

# Food Borne Outbreak in Bisha City, Saudi Arabia, May 2007.

On 9:00 am, Thursday 3rd of May 2007, several patients began to arrive at the emergency department of King Abdullah hospital in Bisha city. All mentioned a history of eating a meal on the same afternoon through midnight of the previous day (Wednesday 2<sup>nd</sup> of May) from the same restaurant. A team from the Field Epidemiology Training Program conducted an investigation to identify the food item(s) responsible for this outbreak, determine the source of infection, and recommend measures to prevent similar outbreaks in the future.

A case control study was conducted. A case (patient) was defined as any person who ate from the implicated restaurant on the 2<sup>nd</sup> of May, and developed one or more of the following symptoms: diarrhea, nausea, vomiting, abdominal pain, and fever. The controls were those who shared eating the food from the same restaurant. We took a sample of 55 cases and 55 controls and inquired about food consumption, clinical symptoms and admission history.

Cases (81.8%) were more likely than controls (5.5%) to have eaten the Russian salad with mayonnaise (Odds ratio (OR) = 78; 95% Confidence Interval (CI) 20.21 - 301.04). Eating Mutabal (OR = 34.2; 95% CI 7.57 - 154.80) and Shawarma (OR = 3.1; 95% CI 1.09 - 8.62) were found to have an association with food poisoning.

Salmonella of serotype enteritidis was isolated from 51 patients. Out of the 51 positive patients, 29 were positive in stool culture, and 22 were positive in rectal swab. Five of the food handlers had Salmonella enteritidis serotype positive on rectal swab.

Mayonnaise was prepared at the restaurant by blending egg yolk with oil and vinegar. After it was prepared, the mayonnaise was mixed with carrots and cabbage to produce the Russian salad. After that, the Russian salad was placed in medium sized plastic containers to be distributed with each roast chicken meal. The plastic containers that included the Russian salad remained at room temperature for over 3 hours. Any leftover Russian salad was used the following day.

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**Editorial notes:** On the basis of this investigation, it is obvious that Salmonella enteritidis was the cause of the outbreak; however, the immediate source and reservoir could not be clearly identified.

The main source of Salmonella infection in a large number of outbreaks was found in chicken meat

and eggs. In USA, one of every 4 chickens was found to be infected with Salmonella.<sup>1</sup> In Saudi Arabia, during the period from 1416 to 1425 H. Salmonella organisms accounted for 41.4% of all reported food poisoning outbreaks, coming in first rank.<sup>2</sup>

In this outbreak, the Russian salad and/or mutabal were the most probable immediate source of infection. The reservoir could be the raw eggs used for the mayonnaise added to the Russian salad, which may have cross contaminated the mutabal. On the other hand, it could be that the infected food handlers themselves contaminated both foods.

Regulations requiring the use of packed mayonnaise only in restaurants should be strictly enforced. It was also recommended to increase the periodic checkup of food handlers, with their health certificate to be issued quarterly.

## References:

- 1- Thorns CJ. Bacterial foodborne zoonoses. Rev Sci Tech 2000; 19:226239-.
- 2- Kurdi TS. Epidemiology of the Food Poisoning Outbreaks in KSA During 1416-1425-H. In: The HACCP, Food Safety and Hazards Analysis Critical Control Point System, Edition 1, 2005, P 211214-.

**Table 1: Odd ratios and 95% Confidence Intervals for food items served in implicated restaurant, Bisha, May 2007 (n=55)**

Health Status Factors	Cases		Controls		OR	95% CI
	Ate	Did Not eat	Ate	Did Not eat		
Russian Salad	45 (81.8%)	10 (18.2%)	3 (5.5%)	52 (94.5%)	78	20.21-301.04
Mutabla	31 (56.4%)	24 (43.6%)	2 (3.6%)	53 (96.4%)	34.2	7.57-154.80
Roast Chicken	32 (58.2%)	23 (41.8%)	39 (71.0%)	16 (29.0%)	0.57	0.26-1.26
Rice	4 (7.3%)	51 (92.7%)	20 (36.4%)	35 (63.6%)	0.14	0.04-0.44
Shawarma	15 (27.3%)	40 (72.7%)	6 (11.0%)	49 (89.0%)	3.1	1.09-8.62
Hummos	17 (30.9%)	38 (69.1%)	12 (21.8%)	43 (78.2%)	1.6	0.68-3.78

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