

## **Genetic predictors of hemolytic uremic syndrome among persons infected with *Escherichia coli* O157**

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**Background and objectives:** Shiga toxin-producing *Escherichia coli* O157 (STEC O157) causes an estimated 73,000 illnesses annually in the United States, resulting in 2,168 hospitalizations and 61 deaths. Approximately 5-15% of persons infected with STEC O157 develop hemolytic uremic syndrome (HUS), the leading cause of renal failure in children. The Foodborne Diseases Active Surveillance Network (FoodNet) has launched a study to identify human genomic factors associated with the development of HUS among persons infected with STEC O157.

**Methods:** FoodNet conducts active, population-based surveillance for laboratory-confirmed STEC O157 infections at >650 laboratories serving the 10 FoodNet sites. All STEC O157 cases ascertained from 2006 to 2008 will be mailed a kit asking them to submit a mouthwash sample for DNA testing for polymorphisms and mutations in candidate genes. Medical chart review will be used to document if cases develop HUS, defined as a clinical diagnosis of HUS by a physician with the detection of STEC O157 as the causative agent by culture, serology, EIA, or PCR. The DNA profile of persons infected with STEC O157 who develop HUS will be compared to those without a HUS diagnosis to identify genetic variants.

**Results:** Study enrollment began in January, 2007 and will be conducted retrospectively for 2006. To date, 37 persons have been enrolled and an additional 40 persons have agreed to participate. Many FoodNet sites only recently received IRB approval, and as they have begun the number of specimens submitted is rising sharply. DNA has been successfully isolated from almost all specimens submitted thus far.

**Discussion/Conclusion:** This ongoing study is one of the first to look at human genomic factors associated with a food-borne pathogen. Identification of genetic factors associated with HUS will contribute to a better understanding of the pathogenesis of HUS and will have potential therapeutic and preventive implications.