# Centers for Disease Control and Prevention

# Epidemiology Program Office Case Studies in Applied Epidemiology

# No. 401-303



# Oswego – An Outbreak of Gastrointestinal Illness Following a Church Supper

## Learning Objectives

After completing this case study, the participant should be able to:

* Provide an epidemiologic analysis from a line-listing of disease outbreak data
* Draw, interpret, and describe the value of an epidemic curve
* Calculate and compare food-specific attack rates and risk ratios to identify possible vehicles of infection
* Provide an outbreak investigation conclusion and summary incorporating Hill’s criteria

This case study is based on an investigation conducted by the New York State Department of Public Health Division. The case study was developed by Wendell Ames, MD, Stafford Wheeler, MD, and Alexander Langmuir, MD in the early 1940s. It has been substantially updated and edited since then by Philip Brachman, Michael Gregg, and Richard Dicker, with input from the many instructors who have reviewed and taught "Oswego" as part of the EIS Summer Course each year.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES Public Health Service

## PART I - Background

On April 19, 1940, the local health officer in the village of Lycoming, Oswego County, New York, reported the occurrence of an outbreak of acute gastrointestinal illness to the District Health Officer in Syracuse. Dr. A. M. Rubin, epidemiologist-in-training, was assigned to conduct an investigation.

When Dr. Rubin arrived in the field, he learned from the health officer that all persons known to be ill had attended a church supper held on the

previous evening, April 18. Family members who did not attend the church supper did not become ill. Accordingly, Dr. Rubin focused the investigation on the supper. He completed Interviews with 75 of the 80 persons known to have attended, collecting information about the occurrence and time of onset of symptoms, and foods consumed. Of the 75 persons interviewed, 46 persons reported gastrointestinal illness.

## Clinical Description

The onset of illness in all cases was acute, characterized chiefly by nausea, vomiting, diarrhea, and abdominal pain. None of the ill persons reported having an elevated temperature; all recovered within 24 to 30 hours. Approximately 20% of the ill persons visited physicians. No fecal specimens were obtained for bacteriologic examination.

The investigators suspected that this was a vehicle-borne outbreak, with food as the vehicle. Dr. Rubin proceeded to interview ill people (cases), and non-ill people (internal comparison cohort) about what they ate and drank at the potluck. He then put his data into a line listing.

## PART II - Description of the Supper

The supper was held in the basement of the village church. Foods were contributed by numerous members of the congregation. The supper began at 6:00 p.m. and continued until 11:00 p.m. Food was spread out on a table and consumed over a period of several hours.

Data regarding onset of illness and food eaten or water drunk by each of the 75 persons interviewed are provided in the attached line listing. The approximate time of eating supper was collected for only about half the persons who had gastrointestinal illness.

## PART III - Analysis

Use the Excel line listing posted on Canvas to complete the table below. OR create your own similar table.

|  |  |  |  |
| --- | --- | --- | --- |
| Food Items Served | Number of persons who ATE specified food | Number of persons did NOT eat specified food | Attack Rate Ratio |
| Ill | Not Ill | Total | Percent Ill (Attack rate) | Ill | Not Ill | Total | Percent Ill (Attack rate) |
| Baked ham |  |  |  |  |  |  |  |  |  |
| Spinach |  |  |  |  |  |  |  |  |  |
| Mashed potato |  |  |  |  |  |  |  |  |  |
| Cabbage salad |  |  |  |  |  |  |  |  |  |
| Jello |  |  |  |  |  |  |  |  |  |
| Rolls |  |  |  |  |  |  |  |  |  |
| Brown bread |  |  |  |  |  |  |  |  |  |
| Milk |  |  |  |  |  |  |  |  |  |
| Coffee |  |  |  |  |  |  |  |  |  |
| Water |  |  |  |  |  |  |  |  |  |
| Cakes |  |  |  |  |  |  |  |  |  |
| Ice cream, vanilla |  |  |  |  |  |  |  |  |  |
| Ice cream, chocolate |  |  |  |  |  |  |  |  |  |
| Fruit salad |  |  |  |  |  |  |  |  |  |

Reference

Gross MB. Oswego County revisited. *Public Health Reports* 1976;91:160-70.