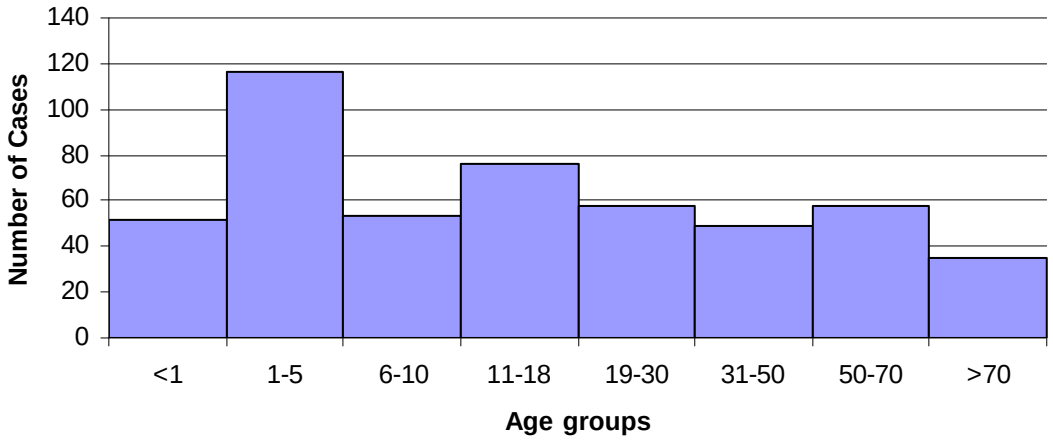
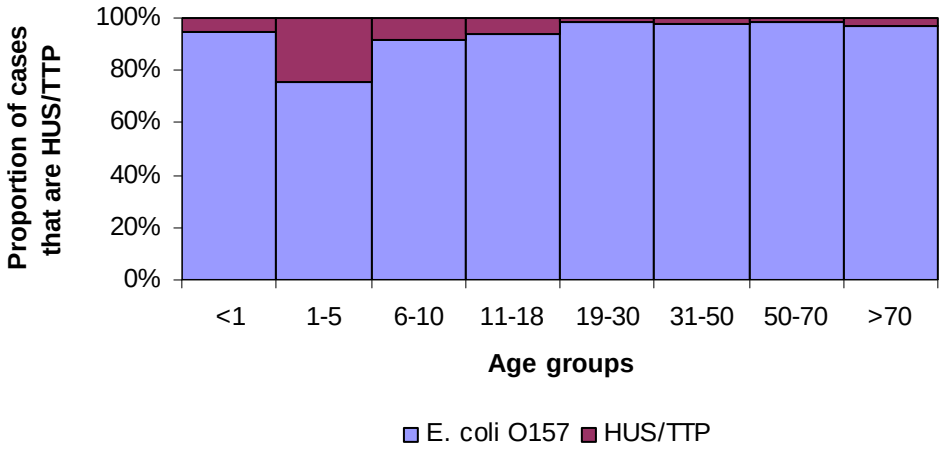
FoodNet E. coli O157 Cohort Study: Selected tables/graphs from Main Questionnaire

