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Identifying Pregnancy Status through STD/HIV Electronic Laboratory Reporting

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Objective

To identify, in real-time, pregnancy status of HIV-infected women through information found in laboratory reports received by the STD/HIV Program (SHP) at the Louisiana Office of Public Health. This identification will be used for targeted follow-up.

Introduction

Although U.S. Mother to Child transmission (MCT) rates of HIV have been reduced from approximately 25% to less than 2%, transmissions continue to occur.[1] This reduction comes in a large part from treating pregnant mothers with antiretroviral medications.[2] Despite these efforts, Louisiana has one of the highest rates of MCT of HIV in the U.S.[3] Real-time identification of pregnancy status would allow high risk HIV-infected pregnant women to be targeted for follow-up.

In Louisiana, laboratories are required to report positive HIV tests to SHP, most of which are received in electronic lab reporting (ELR) format. Although pregnancy status is not a variable provided on lab reports, some reports do contain information that is useful in identifying pregnancy status.

Methods

SHP uses a custom-built computer program to receive, parse, and store ELR. SHP's surveillance and IT staff developed a system within this program to identify pregnancy status from HIV/STD lab reports, based on the following criteria:

• Matching the provider of the test against a complete list of known OB-GYNs in Louisiana

• Scanning the entire lab report for keywords including "pregnant", "pregnancy", "woman", "women"

The authors tested the pregnancy criteria using lab reports from May 2010 to December 2012 and matched identified reports against a list of known HIV-infected pregnant women from this period. The testing of the pregnancy criteria using historical data will help to improve the real-time identification of pregnancy status from STD/HIV lab reports.

Results

The system identified 108,571 STD/HIV tests for which one or more of the pregnancy criteria was true. These tests were matched by first name, last name, and date of birth to women who are currently being followed by SHP surveillance. The matching method excluded women who are identified as HIV-infected during pregnancy (as opposed to prior to pregnancy), but, in recent years, over 70% of HIV-infected pregnant women were identified as being HIV-infected prior to pregnancy.[3]

After matching these tests to women of child-bearing age (age 12 – 60) currently followed by SHP surveillance, a total of 4,981 tests with one or more matching pregnancy criteria remained. For each test, the number of matching pregnancy criteria was totaled and the test with the highest number of matching criteria was chosen for each woman. This yielded a total of a total of 525 women.

The women were then categorized by the number of matching criteria, and the positive predictive value and sensitivity was calculated for each level of matching criteria using a list of HIV-infected women that gave birth in 2011 and 2012 (see table). A total of 311 HIV-infected women gave birth during this period.

Conclusions

Pregnancy criteria successfully identified pregnancy status from STD/HIV lab reports. There is not, however, a criteria that currently provides both a high positive predictive value (PPV) and high sensitivity. There are several additional pregnancy criteria that, when incorporated, may increase the PPV and the sensitivity of the system. These criteria include ICD-9 codes and OBR segments that could help identify pregnancy status.

The additional criteria and other improvements will allow pregnancy status to be identified from STD/HIV lab reports in real-time. Once identified, high risk HIV-infected pregnant women can be the targeted for follow-up.

Table 1: Positive Predictive Value and Sensitivity for each number of matching criteria

Number of Matching Criteria	All Matches	True Matches	Positive Predictive Value	Sensitivity
1	525	159	30.3%	51.1%
2	78	56	71.8%	18.0%
3	2	1	50.0%	0.3%

Keywords

Electronic Laboratory Reporting; Pregnancy Identification; Public Health Surveillance

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