

## OUTBREAK INVESTIGATION OF CHOLERA IN BHARUCH CITY

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## ABSTRACT

**Introduction:** Cholera is an acute diarrhoeal disease, present in India since ancient times. Cholera epidemic was reported in June 2009 in Bharuch city, Gujarat.**Aim:** To find out the cause of cholera epidemic and to suggest preventive and control measure.**Study design:** Cross sectional study. Person from high risk area were interviewed**Results:** Contamination of drinking water with sewage water was found to be the cause of this epidemic.**Key words:** cholera, drinking water, sewage system.

## INTRODUCTION

An outbreak is the occurrence of cases of an illness, specific health related behaviour or other event, clearly in excess of normal expectancy in a community in a specific time period. An outbreak is limited or localized to a village, town or closed institution. All efforts should be made to investigate such outbreaks at the earliest to prevent further spread.

Epidemiological studies have shown that cholera is responsible for about 5 - 10 % of all acute diarrhoea cases in non epidemic situation<sup>1</sup>.

**Cholera** is a severe bacterial infection caused by the bacteria *Vibrio cholerae*, which primarily affects the small intestine and the main symptoms include production of profuse watery diarrhoea and vomiting.

Transmission is primarily by the acquisition of the pathogen through contaminated drinking water or infected food. The severity of the diarrhoea and associated vomiting can lead to rapid dehydration (hypohydration) and electrolyte loss. If these are not replaced then death may follow.

**Symptoms of cholera:-**

The primary symptoms of cholera are profuse diarrhoea, severe dehydration and abdominal pain. Cholera may also cause vomiting. These symptoms start suddenly, usually one to five days after infection, and are the result of a toxin produced by the vibrio cholerae bacterium that compels profuse amounts of fluid from the blood supply into the small and large intestines.

People infected with cholera suffer acute diarrhoea. This highly liquid diarrhoea, colloquially referred to as "rice-water stool" is loaded with bacteria that can infect water used by other people.<sup>7</sup> Cholera is transmitted through ingestion of water contaminated with the cholera bacterium, usually from faeces or other effluent. The source of the contamination is typically other cholera patients when their untreated diarrhoea discharge is allowed to get into waterways or into groundwater or drinking water supplies.

An area is declared free of cholera when twice the incubation period i.e. 10 days has elapsed since the death, recovery or isolation of the last case<sup>2</sup>.

Date of Investigation:- 17 -06-09

Total population of Bharuch city is 1, 80,000

- First case of cholera reported on 27/05/09

- Total 16 confirmed cases of cholera as on 17-06-09. Of which 2 cases are from Asa village, Taluka Jaghadiya. The remaining cases reside in urban area of Bharuch.

**Table 1:** Age and gender wise distribution of cases reported

Age (Years)	Male	Female	Total
1-5	0	1	1
5-15	0	1	1
15-60	5	6	11
>=60	0	3	3
Total	5	11	16

- Majority of the cases are in the age group of 15-60 years. There is no preponderance of cases in extremes of age.
- There is no clustering of cases by time and cases have appeared as sporadic events over a period of time which suggests a continuous exposure rather than a point source. Further the cases have appeared in more than one area suggesting a diffuse source of infection rather than a single source.
- Six cases are from Ektanagar area of Bharuch. First case of cholera was also from this area on 27-5-09. Total population in Ektanagar area is around 4000. Remaining cases were from different areas of Bharuch. Line listing of all cases is attached herewith.

#### High risk geographical area - Ektanagar:-

- Leakage in water supply pipes has led to contamination of drinking water with sewage. There is blocked sewerage system. Breeding places of mosquito and housefly were evident. Source of drinking water is piped water supply by municipality. Residents from this area complained of bad odor from water on the day of visit.
- Out of 91 water samples 50 found positive while 41 found negative for Chlorine as reported by ADHO Bharuch.

#### Description of Control measure taken: -

- At present tap water supply was stopped and alternate supply by tanker twice a day was established which was inadequate.

- Removal of garbage has been undertaken yet not complete.
- Chlorine tablets were distributed only once initially.
- Repairing of 75 leakages in water supply line out of 88 leakages found.

#### Microbiological aspects: -

- Two-stool samples from the patients admitted at civil Hospital, Bharuch on the day of visit were taken and then processed at Department of Microbiology, Medical College, Vadodara, for cholera.

#### Conclusion and Recommendation:-

- From all these observations it is concluded that cholera outbreak is due to contamination of drinking water due to leakage in water supply system.
- Affected person had not consumed outside food during 2 days prior to illness which suggests that infection is water borne.
- It is recommended in present situation that water supply should be safe and chlorinated. In affected area frequency of water supply by tanker should be in proportion of population.
- Distribution of chlorine tablet and educating people how to use should be continued.
- Prophylaxis with Doxycycline should be given to family contacts and in neighboring houses when warranted.
- IEC: -Health education to people regarding water safety and personal hygiene should be taken up including not eating street food. Boiling of drinking water before consumption wherever feasible. IEC can be through newspaper, local television channels, distribution of pamphlets.
- Local health authorities should take up measures to destroy unsafe street food and check water quality in ice factories also.
- Assessment and evaluation of water supply system to look for leakages and clearing up of blocked sewage lines should be taken up on an urgent basis. Long term plans for replacement of water pipes and sewage system where required is advocated<sup>3</sup>.

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