Use of Syndromic Surveillance in the Investigation of *Salmonella wandsworth* Outbreak

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OBJECTIVE

To determine whether increases in gastrointestinal (GI) illness detected through over-the-counter (OTC) drug sales and emergency department (ED) syndromic surveillance were linked to a multi-state outbreak of *S. wandsworth* associated with the consumption of Veggie Booty® snack food.

BACKGROUND

On June 22, 2007 increases in OTC electrolyte and child anti-fever medication sales were detected through routine OTC surveillance. Increases in ED data for GI illness among <5 year olds were observed on June 23 and 24. Further analyses indicated clustering within one borough of NYC, with three EDs having most of the visits. Because NYC has had limited success in detecting spatial outbreaks using syndromic surveillance in the past, an investigation was not immediately initiated [1].

DOHMH was notified of a multi-state outbreak of *S. wandsworth* suspected to be associated with the snack food Veggie Booty® on June 26. Cases were predominantly young children and included 8 confirmed cases among NYC residents with onset dates from March 4 – May 19.

METHODS

DOHMH monitors ED and OTC drug sales daily. A case-control study was initiated on the afternoon of July 3 to investigate a series of ED and OTC increases in GI illness occurring among children during late June, 2007 in the affected borough. Cases were defined as children <5 years who had diarrhea and presented to one of three EDs from June 20-26. Controls were randomly selected from ED visits categorized as "other" syndrome who presented to the same EDs during the same time period; controls were frequency matched by age and ED with a 2:1 ratio. A questionnaire was administered to parents ascertaining details about their children's illnesses, foods eaten by the children, including a specific question regarding the consumption of Veggie Booty®, and other potential risk factors for GI illnesses. We compared risk factors among cases and controls using chi-square statistics. Odds ratios included a correction of 0.5 in every cell when zero-cells were present.

RESULTS

Thirty-nine cases were identified in the ED data, of which interviews were completed for 20 (51.3%). Attempts were made to contact 89 controls, of which 38 (42.7%) completed interviews. Only 1 case and 1 control consumed Veggie Booty® [OR=1.7, 95%CI=(0.1, 29.4)]; however, the control who consumed Veggie Booty® reported having diarrhea upon interview. When we re-classified case status by parental report of diarrhea as opposed to ED chief complaint; the OR for Veggie Booty® was 8.3, 95%CI=(0.4, 182.7) (estimate includes correction).

CONCLUSIONS

We were only able to interview 58 (45.3%) patients, only two children in the ED cluster ate Veggie Booty® before becoming ill, and parents' recollection at the time of interview regarding what their children ate prior to their illness onset may have been poor. The compilation of patient contact information by the EDs was time consuming and was not made available to DOHMH until late afternoon on Friday, July 6 (2 EDs) and the morning of Monday, July 9 (1 ED). Additionally, because we couldn't differentiate between the excess ED visits causing the increase and those that were a part of the normal baseline rate, our cases included both excess and baseline GI ED visits, which biased our results toward the null.

We found an increased odds of having eaten Veggie Booty® among patients who reported diarrhea (regardless of ED chief complaint) compared to those who denied diarrhea, but this association was not statistically significant. Future signal investigations should be initiated earlier to minimize recall bias and include specimen collection from patients involved. Early notification of the EDs could also aide in obtaining clinical specimens as new potential cases present themselves. Additionally, more rapid methods for obtaining patient contact information from EDs need to be developed, either through staff training or remote access by DOHMH.

References:

[1] Balter S, et al. Three years of emergency department syndromic surveillance in New York City: have we found anything? MMWR 2005; 54 Suppl:178-80.

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