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Design and Implementation of a Real-time Microcephaly Surveillance System

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BACKGROUND

Zika virus infection can cause microcephaly (<3 percentile head circumference) and other severe fetal brain defects. The Tennessee Department of Health (TDH) estimates birth defects incidence based on retrospective analyses of Hospital Discharge, Birth and Death Statistical Data Systems. This surveillance approach prevented TDH from detecting increases in microcephaly incidence associated with prenatal Zika virus infection.

OBJECTIVES

To design and implement a real-time microcephaly surveillance system based on provider report of infants diagnosed with congenital microcephaly.

METHODS

Microcephaly was made a reportable condition on February 25, 2016. Integrating data elements from the National Birth Defects Prevention Network data collection tools and cross-divisional feedback, a REDCap survey was created. The survey captures maternal and infant demographics, newborn measurements and travel and Zika testing history; additional data elements are obtained through linkage to secondary data sources. The survey link was posted on the TDH website and disseminated to providers statewide via THAN alert. Comparison of microcephaly reports to a line list of pregnant women authorized for Zika testing is conducted to ensure that cases potentially associated with Zika virus infection are identified.

RESULTS

As of 08/05/2016, 16 cases of microcephaly have been reported. This is comparable to the previous estimates of 45 annual cases of microcephaly. No cases have been reported with prenatal Zika infection, and none have had parental travel to Zika-affected countries.

CONCLUSION

Real-time surveillance allows TDH to detect changes in incidence of congenital microcephaly. Using REDCap, TDH will expand real-time surveillance of other Zika associated CNS birth defects.