N= 597

Graph 1: Age distributions of E. Coli O157 Cases



Graph 2: Percent of E. coli O157 cases that are HUS/TTP by Age groups



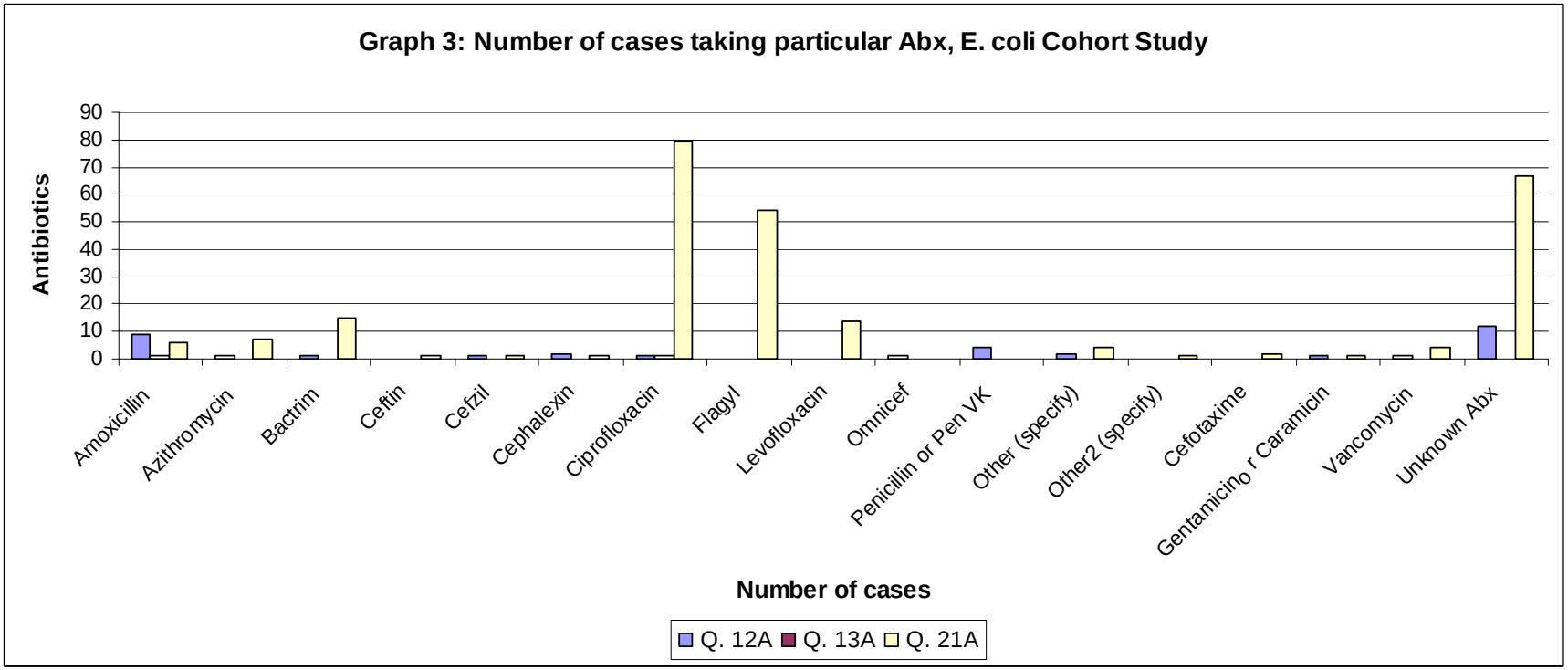
FoodNet E. coli Cohort Study

Table 1: Number of STEC O157 cases with HUS who took Antibiotics

		Q 12A		Q 13A		Q 21[†]		Total	
	N	n	%	n	%	n	%	n	%
HUS	53	3	5.7	0	0	18	34.0	20	37.7
TTP	1	0	0.0	0	0	0	0.0	0	0.0
Total	54	3	5.6	0	0	18	33.3	20	37.0

[†] 5 cases prescribed ≥ 2 Abx.

597 E. coli O157 cases



12. A. What were the names of the antibiotics [you / your child] took **before diarrhea [or other symptom] began**?

13A. What is the name of the antibiotic(s) [you / your child] took for **diarrhea [or other symptom]**, before seeing a doctor or another health professional? **(REFER TO ANTIBIOTIC CODES IN ADMIN PACKET, REPEAT FOR EACH ANTIBIOTIC)**

20. Did [you / your child] take any antibiotics or get treated with antibiotics for this illness after seeking medical care? This could be antibiotics taken on your own, antibiotics given during an office visit, antibiotics that were prescribed by a doctor or health professional, or antibiotics taken during or after hospitalization.

21. A. What are the names of the antibiotics [you / your child] took?

FoodNet Steering Committee Proposal

Title: *E.coli* O157 and non-O157 Shiga Toxin-producing *E.coli* (STEC) testing among Clinical laboratories; results from the 2007 FoodNet STEC Laboratory Survey.

Lead: Dina Hoefer

Working Group Members to date: Sharon Hurd, Carlota Medus, Alicia Cronquist, Tameka Hayes, Kirsten Larson, Karen Edge, Julie Hatch, Samir Hanna, Paula Snippes, Robyn Atkinson, Hannah Gould

Date Submitted: 4/28/2008

Purpose: Shiga toxin-producing *Escherichia coli* (STEC) infection causes severe diarrhea and may result in life-threatening hemolytic uremic syndrome. *E.coli* O157:H7 (O157) is the most widely recognized STEC in the United States; however, studies suggest that infection caused by non-O157 STEC may be as prevalent. In 2006, the CDC published guidelines for STEC testing to improve both routine surveillance and outbreak response. Guidelines include simultaneous testing for Shiga toxin (Stx) using non-culture methods and culturing for O157. The STEC Lab Survey Working Group compared reported clinical lab practices to published STEC infection diagnostic guidelines, as well as reviewed changes over time in clinical laboratory practices to better understand surveillance trends. An initial analysis of this data was presented at the 2008 International Conference on Emerging Infectious Diseases. The Working Group would like to move forward on further examining the data for publication.

