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Identifying Congenital Syphilis Cases through a Birth Registry Match

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Objective

To identify infants perinatally exposed to syphilis in Louisiana that were missed by routine surveillance activities and to ensure that all infants perinatally exposed to syphilis are investigated.

Introduction

In 2012, Louisiana's case rate for congenital syphilis was 49.2 cases per 100,000 live births, the highest in the nation and over six times the national average[1]. In Louisiana, case investigations for infants perinatally exposed to syphilis are initiated through two primary methods: SHP may receive a positive syphilis test on an infant or a syphilis-infected woman may be contacted and identified by Partner Services during pregnancy. This identification process is similar to perinatal HIV surveillance in Louisiana with one major exception: for perinatal HIV surveillance an annual birth match is completed. Through this match women known to be HIV-infected are matched to women who gave birth during the previous year. Over 90% of perinatal HIV exposures are identified prior to this match, but the match ensures that Louisiana's HIV surveillance system identifies all infants perinatally exposed to HIV.

Methods

A syphilis birth registry match was completed for the first time in Louisiana. Compared to HIV, a syphilis birth match is more complex due to the fact that a woman with a history of syphilis can eliminate perinatal transmission risk with appropriate treatment whereas perinatal transmission risk is always present for an HIV-infected woman. For 2013, all women in Louisiana's STD database (PRISM) who ever had syphilis, were linked to all women in Louisiana's Vital Records Birth Registry. The matching algorithm was locally developed and deterministic based on first name, last name, date of birth, and social security number of the mother. Matches that had already been investigated as possible congenital syphilis cases were removed. Matches were then divided into two groups: mothers who received treatment and mothers who did not receive treatment. SHP identified useful constraints for each group to remove unproductive investigations. For mothers with treatment the constraints included the following: treatment less than 30 days before delivery (or after delivery) OR Late/Unknown Latent syphilis without appropriate treatment.[2] For mothers without treatment the constraints included the following: Last titer within three years AND positive treponemal test AND no treatment in PRISM. Each potential case was reviewed in PRISM and those unlikely to become cases were not investigated (for example, women who were falsely positive for syphilis). A similar match was also completed with the stillbirth registry.

Results

The birth/stillbirth match identified 18 potential cases of congenital syphilis. Ten of these have been investigated and eight of the investigations identified cases of congenital syphilis. The remaining eight investigations are currently underway. These cases will significantly increase Louisiana's congenital syphilis case rate.

Conclusions

The birth match prompted the investigation of many infants exposed to syphilis perinatally. Many of these investigations turned out to be cases and these cases will substantially increase Louisiana's congenital syphilis case rate. The birth match also identified the need of guidelines for the initiation of congenital syphilis investigations. SHP does not receive adequate resources to investigate all the potential cases and had to deprioritize investigations which were considered 'low risk'. Take for example a woman who gave birth in 2013, had Late Latent syphilis in 2008, was treated with one set of bicillin in 2008, and had no rise in titer during pregnancy. If investigated, this would likely have been identified as a congenital syphilis case due to the mother's inadequate treatment. SHP, however, did not investigate cases similar to this that were identified because of inadequate resources and the low risk of infection based on Kassowitz's law. Although states may wish to conduct a similar birth match to ensure complete surveillance, initiation guidelines should be developed to prioritize potential cases that are productive in identifying health care systems issues.

Keywords

Congenital Syphilis; Birth Match; Registry Linkage

References

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