

Outbreak of staphylococcal enterotoxin food poisoning

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Coagulase positive staphylococci are generally difficult to grow in foodstuffs without substantial temperature abuse and foodborne outbreaks are uncommon. The following incident resulted in the first detection of staphylococcal enterotoxin in food in a Queensland outbreak and is the first reported outbreak of staphylococcal foodborne illness in Queensland since 1997 when 42 people in a Bundaberg nursing home became ill and subsequent faecal testing of a complainant isolated staphylococcal enterotoxin.¹

Eighteen elderly persons (from a party of 200) developed severe vomiting, diarrhoea and abdominal pain within 5 hours of consuming a pre-prepared meal of cold meat, salad and dessert at a club on 23 March 2000. Unconfirmed reports indicated that a total of approximately 50 guests (25% attack rate) were affected with many of these cases not being reported because of allegiance to the club. Two elderly females were hospitalised and had moderate and slight levels of coagulase positive staphylococci detected in faecal samples. Staphylococcal enterotoxin was detected in faecal and vomitus samples. An epidemiological and environmental investigation sought details of symptom history and exposure to potential sources of staphylococcal enterotoxin, including foods consumed.

The caterer advised that whole chickens were cooked at 200°C for 50 minutes by a butcher-delicatessen business on the morning of 22 March 2000. One batch of 18 was cooked at 10 am and placed into a hot box (for an estimated 3 hours) and another batch of 30 was cooked at 11.15 am and remained in the closed oven pending collection. A temperature check on the hot box yielded 45°C, a temperature at which bacterial growth will be supported.

The cooked chickens were collected at about 2 pm on that day and transported (40-50 minutes) in an iced esky to the luncheon venue. The temperature of the chickens (whether hot or cold) when collected is unclear. They were not transported in an approved refrigerated food vehicle as required by the Food Hygiene Regulations. The temperature within the esky is unknown and no records were kept of temperatures before, after or during transit. Outside temperatures reached approximately 28°C.

There is doubt as to whether the chickens were immediately refrigerated in a small cold room (3°C) upon arrival at the venue or placed on a food preparation bench at ambient temperature (approximately 27°C). Later that afternoon the caterer removed the chickens from the cold room and quartered them by hand. A common tea towel was used to dry hands. The chicken was consumed on the following day.

The Food Microbiology Laboratory at Queensland Health Scientific Services tested the food for coagulase positive staphylococci and found diagnostic levels of $>2.5 \times 10^6$ cfu/g in the 5 submitted samples. Using the TECRA Staphylococcal Enterotoxin Visual Immunoassay kit,² staphylococcal enterotoxin was detected in four out of five plated meals of chicken, ham, pasta and salad obtained on 24 March 2000. Further enterotoxin testing of individual food items indicated that the chicken was the most likely source of contamination. Pulsed Field Gel Electrophoresis demonstrated genetic relatedness between the food and human isolates.

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Environmental investigations concluded that improper storage temperatures post cooking and during transport were unacceptable in that the chicken was stored in the temperature danger zone (between 5°C–60°C) for a prolonged period increasing bacterial growth. Furthermore, the potential for cross-contamination was noted at the manufacturing premises due to food handlers handling both cooked and raw meats.

References

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