Antigen Testing Likely Contributes to Increased Reporting of Campylobacteriosis

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The number of campylobacteriosis cases reported to the Tacoma-Pierce County Health Department increased dramatically from 79 cases in 2009 to 221 cases in 2012. Until 2012, the incidence of campylobacteriosis in Pierce County was lower than that for Washington State.

Pierce is the only county in Washington where the majority of the reported cases of campylobacteriosis are being diagnosed by antigen tests rather than culture (Figure 2). Between 2010 and 2012, both MultiCare and Franciscan Health Systems switched from culture-based diagnosis of campylobacteriosis to enzyme immunoassays (EIA). Of the 1,551 cases of campylobacteriosis reported to the Washington State Department of Health in 2012, 227 were diagnosed with non-culture methods; and, of those, 167 (74%) were Pierce County residents.

Laboratory Testing

*Campylobacter* species are fastidious organisms that require special media and/or techniques to culture. Estimates of the sensitivity of culture techniques to detect *Campylobacter* vary. Bessède estimated the sensitivity of culture to be 65%. Granato estimated culture sensitivity to be 94.1%.

In contrast to *Campylobacter* culture, antigen tests are highly sensitive. Granato found the sensitivity and specificity of three antigen tests for *Campylobacter* to be ≥98% with a positive predictive value of ≥95%. Dediste and Floch found the positive predictive value of *Campylobacter* antigen assays to be 78.3% and 80.6%, respectively. The difference in sensitivity between culture and antigen tests likely contributes to, but may not completely explain, the increase in the number of reported cases of campylobacteriosis in Pierce County.

We analyzed Pierce County campylobacteriosis data to determine if there were clinical differences between cases that were diagnosed using antigen tests and cases that were diagnosed with culture. We found that cases diagnosed with culture were...
more likely to present with fever and bloody diarrhea than antigen-positive cases. We also found that the mean duration of symptoms from onset to specimen collection for antigen-positive cases was significantly longer than for culture-positive cases.

These results suggest that culture positive cases were more likely to present with “textbook” signs and symptoms of campylobacteriosis than antigen positive cases. Signs and symptoms include diarrhea (frequently bloody), abdominal pain, malaise, fever, nausea and/or vomiting. We suspect that a large proportion of antigen positive cases reported to the Health Department would not have been detected using culture for laboratory confirmation.

Because Campylobacter species and antibiotic sensitivities cannot be determined by antigen testing, isolates for genotyping would not be available for cases diagnosed with antigen testing, making investigation of an outbreak difficult. 

**Treatment**

For most patients, campylobacteriosis is a self-limiting illness that does not require antibiotic therapy. 

Persons for whom antibiotic therapy should be considered include those with fever and diarrhea, bloody stool, extraintestinal infections, diarrhea lasting more than a week, and immunocompromised individuals. In their meta-analysis, Ternhag, et al. found that antibiotics reduced the duration of diarrhea in persons with campylobacteriosis by less than two days.

Due to the rising prevalence of Campylobacter resistance to fluoroquinolones, azithromycin is preferred for the treatment of Campylobacter enteritis, however, Campylobacter resistance to macrolides is an increasing problem. Campylobacter drug resistance is largely the result of agricultural use of antibiotics.

A parenteral aminoglycoside and/or a carbapenem should be considered for those with extraintestinal Campylobacter infection.

For most patients, campylobacteriosis is a self-limiting disease that does not require antibiotic therapy. Because the prevalence of fluoroquinolone resistance in Campylobacter has increased, macrolides are the preferred treatment when antibiotic therapy is indicated.

**References**


