

Pulsed-field Gel Electrophoresis for *Salmonella* Infection Surveillance, Texas, USA, 2007

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[Karen Hunter] Hello. I'm Karen Hunter. With me today is Dr. Peter Gerner-Smidt, a microbiologist at the Centers for Disease Control and Prevention. We're talking about a paper in the June 2010 issue of CDC's journal, Emerging Infectious Diseases. The article looks at the use of pulsed-field gel electrophoresis for *Salmonella* surveillance in Houston, Texas. Welcome, Dr. Gerner-Smidt.

[Peter Gerner-Smidt] Thank you, Karen, I'm happy to be here.

[Karen Hunter] Dr. Gerner-Smidt, what is pulsed-field gel electrophoresis?

[Peter Gerner-Smidt] Well, pulsed-field gel electrophoresis, or PFGE as we call it, is the DNA fingerprinting method that we use to subtype bacteria that cause food-borne illnesses, such as *Salmonella*. PFGE is an extremely accurate method to determine which specific strain of pathogenic bacteria is associated with an outbreak of disease. And the paper from Texas describes the work done by the Houston Department of Health and Human Services in identifying outbreaks of *Salmonella* infections by linking the results of patient interviews with clusters of PFGE patterns for *Salmonella* detected by the local PulseNet laboratory.

[Karen Hunter] That sounds very intriguing. What is PulseNet?

[Peter Gerner-Smidt] Well, PulseNet is a national network that monitors foodborne bacteria through their DNA fingerprints. It's coordinated by Centers for Disease Control, in collaboration with the Association of Public Health Laboratories. PulseNet allows public health officials to determine if a case of a food-borne illness is an isolated event or if more cases occur at the same time, which could indicate that an outbreak is going on. And this can help the epidemiologists to find the source of the infections faster.

[Karen Hunter] I see. Do all the PulseNet labs use PFGE in the same way?

[Peter Gerner-Smidt] Yes. All PulseNet laboratories do the subtyping the same way. And they do that to ensure that all the data submitted would be equally accurate and reliable, and CDC has developed standardized PFGE methods for PulseNet certified labs to use and all PulseNet labs must participate in that quality assurance scheme or testing every year. Once the labs have obtained PFGE patterns, those patterns are uploaded to the national PulseNet database at CDC and CDC database managers regularly do searches of the national data to look for clusters of identical patterns. And state and county health department personnel also do regular searches of their local PulseNet data looking for clusters. In both cases, search results are reported to CDC and state epidemiologists. And if the listeners would like to know more about the details of PulseNet and how it works, they could go to our website, which is www.cdc.gov/pulsenet.

[Karen Hunter] It sounds like PulseNet is an extremely useful public health tool.

[Peter Gerner-Smidt] Yes, it is. The Texas study provides a nice example of how PulseNet helped a local health department in Houston, the Texas Department of Health Services, and CDC work together to determine if *Salmonella* cases in Houston County were linked to cases elsewhere, either in Texas or nationally. Of course, as this study shows, outbreak investigations also rely on patient interviews. And one of our new developments is, in the outbreak investigations to do the patient interviews at the same time as we do PFGE, not waiting for PFGE results. The sooner the patients are interviewed after getting sick, the fresher their memories are regarding the possible sources of exposures.

[Karen Hunter] Thanks, Dr. Gerner-Smidt. I've been talking with CDC's Dr. Peter Gerner-Smidt about a paper that appears in the June 2010 issue of CDC's journal, Emerging Infectious Diseases. You can see the entire article online at www.cdc.gov/eid. If you'd like to comment on this podcast, send an email to eideditor@cdc.gov. That's eideditor – one word - at c-d-c-dot-gov. I'm Karen Hunter, for Emerging Infectious Diseases.

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