FoodCORE Highlights

Using Online Restaurant Reviews to Find Local Foodborne Outbreaks

This restaurant made me sick!
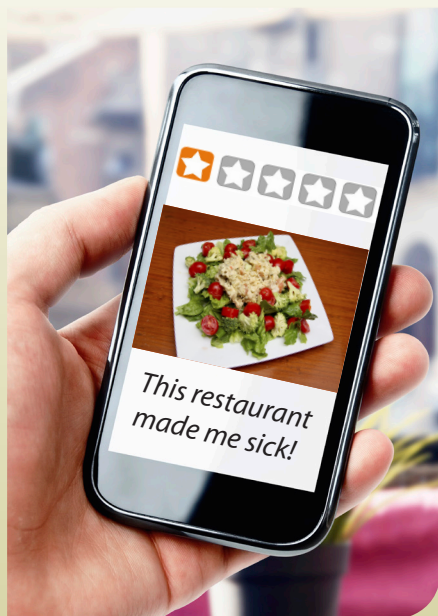
"By working with new technologies, we have been able to cast a wider net and detect more outbreaks. We plan to continue refining this project to detect outbreaks faster and to reach even more people by adding data from Twitter and other social media sites."

– **Vasudha Reddy, MPH**
NYC Department of Health & Mental Hygiene

If you find yourself sick with food poisoning soon after eating at a restaurant, what do you do? Do you call your primary care provider or your local health department? Do you turn to the internet?

Local health departments detect many foodborne outbreaks through illness complaint systems. The public, however, may not use them or may not even be aware of these systems. Each year, the New York City Department of Health and Mental Hygiene's (DOHMH) illness complaint system, "311", receives approximately 3,000 complaints, but it is likely that many more complaints are never reported. Staff at DOHMH collaborated with Columbia University and Yelp, an online review site, to pilot a project to identify foodborne outbreaks that may go undetected through traditional complaint systems.

DOHMH's academic partners at Columbia University developed a data mining software program to search online restaurant reviews for words and phrases related to food and sickness. Researchers used the program to analyze nearly 300,000 New York City restaurant reviews posted to Yelp over a nine-month period in 2012 and 2013. The researchers were looking for reviews that were consistent with foodborne illness, reported two or more people getting sick, and stated that there was at least 10 hours between the meal and when people got sick. The program and DOHMH staff identified 129 reviews that needed further investigation, from which DOHMH was able to contact and interview 27 reviewers.

Three outbreaks were identified through this project that met DOHMH's outbreak investigation criteria and had not been detected through traditional outbreak detection methods. **DOHMH potentially prevented further illnesses by identifying and responding to these three outbreaks**.

Another interesting finding from the study is that only 3% of the Yelp reviews consistent with potential foodborne outbreaks had also been reported to "311", so these two systems are likely used by different populations. This shows that integrating multiple data sources, including socially-driven technologies like Yelp, into complaint systems can offer a more complete outbreak surveillance picture. Incorporating additional new and innovative technologies into surveillance will hopefully help in decreasing the significant health and financial impacts of foodborne illness.

For more information:
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6320a1.htm

National Center for Emerging and Zoonotic Infectious Diseases
Division of Foodborne, Waterborne, and Environmental Diseases