

GASTROENTERITIS OUTBREAK AT HOLIDAY RESORT, CENTRAL ITALY

Migliorati et al

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Ryan Chan
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Background Information

- ▣ several episodes of acute gastroenteritis documented at a costal holiday resort prior to 2003
 - gastroenteritis can be caused by a myriad of pathogens (e.g. *Campylobacter* spp., *Salmonella* spp., *Shigella* spp., Norovirus, Rotavirus, etc.)
 - gastroenteritis is a common disease among resort-goers; role of exposure to contaminated water is well documented
- ▣ aim of the investigation was to find and eliminate the source of the outbreaks; study done from June-Sept. 2003

Study Design

- ▣ Epidemiologic Study (matched case-control)
 - gastroenteritis epidemic occurred from July 1, 2003 – September 4, 2003
 - 183 case-patients (person at resort with at least 3 episodes of diarrhea and vomiting within a 24 hour period) and 181 controls (age-matched)
 - collected data on type of accommodation, contact with infected persons, exposure to possible risk factors 3 days prior to onset of symptoms, and stool samples
 - analyzed with univariate statistical techniques and stepwise multivariate logistical regression

Study Design

- ▣ Environmental Survey
 - evaluated the layout and condition of the water pipelines supplying drinking water and the groundwater collected from 2 wells
 - ▣ wells supplied water to showers, laundry facilities, public toilets, and irrigation pipelines
 - tested water sources for fecal or pathogen contamination, and used fluorescein test to check for connections between systems linking drinking water and non-drinking water

Results

▣ Epidemiologic Study

- sea bathing, use of cabin and shared toilets, and showers supplied with non-drinking water were statistically significant risk factors
- 13 of 19 stool samples + for norovirus, 1 of 14 + for *Campylobacter* spp., and 3 of 8 + for rotavirus
- based on clinical signs, age of cases, and occurrence of secondary cases, they concluded that norovirus was the pathogen associated with the outbreak

Results

- ▣ Environmental Study
 - fecal contamination (coliforms, enterococci, and *Salmonella*) in the sea and well water used to supply showers was observed
 - ▣ all well water and 2 seawater samples were positive for norovirus, 2 of 3 genotypes found in patients also found in these samples – conclude environmental contamination of wells with human stool
 - based on the fluorescein tracer, contamination could have arisen through connections with the non-drinking-water system because of damaged pipework

Conclusion

- ▣ study team proposed several prevention measures, and in 2004, 120 cases were reported, in 2005, 1 case, and in 2006, 0 cases