Timeline: The Working Group would like to have a final manuscript ready for publication that corresponds with the STEC Diagnostics WG Clinical Guidelines publication. That WG has set a deadline of August 15, 2008 to have a document complete and ready for publication submission. The STEC Lab Survey will work closely with the Diagnostics WG to coordinate publication.

FoodNet Steering Committee Proposal for Manuscript

Title: Isolation and Characterization of *Clostridium difficile* Responsible for Community-Associated Disease

Proposed by: Brandi Limbago,

Working group: Fred Angulo, Cliff McDonald, Cherie Long, Angela Thompson (other working group members TBD)

Proposal: There are very few isolates that exist from CDAD cases in non-hospitalized patients. FoodNet sites conducted a three month surveillance to identify presumed community-acquired CDAD. *C. difficile* toxin-positive cases, with no known hospitalization in the three months prior to specimen collection, were cultured and all culture positive *C. difficile* isolates were sent to CDC for characterization (n=92). All isolates were characterized by pulsed-field gel electrophoresis (PFGE), toxinotyping, deletion analysis of *tcdC*, detection of binary toxin (*cdtA)* and antimicrobial susceptibility testing.

We plan to describe the characteristics of this collection of presumed community-acquired CDAD isolates and compare these isolates to isolates in our collection from hospital-associated CDAD, isolates from animals, and isolates collected from retail meats.

Previous abstract submitted to ASM (revised to reflect new data):
Background: *Clostridium difficile* is the leading cause of antibiotic-associated diarrhea and colitis among inpatients of healthcare facilities (HCF) and is emerging in the community, where *C. difficile* associated disease (CDAD) is occurring in patients without recent HCF exposure. Emergence of an epidemic *C. difficile* strain, NAP1/ BI, has led to increased incidence and severity of CDAD in HCF, but little is known about what strains are responsible for community-associated CDAD (CA-CDAD). Therefore, we collected and characterized CA-CDAD isolates from diverse geographical regions in order to better understand the epidemiology of this disease.

Methods: Ten FoodNet sites conducted CA-CDAD case finding and performed stool cultures for *C. difficile* over 3 months. Presumed CA-CDAD was defined in an ambulatory patient with a *C. difficile* toxin-positive stool who, based upon available medical record review, had no overnight stay in a HCF in the preceding 3 months. Isolates were sent to CDC for confirmatory identification and characterization, including toxinotyping, pulsed-field gel electrophoresis (PFGE), evaluation of *tcdC* and *cdtB*, and antimicrobial susceptibility testing.
Results: A total of 174 presumed CA-CDAD cases were identified; *C. difficile* was isolated from the stool specimens of 92 (59%) of 155 patient specimens cultured (range 29-100% recovery at each site). Toxigenic CA-CDAD isolates (n=89) comprised 8 toxinotypes and 31 PFGE patterns. Toxinotype 0 isolates were most common (n=49; 53%), followed by types III (n=18; 20%) and V (n=9; 10%).

Conclusion: *C. difficile* isolates from presumed CA-CDAD cases were genetically diverse, indicating that CA-CDAD is not caused by a single strain. Strains that commonly cause HCF-associated CDAD, including NAP1/ BI (toxinotype III), were also the most common toxinotypes isolated from presumed CA-CDAD. Toxinotype V, however, is a historically rare cause of human CDAD, but causes epidemic CDAD in food-producing animals. Further study is required to determine whether there is link between *C. difficile* from animals and human CA-CDAD.

Proposal: Describe the clinical characteristics and severity of illness in HUS cases co-infected with *Clostridium difficile*

Conference : IDSA 2008

Authors: Hannah Gould, Liane Ong, CA FoodNet Epi, GA FoodNet Epi, MD FoodNet Epi, TN FoodNet Epi, NY FoodNet Epi

From 1998-2006 11 HUS were identified with *Clostridium difficile (C. difficile)*; 2 cases were also infected with STEC O157. 5 cases indicated that they had a sample of *C. difficile* identified after HUS diagnosis suggesting a hospital acquired infection. Antimicrobial medication was taken by 6 of the patients. The severity of HUS and likelihood that cases would spend some form of extended time in a hospital setting added with the potential role of antibiotics in the development of HUS is an area which we would like to understand better. We would like to describe the clinical characteristics of these cases, treatment and the severity of illness.

