

Epidemiology Bulletin

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Food Poisoning in a
Primary School-Taichung County

Food Poisoning in a Primary School-Taichung County

On October, 1991, many students of the Nei-pu Primary School of Houli Township, Taichung County, were noted to visit toilets frequently during class hours. Upon investigation, it was found that more than a hundred students, and several teachers as well, had diarrhea and vomiting, and six of them late on were treated by local physicians.

On the same day, the school reported the incident to the Education and Health Bureaus of the Country Government. The Health Bureau then requested the Department of Health for assistance. The investigation revealed that the incident was caused by the lunch boxes consumed on 30 September. Specimens of patients, anal specimens of food handlers and spare lunch boxes were collected and sent to the National Institute of Preventive Medicine and the National Laboratories of Foods and Drugs for laboratory testings.

Lunch boxes of the School are prepared by the Chen-ta Food Factory of Taichung City and the Sung-chiang Food Factory of Taichung County every other week. The lunch boxes of 30 September were supplied by the Chen-ta Food Factory. Chen-ta supplies around 10,000 lunch boxes to more than ten schools in Taichung City and Country. The Nei-pu Primary School is about one-hour drive from Chen-ta. Lunch boxes are prepared at 7:30 in the morning, and by 8:00, some are already made. They are then kept in a heater of stainless steel with plastic layer.

There are a total of 2,182 teachers and students in the school. We interviewed 50 teachers and 764 students who had eaten the lunch boxes during that day. We random selected 50 teachers and 382 students to study for risk factors. Cases are defined as those who had eaten the lunch boxes on 30 September and had developed either diarrhea or vomiting or stomach pain with nausea of the 814 teacheres and students, 157 met the criteria, for an overall attack 36%. Major symptoms are: stomach pain (143 persons, 91.1%), diarrhea (91.1%), nausea (29.9%), vomiting (16.6%). The median incubation period is 6 hours (see Fig. 1). There were six kinds of foods were in the lunch boxes. When the subjects were compared by food items (see Table 1), scrambled eggs with scallions, fried winter melon and rice were found to be highly related to the incident. Further analysis by multivariate analysis of these three food items and the cases, the fried winter melon was found to be significantly related to the food poisoning.

Food specimens tested by the Taichung Laboratory of the National Laboratories of Foods and Drugs for four pathogens (*Bacillus cereus*, pathogenic colibacillus, *Salmonella* and *Staphylococcus aureus*) were found all negative. 16 vomits and anal specimens of patients and anal specimens of food handlers were also found negative (telephone communication with the Taichung Country Health Bureau).

Reported by :Taichung City and County Health Bureaus, Bureau of Food Sanitation, Bureau of Communicable Disease Control, and National Institute of Preventive Medicine, DOH.

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Table 1. Food Consumption by Patients and Non-patients by Food Items

