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Telephone 503/731-4023
Emergencies 503/731-4030
Fax 503/731-4798
cd.summary@state.or.us

CENTER FOR DISEASE PREVENTION & EPIDEMIOLOGY • OREGON HEALTH DIVISION

PHYSICIAN STOOL CULTURING PRACTICES IN OREGON

EXCLUDING ALLERGIES, there are three basic categories of acute foodborne illness: infections, intoxications, and illusions. Let us consider the former. The etiologic agents of infectious foodborne illness include bacteria (e.g., *Salmonella* spp., *Escherichia coli* O157:H7, *Listeria monocytogenes*), viruses (e.g., "Norwalk"-like viruses, hepatitis A virus), and parasites (e.g., *Taenia solium*, *Cyclospora cayetanensis*, *Trichinella spiralis*). The best estimates of the incidence of foodborne illness in the United States are little more than wild guesses—maybe 6-80 million cases annually.[1] Yes, foodborne illness happens.

The vast majority of foodborne illness is never diagnosed. Most people do not seek medical attention for their ailments, and for those who do, efforts to identify the specific cause are often minimal. The most common foodborne infections to be traced to a specific pathogen are bacterial, but even of these, only a small fraction are ever culture-confirmed.

In 1995, the Health Division joined with a number of public health and allied agencies (in California, Connecticut, Georgia, and Minnesota; CDC, the USDA, and the FDA) to form FoodNet - a collaborative group working to further our understanding of the epidemiology of foodborne illness. One of FoodNet's objectives is to determine more precise estimates of the incidence of foodborne illness in general and how those estimates relate to surveillance tallies. As part of that research, in 1996 we surveyed a sample of physicians to measure how often and under what circumstances they order stool cultures.

METHODS

As of January 1996, 7,284 physicians were licensed in Oregon. We excluded physicians in certain specialities (psychiatry, ophthalmology, etc.) from our target audience as being unlikely *a priori* to see many patients for gastroenteritis.* We selected a random sample of 1000 of the remaining 4,301 physicians to survey. One-quarter of these were surveyed each calendar quarter. In the first two quarters, we phoned each physician's office before sending the questionnaire to verify the address. Pre-survey calling was not done in the second half of the year. Questionnaires were mailed out, and if there was no response within two weeks, a second copy was mailed. After another two weeks, a phone call was made to remind physicians about the survey and to stress its importance. A third mailing was done to the stubbornly recalcitrant. Those who still didn't take the hint were classified as hard-core refuseniks and their names were put on a special little list.

RESULTS

Well, not so little, actually. Of the 1,000 physicians surveyed, only 680 responded, which raises questions (still unanswered; more analysis in progress) about the generalizability of survey results. Of the 680 who were kind enough to respond, 651 (96%) actually practiced in Oregon and 598 (91%) said they were involved in direct patient care at least 8 hours a week.

Forty-eight percent of the respondents said they were in private practice; 19% were in HMO/Managed care settings; 18% had a hospital-based practice; and the remaining 15% worked in some combination of those settings. The mean number of outpatients seen in a week by the respondents was 84 (range, 0-350†); the weekly average number of patients seen with acute diarrheal illness was 3 (range, 0-40). Eighty-three percent said that they had seen a patient with diarrhea within the past month. Because memories fade, we asked physicians about symptoms and culture practices for only the last case of diarrhea they had seen. Physicians responded that, of such patients: 75% reported abdominal pain, 20% were dehydrated, 15% had fever, and 10% reported bloody diarrhea. Four percent had a history of recent travel to another country. Thirty-five percent of physicians reported ordering a stool culture for the last patient they saw for acute diarrhea. (Although this may sound high to some, it accords very well with the results of a concurrent population survey.) The proportion of culture buffs varied by specialty: general pediatricians were least likely to have cultured; ob/gyns were most likely to have done so (7% and 45%, respectively). Culturing practices did not vary by the primary setting of the practice.

The decision to obtain a stool specimen for culture hinges on many factors. The most commonly indicated single reason was duration of symptoms (named by 44%) or blood in stool (by 17%).