Serological Testing for Shiga Toxin-Producing *Escherichia coli* in Pediatric Hemolytic Uremic Syndrome in the Foodborne Diseases Active Surveillance Network (FoodNet) Surveillance System – United States, 2000-2005

Melissa Viray, Hannah Gould, Liane Ong, Deborah Talkington, others to be determined.

As a part of FoodNet's surveillance for hemolytic uremic syndrome (HUS), FoodNet sites have been increasingly encouraged to submit patient sera to test for antibodies to *Escherichia coli* O157 and other Shiga toxin-producing *E. coli* (STEC). We would like to evaluate serologic testing for STEC in FoodNet HUS cases. This would include examining the value added to the system through identification of STEC as an etiology for HUS as well as factors such as time from onset to testing that may impact serologic results. Variables of interest include serological and culture status and results, (including STEC serogroup data and antibody titers when available), dates of illness onset and dates of sample acquisition. The results will be submitted as an abstract to the 2008 Infectious Diseases Society of America (IDSA) conference October 24-25 in Washington, DC and will also be shared with the FoodNet STEC/HUS Working Group.

Hemolytic uremic syndrome and death due to *Escherichia coli* O157:H7 infection in the FoodNet sites, 2000--2006

Originally submitted proposal to use data through 2004. Paper will be updated to include data through 2006. Because of addition of more current data, this is being resubmitted to the Steering Committee to see if sites would like to amend or update their persons involved with this project.

Current author list: Linda Demma, Xin Tong, Alison L. Drake, Duc Vugia, Sharon Hurd, Alicia Cronquist, Suzanne Segler, Stephanie Mickelson, Kirk Smith, Shelly Zansky, Beletschachew Shiferaw, Timothy Jones, Patricia M. Griffin, and the EIP FoodNet Working Group

Current Abstract
Context: Hemolytic uremic syndrome (HUS) is a life-threatening illness usually caused by infection with Shiga toxin-producing *Escherichia coli* O157 (STEC O157).
Objective: To evaluate the age-specific rate of HUS and death due to STEC O157 infection and the risk factors for HUS.
Design, setting, participants: STEC O157 infections and HUS cases were reported from eight sites participating in the Foodborne Diseases Active Surveillance Network (FoodNet) during 2000--2004. For each case of STEC O157 infection and of HUS, demographic and clinical outcomes were reported. The proportion of STEC O157 infections that resulted in HUS was determined.
Main outcome measurements: Development of HUS and death following STEC O157 infection.
Results: A total of 2,492 STEC O157 infections were ascertained. The proportion with HUS was 7%, with the highest rate (18%) in children <5 years old. Age <10 years and female gender were associated with an increased risk of HUS. Death occurred in 0.7% of all STEC O157 cases and in 7% of those with HUS. The rate of death among persons with STEC O157 infection was highest in those ≥ 60 years old (3.2%); over half of deaths in this age group occurred in persons without HUS. Among children <5 years old, death occurred in 3.4% of those with HUS and in none of those without HUS.
Conclusions: Young children and females had an increased risk of HUS from STEC O157 infection. The elderly had the highest risk of death from STEC O157 infection and over half of them did not have HUS. These data support recommendations for aggressive supportive care of young children and the elderly early during illness due to STEC O157.

Proposal for analysis for abstract (Target meeting: IDSA)

Examination and comparison of trends in incidence of sporadic, travel and outbreak associated cases of infection with pathogens transmitted commonly through food, FoodNet 2007

Lead: Olga Henao
Others involved: Cherie Long and others to be determined

In 1996, FoodNet began active, population-based surveillance for laboratory-confirmed cases of infection caused by *Campylobacter, Listeria, Salmonella*, STEC O157*, Shigella, Vibrio, and Yersinia.* In 2004, FoodNet began collecting data on which laboratory-confirmed infections were associated with outbreaks and travel. To better understand trends in incidence of the foodborne pathogens monitored via FoodNet, we would like to examine the changes in incidence from 2004 to 2007 among sporadic, outbreak-associated and travel-associated cases to determine if patterns differ among subgroups by pathogen. We would also like to calculate the annual rate of change among subgroups of cases by pathogen.

This analysis is in its early stages and will be submitted only if findings are of interest.