

Cervical Cancer Screening Practices Among Physicians in Connecticut, 2016

Since 2008, the Connecticut Emerging Infections Program (CTEIP) has conducted population-based surveillance of cervical intraepithelial neoplasia grade 2 or higher (CIN2+) to monitor the impact of human papillomavirus (HPV) vaccine. The program has detected significant declines in CIN2+ (1), likely due to both vaccine impact and concurrent changes in cervical cancer screening recommendations. Therefore, this project has included activities to monitor cervical cancer screening trends. Understanding cervical screening guidelines and how local practitioners adhere to them is key to interpreting these surveillance data.

In October of 2016, a survey was faxed to New Haven County medical doctors specializing in obstetrics and gynecology (OB/GYN) to gain a better understanding of cervical screening practices in relation to national guidelines. At the time of the survey, the US Preventive Services Task Force (USPSTF) recommended routine cervical cancer screening as follows: for ages 21-65 years, cytology alone every 3 years; for ages 30-65 years, cytology and HPV co-testing every 5 years (2). American Congress of Obstetricians and Gynecologists (ACOG) Interim Clinical Guidance states that primary HPV testing alone for ages 25-65 years, no sooner than every 3 years, may be considered (3).

Data from previous year's surveys and current surveillance work were used to identify 133 providers from 53 practices in New Haven County. Each

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provider was faxed a survey, and a follow-up phone call and subsequent fax was sent two weeks later to non-responders.

Provider compliance with the USPSTF for cytology and co-testing, and with ACOG for primary HPV testing were considered. Compliance was defined as follows: full compliance met both age at initiation and interval recommendations, age compliance met only age at initiation recommendations, and interval compliance met only screening interval recommendations. The overall survey response rate was 39% (52/133) representing 24 (45%) different practices (Table).

Of the 52 OB/GYNs who responded, 12 (23%) reported primary HPV testing alone; none met any compliance criteria. Cytology alone was reported by 88% (46/52) of OB/GYN providers; 26 (56%) indicated age compliance, 11 (24%) interval compliance, and 6 (13%) full compliance. Co-testing was reported by 85% (44/52) of OB/GYN providers;

Table: Cervical screening practices of New Haven County Ob/GYNs: Compliance based on USPTF and ACOG standards (n=52).

Screening strategy *	Age Compliance*	Interval Compliance*	Full Compliance*	Full Compliance (%)
Primary HPV testing (n=12)	0	0	0	0%
Cytology alone (n=46)	26	11	6	13%
Co-Testing (n=44)	24	4	3	7%

*Table does not sum due to the allowance of multiple options selected and survey fields left blank.

24 (55%) indicated age compliance, 4 (9%) interval compliance, and 3 (7%) full compliance.

Overall, the majority of providers reported age compliance with cytology alone and co-testing. However, substantial deviation from recommended screening guidelines was observed. Many providers reported screening more frequently than recommended or using primary HPV testing, which is not recommended for women <25 years of age due to the high sensitivity of the test. These forms of over screening may lead to adverse effects from unnecessary excisional treatments. This is particularly true in women aged 21-30 years when HPV infections are very common but frequently resolve without intervention. In addition, over screening may place an undo financial burden on the patient and/or medical system. The reasons for over screening in New Haven County are not known, and as screening practices move towards primary HPV testing, the potential for over screening may increase. Future surveys will help to understand why gaps in screening compliance occur. Strategies can then be created to increase compliance with recommended guidelines.

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Campylobacteriosis Outbreak at a Wine and Food Festival Detected Using SaTScan™ — Connecticut, 2017

During 2016, the Connecticut (CT) Department of Public Health (DPH) Epidemiology and Emerging

Infections Program (EEIP) began using SaTScan™ software to detect clustering of campylobacteriosis cases in space and time. All laboratory-confirmed cases reported to DPH are included in weekly scans. During June 2017, SaTScan v9.4 identified a cluster of ten campylobacteriosis cases in eastern CT. Review of routine follow-up interviews for these cases revealed three case-patients in the cluster attended the same central CT wine and food festival during the incubation period. A local health department (LHD) concurrently suspected an outbreak while conducting routine interviews of two other campylobacteriosis case-patients who reported attending the same festival. This report summarizes the investigation conducted by staff from LHD, DPH EEIP, and DPH Food Protection Program (FPP) to assess extent of illnesses associated with festival attendance, identify a source and route of exposure, and guide control measures.

