Department of Health
REPUBLIC OF CHINA

December 25, 1990/Vol.6/No. 12

Epidemiology Bulletin

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A Gastroenteritis Outbreak in a Military Hospital

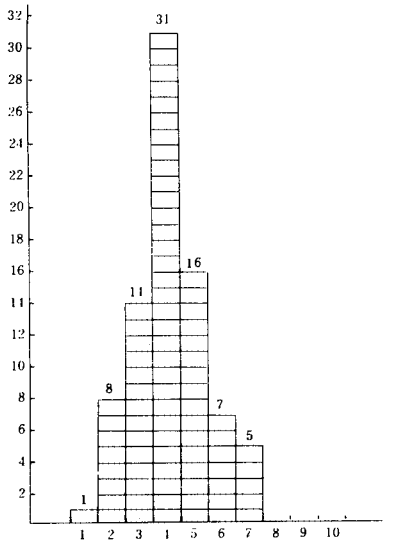
On July 4, 1990, a food poisoning outbreak occurred among hospitalized patients in a medical care unit in a military hospital. One hundred eight-five patients became ill with diarrhea, abdominal pain, nausea, vomiting and sweating starting approximately at 8 a.m. A retrospective procedure was used to interview all patients in that particular building. A total of 295 questionnaires were collected, with 87 respondents complaining of some discomfort. A case was defined as a patient of the medical care unit in the military hospital with at least one of the major symptoms (diarrhea or vomiting) and one of the minor symptoms (abdominal pain, nausea, sweating, or fever). Eight-two patients met this criteria, five failed to meet the case definition and were discarded for further analysis. The attack rate was 45.6%. The 208 patients without complaints were used as controls. Analysis of returned questionnaires showed major symptoms of diarrhea (82.9%), abdominal pain (68.3%), nausea (45.1%), and vomiting (37.8%). Onset of disease clustered around one to seven hours after eating breakfast (see Figure 1). The median period of incubation was about 4 hours. Food items and statistical analyses of the cases and controls are summarized in Table 1. Two food items, bread and oat milk, were consumed at breakfast. A statistically significant difference in attack rates was found between cases and controls according to food item consumed ($p<0.05$ by a Chi-square test). Attack rates for those who ate the bread and who did not eat the bread were 45.7% and 1.7% respectively, with a relative risk as high as 26.9%. A large amount of Staphylococcus aureus was cultured from the bread, though no pathogenic bacteria were found in the vomitus. The bread was supplied by a local factory on contract, and the supply was suspended immediately. Most patients had recovered by the afternoon of the same day after receiving treatment.

Table 1. Cases and Controls by Food Items

Food item	Case		Control		P-value*	Odd ratio	Relative risk	95% confidence
	Eaten	Not eaten	Eaten	Not eaten				
Bread	80	2	95	113	<0.001	47.58	2.14	12.06-406.5
Oat milk	73	9	95	113	<0.001	9.65	1.95	4.47-22.96

*Chi-square test

Figure 1. Incubation Periods



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Editor's Notes: Staphlococous aureus is the most common pathogenic organism causing food poisoning. The incubation period is generally one to four hours, the shortest of all bacterial causes food poisoning. The enterotoxin produced by the bacteria is the cause of illness. Foods are easily contaminated by food handlers, the bacteria then produces heat-restraint toxin in foods. A large amount of Staphylococcus aureus was found in the skin of the bread but not in the bread itself, nor in the crushed dried pork and the salad contained in the bread. The skin was added by hand to the bread layer by layer. No pathogenic organism were isolated from the vomitus perhaps due to incomplete collection of human specimens. Based on the symptoms, the incubation periods, and epidemiological data, this outbreak was most likely caused by Staphylococcus aureus. The outbreak indicates that food sanitation is particularly important for groups of people living together, such as in this hospital setting where many people can be infected once an outbreak occurs.

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