Twenty-three percent of respondents said they had seen a patient with bloody diarrhea within the preceding month; 79% said they had ordered a stool culture for that patient. Of those who submitted stool specimens from patients with bloody diarrhea, 31% said they specifically asked the laboratory to culture for *E. coli* O157, and an additional 44% indicated that their lab routinely cultured for *E. coli* O157. Culturing practices for bloody diarrhea varied by specialty. Emergency room physicians were most likely to have cultured patients with bloody diarrhea; ob/gyns were least likely to have done so (94% and 50%, respectively). (*E. coli* O157:H7 is one of the most common causes of infectious bloody diarrhea in the United States, and it is only detectable on special culture media).

* Of course, one wonders at the origins of the expression "here's mud in your eye."

† Oy! And you thought *your* practice was hectic.

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The survey asked docs which bacterial pathogens they thought their lab tested for when routine stool cultures were submitted. Responses are shown in the table. In general, there was a surprising concordance between expectation and reality. Data from a 1995 laboratory survey are shown for comparison. (There is a little fudging here; the labs used by physician survey respondents may not be representative of all Oregon labs.) More labs routinely tested for *E. coli* O157 and Campylobacter than physicians thought. Almost all physicians (95%) thought that their lab routinely tested for *Salmonella* and *Shigella*—a little pessimistic, as it turns out.

Thirty-four percent of physicians said that they ordered 3-5 stool cultures during the preceding 12 months, and another 26% ordered 6-10 cultures. At the end of the survey, patient scenarios were described, and physicians were asked for each scenario whether or not they would order a stool culture or a stool exam for ova and parasites. Almost all respondents (99%) said they would order a culture if the patient presented with 3-day history of bloody diarrhea and fever. Eighty-two percent said they would also order a stool exam for ova and parasites if the patient had been in a developing country before the diarrheal onset.

CONCLUSION

There is little consensus about diagnostic approaches to acute diarrhea. Most physicians do not routinely order stool cultures as part of a patient workup for gastroenteritis, and there are legitimate concerns about the cost and diagnostic yield of routine cultures. Culture for bacterial pathogens obviously does little to identify viral or parasitic agents, and the sensitivity of culture for many bacteria is obviously not 100% because of timing of specimen collection, specimen handling, antibiotic use, lab techniques, luck of the draw, etc.

Nevertheless, accurate diagnosis allows for better management. Empiric therapy for gastroenteritis is often inappropriate (e.g., use of any antimicrobials for viral infections or uncomplicated salmonellosis; giving TMP/SMX for *E. coli* O157 infections). On the other hand, therapy is sometimes warranted — e.g., to reduce the duration of carriage of *Shigella*. Moreover, the finding of *E. coli* O157 has important prognostic significance: about 5% of children diagnosed with the infection develop hemolytic uremic syndrome. In any event, only specific diagnoses result in appropriate public health follow-up. For example, because shigellosis and *E. coli* O157 infections are so easily transmitted person-to-person, children with these infections need to be excluded from day care. (It is because of this ready transmissibility that we recommend that all persons with acute bloody diarrhea be cultured for O157.) Finally, most outbreak investigations begin with cause-specific case reports.

In future issues we will present more data from these surveys and how they help us understand the epidemiology of foodborne and other diarrheal illnesses.

Which Pathogens are Identifiable through Routine Stool Cultures?

Pathogen	According to MD perception	According to lab survey
Salmonella	96%	100%
Shigella	95%	100%
E. coli O157 (all specimens)	59%	69%
E. coli O157 (bloody stools)	84%	85%
Campylobacter	20%	96%
Vibrio spp.	29%	16%
Yersinia	19%	22%

source: OHD survey 1995, 1996

REFERENCE

1. Archer DL, Kvenberg JE. Incidence and cost of foodborne diarrheal disease in the United States. J. Food Prot. 1985; 48:887-894.

Flu Surveillance Suspended

EFFECTIVE April 15, the "rule-out" influenza throat swab culture and surveillance program will enter its annual estivation period. We thank Oregon physicians for another season of enthusiastic cooperation.