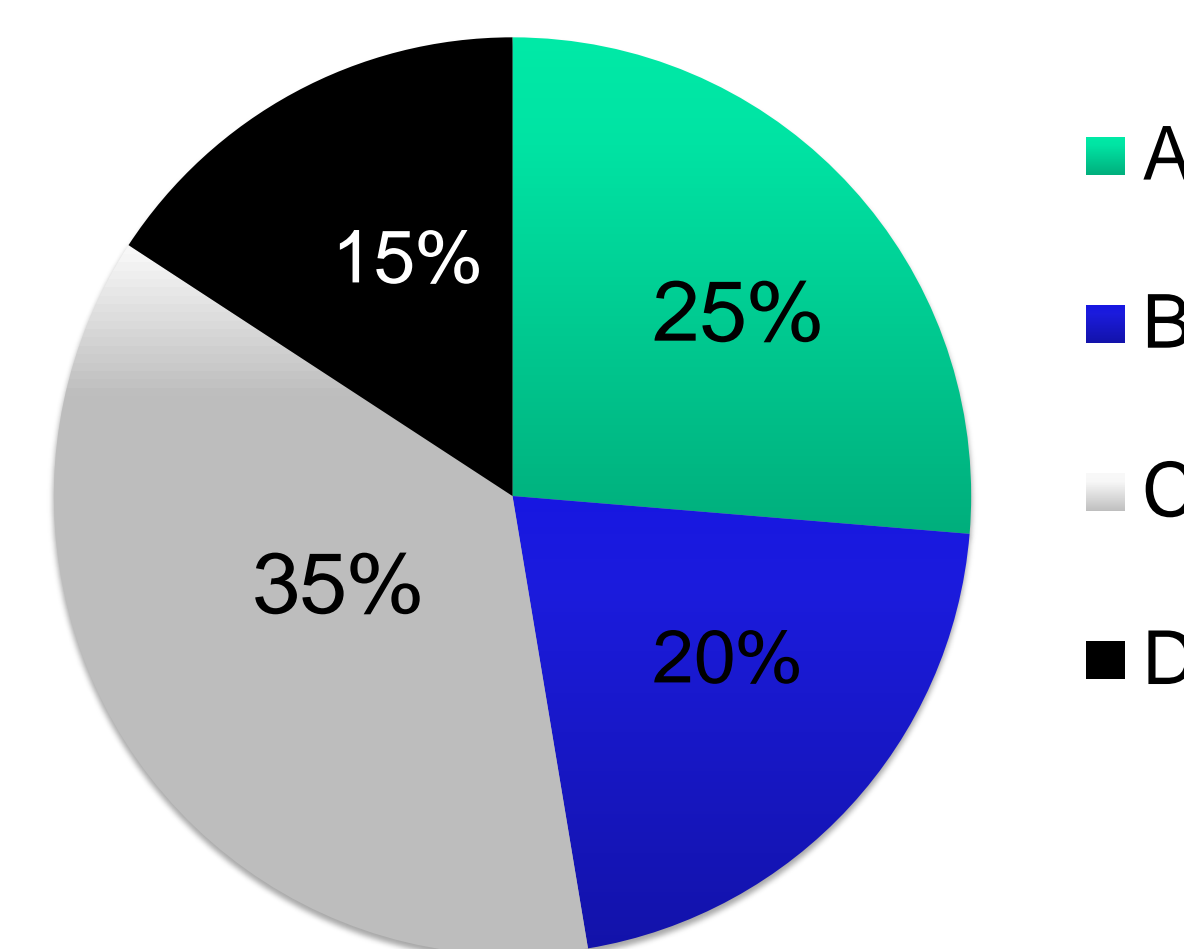
Characteristics of the entire cohort:

Black 14/20 = 70.0% of the cohort is comprised of individuals who self-identify as Black/AA.  
Male 18/20 = 90.0% of the cohort is comprised of Males

Each age group

(20-24) = 20.0%	4/20
(25-29) = 25.0%	5/20
(30-34) = 10.0%	2/20
(35-39) = 15.0%	3/20
(40-44) = 5.0%	1/20
(45-49) = 5.0%	1/20
(50-54) = 15.0%	3/20
(55-59) = 0	0/20
Over 60 = 5.0	1/20

## Results



■ A  
■ B  
■ C  
■ D

**Group A:** Prior to the visit on which they tested (+), these patients were seen in ED for viral symptoms and had a negative Oraquick (n= 5)(25%)

**Group B:** Prior to the visit on which they tested (+), these patients were seen in ED for other complaints (symptoms unrelated to viral syndrome) and had a negative Oraquick (n=4) (20%)

**Group C:** Prior to the visit on which they tested (+), these patients had a negative Oraquick followed by an ED visit(s) for other complaints (symptoms unrelated to viral syndrome) (n=7)(35%)

**Group D:** Prior to the visit on which they tested (+), these patients had a negative Oraquick followed by an ED visit(s) for viral symptoms (n=3) (15%)

There was one outlier who had no prior ED visits, and who tested (+) with complaints of viral symptoms. (5%)

**In Group D (patients who had ED visits with viral symptoms between their negative Oraquick and Positive test):**

33.3% were male  
100.0% were Black  
were in each age group (20-24) = 0, (25-29) = 0, (30-34) = 0 (35-39) = 66.7%=2/3, (40-44) = 0 (45-49) = 0, (50-54) = 33.3%=1/3, (55-59) = 0, over 60 = 0

40% of the cohort were seen in the ED for c/o viral symptoms prior to their (+) HIV test.  
50% were male  
100% were Black

## Results

Those with ED visits showing non-viral symptoms are 0.838x *less likely* to be Black. [0.602 to 1.167] 95% CI  
Those with ED visits showing non-viral symptoms are 1.636x *more likely* to be Male. [0.775 to 3.453] 95% CI

Those with ED visits showing viral symptoms are 1.193x *more likely* to be Black. [0.857 to 1.661] 95% CI

Those with ED visits showing viral symptoms are 2.75x *more likely* to be Female [0.657 to 11.519]

Those with ED visits showing viral symptoms are 1.01x *more likely* to be between 20-40 years of age. [0.41,1.43]

Those with interval ED visits were 1.05x *more likely* to be Male. [0.568 to 1.942] 95% CI

Those with interval ED visits were 1.013x *more likely* to be Black. [0.743 to 1.38] 95% CI

## Conclusions

Nineteen of the 125 patients (15.2%) who tested positive for HIV antibodies during the 12 month study period had a previous negative HIV antibody test in the months prior to seroconversion. At the time of or shortly after those negative tests, 40% of these patients were evaluated in the ED for viral symptoms, and were most likely in the acute phase of HIV infection. Males, individuals who self-identify as Black, and patients between the ages of 20-40 are more likely to present to the ED at some point with viral syndrome. The interval negative HIV antibody test represents a missed opportunity for early intervention and treatment, as well as a public health risk to the partners of patients under the mistaken impression that they cannot transmit HIV. It is reasonable to assume that if antigen testing were available and patients were diagnosed in the acute phase (“window period”), transmission of HIV in the New Orleans community would be reduced.

## Discussion

This study is limited by the small cohort size. We are currently reviewing data from a 6 year period, which will increase cohort size significantly. While data from New Orleans may not generalize to all populations with high HIV prevalence, we believe that the potential impact of early diagnosis in the window period will be of universal benefit.

## Acknowledgments

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