

ABSTRACT

Outbreak investigation of acute diarrheal disease during a religious festival associated with drinking contaminated pipeline water, Radhakund, Uttar Pradesh, India – November 2016

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Background: In 2015, there were >12 million acute diarrheal disease (ADD) cases with 1,216 deaths reported in India with 75,347 cases and 320 deaths from Uttar Pradesh state. A suspected ADD outbreak was reported from Radhakund, Uttar-Pradesh (population = 7511) on November 11, 2016 during a religious festival with >10,000 tourists. We investigated to describe the epidemiology, identify risk factors, and recommend preventive measures.

Methods: We defined a suspect case as ≥ 3 loose stools within 24 hours in a resident of Radhakund between October 31 and November 11, 2016. We identified cases by reviewing hospital records and by house-to-house survey. We conducted a 1:2 unmatched case-control study using a structured questionnaire to identify risk factors. Stool for cultures were not collected by hospitals and no active cases were present during the investigation for testing. We assessed water-supply and sanitation of the town and tested water samples for faecal contamination.

Results: We identified 339 cases (69% female); 285 (84%) were tourists. Median age was 60 years (range 1-80 years). There were 117 (35%) hospitalizations and two deaths. Symptoms reported included diarrhea (100%), vomiting (94%), abdominal pain (23%), and fever (3%). Among 44 cases and 81 controls, only drinking water from pipeline-A (aOR=12.7 [95% CI = 4.9 – 33.0]) and illiteracy (aOR=4.1 [95% CI = 1.5 – 11.3]) were associated with illness in multivariate analysis. We observed sewage overflow from community toilets near tube-wells supplying pipeline-A. Pipeline-A is >40 years old with frequent cracks and leaks. Among four water samples from pipeline-A, two were positive for *Vibrio cholerae*.

Conclusion: This was an ADD outbreak during a mass gathering in Radhakund associated with drinking water from a contaminated pipeline. We recommended chlorination of water, relocation of public toilets away from tube-wells, repair of pipeline-A, routine water surveillance and enhanced sanitation facilities for tourists.

