

## Brief Investigation of a Cholera Outbreak in Thailand

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**OBJECTIVE:** To investigate the role of food handlers in the maintenance and propagation of a cholera outbreak in Thailand, May 1973.

**BACKGROUND:** Cholera, a potentially serious problem in Bangkok with its poor sanitation and water supply, had not been reported in the city for the previous four years. In late April 1973 cases began appearing sporadically in Samut Prakarn Province just south of Bangkok, and by early May it was obvious an outbreak was occurring. Interest and concern was expressed by the School of Public Health and a meeting was held at the school to discuss the status of the outbreak and potential avenues of investigation open to the school, with assistance from the SEATO Medical Research Laboratory (SMRL). At that time it was decided that a limited study could be done, investigating the possible role of food handlers in the maintenance and spread of the disease.

**DESCRIPTION:** Site visits were made to several areas of potential epidemiological importance:

1. The Samut Prakarn Provincial Hospital was visited to substantiate the diagnosis and occurrence of cholera cases.
2. The village of Moo Song in the factory district, where three cases had originated, was visited.
3. One theory for the recurrence of cholera in Thailand was the possible importation of cases from Malaysia by fishermen. Fishing boats coming to an ice plant in the area of Moo Song were thought to be a possible focus of spread. The ice plant was inspected to determine its potential for such a role.
4. An isolated duck farm, where an individual had apparently contracted the disease, was visited and individuals interviewed to determine possible sources of infection.

To investigate the potential role of food handlers in the spread of the disease: (1) "noodle" shops in the area of Moo Song were identified, censused, and mapped, (2) all persons in these places identified as food handlers (usually all members of the family involved with the noodle shop were considered food handlers) submitted a rectal swab, which was placed in Cary Blair transport media and returned to SMRL for bacteriological culture and sensitivity studies and (3) a short questionnaire was completed on each of these food handlers.

**PROGRESS:** The above site visits produced the following results:

1. The Samut Prakarn Hospital had seen 104 suspected cases of cholera starting from 18 April 73 (the beginning of the out-break) until 3 May 1973. Thirty-three of these cases had bacteriological confirmation as being *Vibrio cholera* (Bhamraj Naradul Hospital Laboratory).
2. Moo Song is a narrow village approximately 50 meters by 200 meters, located between two large factories, the United Flour Factory and the Scott-Thai paper factory. One end of the village abuts the Chao Phaya river and the other faces the road. Each house in the village has its own "klong jars" which are filled from one central water faucet, via a plastic hose, the total length of which is made up of many hoses coupled together. Since this hose lies on the ground in waste water, puddles, etc., it is certainly a potential source of drinking water contamination.

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3. The ice factory was very clean and is regularly inspected by a Public Health Worker. The water is obtained from a deep well and the ice is only used for refrigeration, not for consumption. Fishing boats are "iced" (filled) in 1.5 hours by a conveyer belt, and the Malayan crew members do not come ashore at any time. Thus the theory of importation was unlikely.

4. On April 19th the second recognized case of cholera ended fatally for a worker on the duck farm. His wife and niece were also bacteriologically positive though apparently asymptomatic. It had been reported that the infected worker had not left the duck farm in the last six months, but 1000 ducks were shipped daily, and numerous persons entered and left the farm every day. It is possible that one of these persons was excreting the organism and spread the disease to the persons on the farm by poor sanitary practices.

*Foodhandler Survey:* A total of 31 persons were cultured from ten eating places, a food cart, and a food basket carrier. Four males and twenty-seven females were cultured, reflecting the fact that females are more likely to be engaged in this occupation. Three of the persons cultured had a complaint of diarrhea in the previous two weeks, and, indeed, two of them had diarrhea at the time the culture was taken. None of the 31 cultures were positive for *V. cholera* although one *Shigella* organism and seven *Salmonella* organisms were isolated from this group. The *Salmonella* organisms were all *S. derby* except for one *S. newlands*.

*SUMMARY:* There was no obvious cause found for the recurrence of cholera in Thailand, though there are several possibilities. Cholera could have continued to smolder unrecognized with the occasional clinical case misdiagnosed. Importation to this area is also possible since this factory area absorbs a large number of migrant workers from other areas of Thailand as well as migrants from other nearby countries. Given the characteristics of the organism, the potential for a major outbreak is always present.

In the "chunk" sample of food handlers living and working in a cholera infected area, there were no persons from whom cholera organisms were isolated. There had been no cholera cases in the area during the previous five days and it is possible that asymptomatic carriers could have reverted to negative by the time the survey was made.

A surprisingly large number of persons had *Salmonella* organisms isolated on rectal swab. The public health significance of food handlers thus infected is very real and emphasizes the need for continued instruction in the use of proper sanitary practices.