

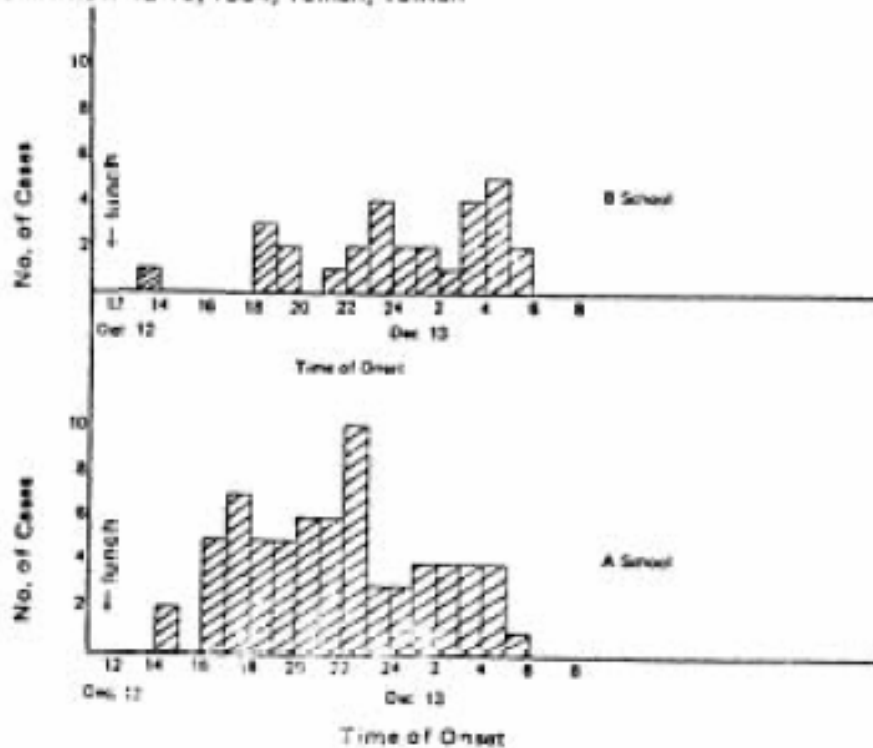
Outbreak of Gastroenteritis Among Students of Two Senior High Schools-Tainan County

On December 17, 1964, the Bureau of Disease Control received a report of an outbreak of gastroenteritis among students in two senior high schools in Tainan County. Students first became ill in the afternoon of December 12, and new cases continued to occur until the early morning of December 13 (Figure 1). Sixty-nine cases occurred in

School A and 30 cases in school B for an attack rate of 64% and 44% respectively. Major signs and symptoms included diarrhea 100%, abdominal cramps (79%), generalized weakness (21%), nausea (15%), and vomiting (3%). The illness was generally mild and symptoms subsided within 1 to 2 days. Three percent of cases sought medical care. No cases required hospitalization. A preliminary survey showed that all cases had eaten box lunches prepared in one food company on December 12. Approximately 463 students from schools A and B had eaten these lunches. The median incubation period was 10 hours. A case-control study showed that significantly more cases than controls ate cooked taro root, a food item contained in the box lunch ($p < 0.01$). Stool specimens from 62 students were cultured for *Shigella*, *Salmonella*, and *Vibrio* species. No students had cultures positive for these organisms. No food specimens from the suspected box lunches were available for testing. An investigation of the food company is pending. Reported by, YH Hu, SC Lee. Tainan County Health Bureau: Bureau of Disease Control and Bureau of Food Sanitation, Department of Health, the Executive Yuan.

Editorial note: This outbreak was the second outbreak of gastroenteritis among school students investigated by the Department of Health in December.¹ In neither investigation was the causative organism identified. In the Tainan outbreak, the signs and symptoms, temporal clustering of cases, incubation period, and suspected food item were consistent with gastroenteritis due to *Bacillus cereus*. *B. cereus* is an aerobic, spore-

Fig 1. Cases of gastroenteritis among students of two senior high school, by time of onset. December 12-13, 1984, Tainan, Taiwan



forming, toxin-producing. Gram-positive bacillus that is ubiquitous in the environment and small numbers of organisms are frequently present in foods² *B. cereus* is a well known cause of gastrointestinal illness following ingestion of heavily Contaminated foods | Spores of *B. cereus* are heat resistant, Since the organism is able to grow over a wide range of temperatures (25-42°C), it can multiply in large numbers in cooked foods that are held at improper temperatures In food companies where food is prepared several hours before consumption and held at room temperature, there is ample opportunity for an outbreak of food-poisoning due to this organism. In the present outbreak, it was not possible to determine whether the cause was *B. cereus* for two reasons: 1) stool specimens were not specifically cultured for *B. cereus*; and 2) no food was available for testing by the time the investigation was begun These are common problems in the investigation of food-borne outbreaks that often lead to inconclusive results and recommendations The efficiency of such investigations can be greatly improved by 1) training field and laboratory Investigators of food-borne outbreaks in the proper collection, transportation, and testing of specimens; and 2) early reporting of suspected cases of food-poisoning to health authorities.

Reference

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2. Kim HU, Goepfert JM Occurrence of Bacillus cereus in selected dry food produces, J Milk Food Technol 1971; 34:12:15.
3. Goepfert JM, Spin WM, Kim HU, Bacillus cereus: Food poisoning organism, a review J Milk Food Technol 1972; 35:213-227.