

# Epidemiology case study essay

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HCA 602 – Managerial Epidemiology National University October 2009 Marine Corps Recruit Depot is a Military training Command located in San Diego, California. Each month 500 young men are recruited and placed together in Recruit Enlisted quarters for the duration of their 12 weeks basic training. The marine recruits share common facilities in this berthing such as bathrooms, dining area and recreational areas along with their training staff. These Marine recruits also perform very rigid physical training that some acquired partially healed superficial wounds while doing their annual physical readiness test that occur three days prior to graduation from the camp. On September 18, 2009 after their graduation ceremony, a traditional dinner is served at the Mess Hall for the graduating Marine recruits, their family and training staff. An outbreak occurred among the 500 Marine recruit, their family and staff 8 hours after having this dinner.

100 people became ill and common symptoms presented were dizziness, blurred vision, dry mouth, nausea and vomiting and diarrhea. All 100 people were admitted at the Naval Medical Center San Diego and further examinations were performed. After the examinations, these findings were discovered: 5 out of the 100 people examined also have ptosis, extraocular palsies, facial paralysis, palatal weakness and impaired gag reflex and 4 of them still have that partially healed superficial wound from their physical training few days ago.

Upon this discovery all were administered botulism antitoxin intravenously. Commander Benny Triplett, Nurse Practitioner head of the Infection Control Department was assigned to investigate the outbreak and must provide results to the local health department within a week. Commander Triplett

knew it was botulism based on symptoms presented but since two types are suspected, she is wrestling with some important questions at this time: What further differential diagnosis can be performed for wound and foodborne botulism? What were the types of food served at the dining facility and how many people have eaten them and how many did not? What is the calculation for crude attack rate? What are the food specific attack rates for those who have eaten and did not eat each type of food? How many times more likely are people who ate specific food items to get sick compared to those who did not eat each food item? What is the cause of the outbreak and its incubation period? Commander Triplett came up with the following answers: Number of people who became ill divided by the number of people at risk times 100. In this case,  $100 / 500 \times 100 = 20\%$  Commander Triplett designed the table below for Food-Specific Attack Rates (per 100) at the MCRD Mess Hall Of all the food items listed, rib eye steak has the highest relative risk and is most likely to be the cause of the outbreak and basing on the stool culture result, *Clostridium botulinum* is the strain to most likely cause the outbreak. \_ “ Foodborne botulism typically has a relatively narrow incubation period (12–72 hours), which may vary from 2 hours to 8 days, depending on the inoculum”. \_ (James W. Buehler, 2003) In this case study, *Clostridium botulinum* spores might have been resistant to heat and survived the cooking or were introduced after the cooking. The spores then multiplied and produced the deadly toxin.

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