Epidemiologic Investigation

DPH EEIP created an online survey regarding attendee symptoms and festival exposures, including 65 food items served. Festival organizers distributed the survey to approximately 370 available e-mail addresses among approximately 1,000 attendees. A probable case was self-reported diarrhea (≥ 3 stools within 24 hours) in a festival attendee with onset ≤ 7 days after the festival. Laboratory-confirmed cases were identified by matching survey respondents reporting recent stool testing with campylobacteriosis surveillance data.

Among 88 attendees who completed the survey, 11 reported illness meeting the case definition (8 laboratory-confirmed, 3 probable). Two additional laboratory-confirmed cases did not complete the survey and were linked to the festival during routine interviews for laboratory-reported cases. Among all 13 identified case-patients, median age was 42 years (range: 30–70 years); 7 (54%) were female. Median incubation period was 3 days (range: 1–6 days). (Figure). Median duration of illness was 6.5 days (range: 1–19 days) for ten case-patients who had recovered at the time of survey completion. All 13 (100%) case-patients reported diarrhea, 5 (38%) of which were bloody, nine (69%) fever, and three (23%) vomiting. Five persons visited emergency

rooms and six visited other healthcare providers; two were hospitalized and none died.

Case-control analysis compared consumption of each festival food item among 11 case-patients who completed the survey with 73 non-ill survey respondents. The case-patients were significantly more likely to have eaten the marinated rib eye beef stir-fry than non-ill respondents (odds ratio, 4.91; confidence interval, 1.14–21.12; P value = 0.034). No significant associations were found with other food items.

Laboratory Investigation

Before epidemiologic analysis implicated the beef dish, FPP suspected a chicken liver mousse served at the festival, because undercooked poultry is a common food vehicle for *Campylobacter* (1,2). The vendor prepared a sample of chicken liver mousse for testing at the CT State Public Health Laboratory (SPHL); multiple portions of the sample were cultured; none yielded *Campylobacter*.

When the beef dish was epidemiologically implicated, FPP obtained two beef samples from the vendor. The frozen, unsliced rib eye and the partially frozen, sliced and marinated rib eye samples tested at SPHL were comparison samples, rather than samples of food consumed by festival attendees. No *Campylobacter* was isolated from either sample.

Four case-patient stool isolates were submitted to SPHL; all four isolates were confirmed as *Campylobacter jejuni* and yielded indistinguishable

pulsed-field gel electrophoresis (PFGE) *SmaI* patterns.

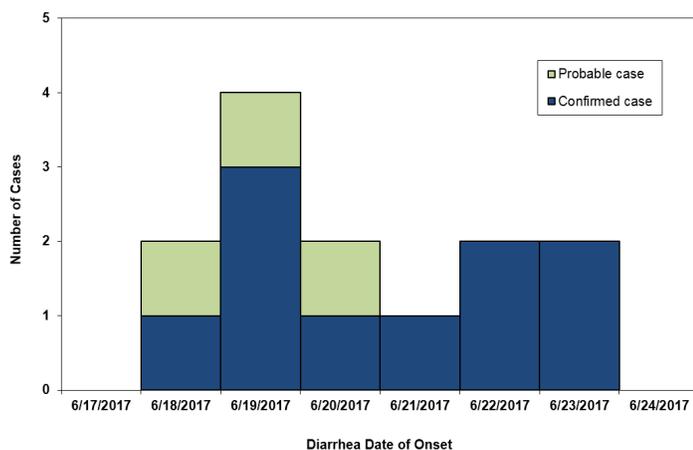
Environmental Investigation

When the festival was identified as a common exposure among three campylobacteriosis case-patients by the SaTScan cluster, FPP identified potential high-risk food vehicles for *Campylobacter* among the foods served at the event and reviewed preparation of the chicken liver mousse. FPP observed no mousse preparation steps that might cause potential contamination, proliferation, or survival of *Campylobacter*.