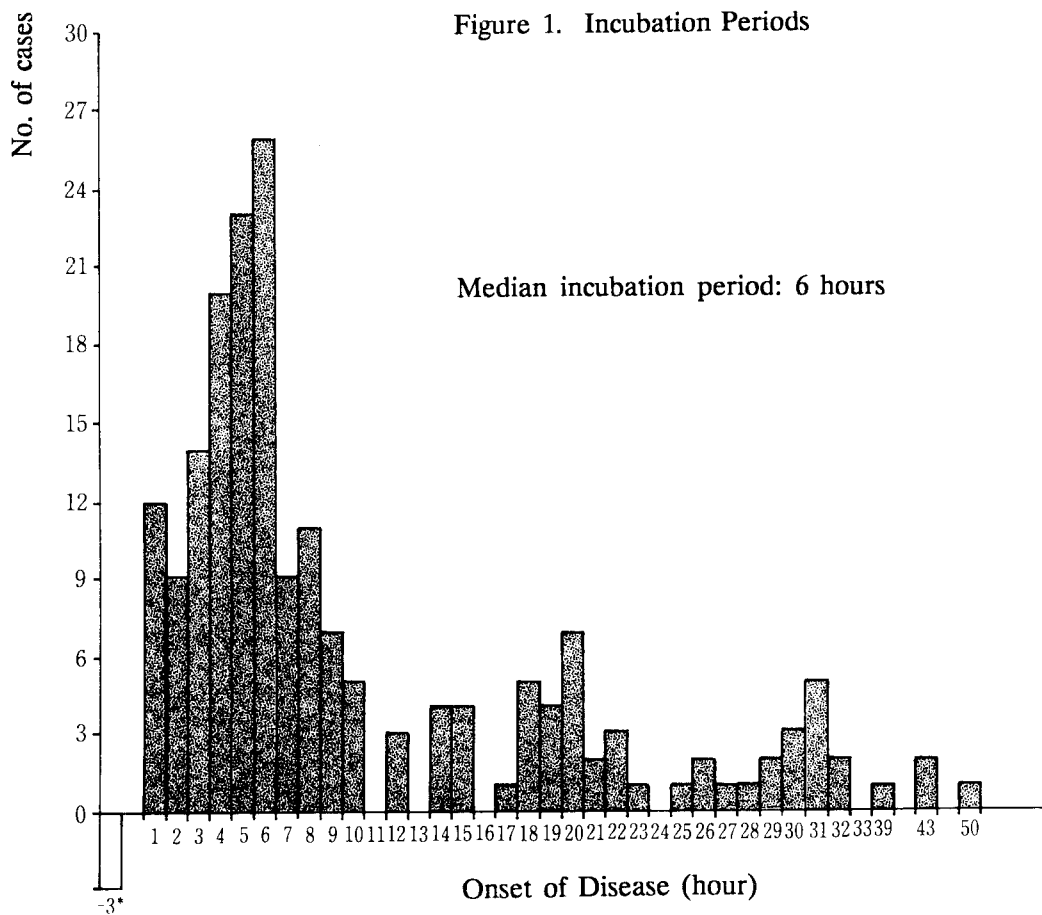
Food item	Consumed			No consumed			Relative risk	P-value
	No. of cases (1)	Total No. (2)	Attack rate (%) (3)	No. of case (1)	Total No. (2)	Attack rate (%) (3)		
Sour soup	120	294	40.8	28	90	31.1	1.31	0.0978
Leaf mustard	83	196	42.3	47	145	32.4	1.31	0.0618
Scrambled eggs								
with scallions	107	267	40.1	25	94	26.6	1.51	0.0196
Pigeon eggs	52	140	37.1	65	173	37.6	0.99	0.9377
Fried winter melon	81	181	44.8	44	153	28.8	1.56	0.0026*
Pork steak	121	316	38.3	22	70	31.4	1.22	0.2820
Soft drink	128	334	38.3	13	50	26.0	1.47	0.0918
Rice	151	412	36.7	0	9	0		0.0174

* $P < 0.01$ (statistically significant)

Editorial note :The toxin of *Bacillus cereus* can cause food poisoning. The bacillus comes from the soil. Incubation periods are 1-6 hours for the vomiting type and 6-24 hours for the diarrhea type. Major symptoms are: (1) nausea and vomiting; and (2) stomach pain and diarrhea. Poor refrigeration, food prepared hours in advance, and left-over foods not well heated again are some of the reasons of food poisoning.

The analysis shows that the fried winter melon was the likely cause. The symptoms and incubation period indicate the likelihood of *Bacillus cereus*. However, no bacillus was identified in either food or human specimens to help the diagnosis.

Some suggestions for future investigations are: (1) timing is important in the investigation of food poisoning; the validity of data decreases with the lapse of time; (2) soup specimens were not collected for laboratory testing; though analysis of questionnaire showed that soup was not related to the incident, a complete investigation should also include analysis of the soup; (3) the School is about one-hour drive from the food factory, the factory suppliers around 10,000 lunch boxes every day, some lunch boxes are already made at eight o'clock in the morning and are later consumed by students at 12 noon. Lunch boxes may thus be contaminated during these hours if they are not stored properly. Schools, therefore, should take into consideration the distance and the storage measures when selecting lunch box suppliers.



– 3*: The onset time of this case was 3 hours long before meals, so this case should not be correlated with the food poisoning.

References:

1. Benenson, A.S.: Control of Communicable Disease in man, 15th ed. Am. Public Health Association, Washington DC, 1990.
2. Chen, CJ. Epidemiology 490-493., 1983.
3. FDCB, Synopsis of Food-borne disasl invertigation for practice workshop 53-57, 1990.

Errantum: Epidemiology Bulletin vol 7 No. 11, P. 126 AIDS cum 1990 was corrected by cumulative.