When the beef dish was implicated as a potential source of infection, FPP conducted a food preparation review and environmental assessment at the restaurant that prepared the dish. No restaurant employees reported any illness 2 months before or 1 month after the festival. On the morning of the festival, dishes were prepared at the restaurant and held hot for 2 hours until arrival at the event. During the event, food trays were kept in a hot box until placement on the serving table with small burners. All of the approximately 500–600 servings of the beef stir-fry were consumed during the festival.

Rib eye preparation started with thinly slicing the meat while still frozen, mixing with marinade (soy sauce, garlic, sugar, and lemons), and returning portions of sliced meat with marinade to the freezer. Portions of marinated meat were taken out of the freezer, as needed, during the following weeks. Food thermometers were not available and meat temperatures were not checked during cooking. Multiple temperature violations were identified during inspection, particularly with cold holding food. Cross-contamination risk factors were also observed, including raw meat storage above raw vegetables, food preparation in a bowl atop a garbage can, inconsistent sanitization of cloths for wiping food preparation surfaces, and flies in food preparation areas. Corrective actions were discussed with the restaurant's Qualified Food Operator, along with appropriate cooking, hot and cold holding temperatures. Some corrections were made onsite, while others were required before a 2-week follow-up inspection, such as correct placement of thermometers in cooler units and repair of a damaged freezer lid.

Figure. Onset of diarrhea among cases of campylobacteriosis associated with a wine and food festival—Connecticut, 2017



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Editorial

Campylobacter is the most common foodborne pathogen under surveillance in Connecticut, with 600–800 campylobacteriosis cases reported each year. *C. jejuni*, the species causing most human cases of campylobacteriosis, can colonize animals, most notably chicken and cattle. *Campylobacter* outbreak investigations have revealed undercooked poultry and unpasteurized dairy to be common food sources (3,4).

The findings of this investigation suggest that beef was the food vehicle for this *Campylobacter* outbreak. Although beef has been implicated in *Campylobacter* outbreaks, it is not a common food source for the pathogen (4). The lack of laboratory evidence for *Campylobacter*-contaminated beef in this outbreak leaves the possibility of cross-contamination from poultry or another product. The salty and acidic marinade, along with freezer storage, would have created a hostile environment for *Campylobacter*; however, environmental assessment indicated temperature violations during freezing and cooking, which could have allowed *Campylobacter* to survive in the beef. As few as 500 surviving *Campylobacter* organisms can cause illness (1). Further investigations of *Campylobacter* outbreaks will more fully characterize factors that cause and prevent *Campylobacter*-related illness, including the role of beef.

Most campylobacteriosis cases are not included in outbreak investigations and are considered sporadic. *Campylobacter* outbreak detection is

challenging, because *Campylobacter* isolates are not required submissions to SPHL and do not routinely undergo PFGE, which distinguishes bacterial strains for cluster detection. Before SaTScan use, DPH epidemiologists examined *Campylobacter* surveillance data for clusters by week and within towns of residence. With SaTScan, epidemiologists can now detect statistically significant space-time clusters that span multiple towns. This is the first outbreak in Connecticut detected using SaTScan, although an LHD concurrently linked two cases to the festival. In a state where residents often cross local health jurisdictions, SaTScan is useful for common pathogens (e.g., *Campylobacter*) and helps to focus epidemiologic response on clusters that are most likely to represent point-source outbreaks. This new cluster detection method can lead to more timely outbreak investigations that will contribute to understanding of exposure sources and preventive measures.

Note: The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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SaTScan™ is a trademark of Martin Kulldorff. The SaTScan™ software was developed under the joint auspices of Martin Kulldorff, the National Cancer Institute, and Farzad Mostashari of the New York City Department of Health and Mental Hygiene.

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