

TerranearPMC Safety Share

Week of May 13, 2013 – Food Poisoning

According to the Centers for Disease Control and Prevention (CDC), last year there were 76 million cases of food poisoning in the United States and 325,000 of these cases required hospitalization. On the average, there are 5000 deaths from food poisoning, with 1800 attributed to Salmonella, Listeria (where a recent outbreak was responsible for meningitis), and Toxoplasma (caused by parasitic infection). Meanwhile the majority of food poisoning fatalities went unidentified (unknown toxins).

Some of the most famous cases of food poisoning occurred during ancient Rome when poisoning at the dinner table was a way to remove those that threatened one's social position. The Roman Emperor, Nero, was notorious for "disposing" of unwanted family, and with the aid of his personal poisoner, Locusta, poisoned his brother Britannicus with cyanide. Belladonna was also a favorite poison (this is a perennial herbaceous plant, where the foliage and berries are extremely toxic) in which Nero used on his step father, Claudius, at the instruction of Agrippa, the wife of Claudius, so her son, could take the throne.

Throughout the ages poisoning was relatively easy to get away with because possession of the murder weapon was by no means a clear indicator of guilt. Would-be poisoners could easily obtain materials from shops or chemists, under the guise of using them in small doses for a cosmetic or medical purpose. During the Renaissance era (1400 ó 1500s), one influential family in Europe, the Borgias, made a practice of poisoning potential political foes during dinner parties. Indeed, getting an invitation from the Borgias put one in a most stressful predicament as not accepting the invitation was surely an insult while attending was equally as threatening.

Food poisoning is a term used to describe an illness due to eating food or drink that has gone bad or is contaminated. There are two kinds of food poisoning: 1) poisoning by toxic agent or 2) by infectious agent. Notable toxic agents are mushrooms (containing lethal chemicals), belladonna (mentioned above), shellfish (containing neurotoxins), pesticides (that's why we need to wash fruits and vegetables!), arsenic, antimony and other metals. The other type of poisoning, food infection, occurs when the food contains bacteria or other microbes which infect the body after it is eaten. Most cases of unintentional poisoning are caused by a variety of pathogenic bacteria, viruses, or parasites that contaminate food, rather than chemical or natural toxins which we typically consider with the term "poison."

Food intoxication via microbes is attributed to the ingestion of exotoxins or endotoxins. An exotoxin is a toxin that is released or secreted by bacteria. An exotoxin can cause damage to the host by destroying cells or disrupting normal cellular metabolism. They are highly potent and can cause major damage to the host. The term endotoxin refers to a toxin that is part of the cell structure (lipid material) and is only released into the environment after destruction of the bacterial cell wall.

Food poisoning via microbial agents typically does not manifest until hours to many days after eating. This is a major reason why it is difficult to attribute illness to food poisoning. Depending on what the cause of the poisoning was, one or more of the following is typically experienced: nausea, abdominal pain, vomiting, diarrhea, gastroenteritis, fever, pain in the head or fatigue.

About 20 organisms can cause food poisoning. After eating food contaminated with bacteria, the bacteria multiply in the stomach and the bowels. Some bacteria give off a toxin when they multiply. As a result, nausea, vomiting, abdominal cramps and diarrhea occur. Vomiting and diarrhea are the body's way of eliminating the toxin. Although the experience is unpleasant, most common cases of food poisoning run their course without needing medical attention. In most cases the body is able to completely recover after a short period of acute discomfort and illness. Nevertheless, there are a number of foodborne illnesses which can result in permanent health problems or even death, especially for people at high risk, including babies, young children, pregnant women (and their fetuses), elderly people, sick people and others with weak immune systems.

Foodborne illness due to such bacteria as campylobacter, yersinia, salmonella or shigella is a major cause of reactive arthritis, which typically occurs 1-3 weeks after diarrheal illness. These bacteria have been implicated in most of the recent food poisoning cases in the U.S.. Another common bacteria associated with food poisoning is *Vibrio vulnificus*, which is present in marine environments, especially estuaries where fresh water and salt water environments transition. Most notable carriers are oysters that are either raw or undercooked. Food contaminated with *V. vulnificus* does not provide any altered taste or odor and have been known to cause blistering skin lesions, septic shock, and even death. Another type of food poisoning, tetrodotoxin, is poisoning from reef fish and other animals where the symptoms show up very quickly causing numbness and shortness of breath while often being fatal. As it should be apparent, sushi lovers are definitely at greater risk than those who prefer their meals cooked.

An estimated 55% of food poisoning cases are caused by improper cooking and storage of foods, and 24% by poor hygiene (not washing hands before handling food). Only 3% of cases are from an unsafe food source (maybe sushi lovers can relax!). Keeping your hands clean while working with food is the single most important thing you can do to prevent food poisoning.

From an occupational perspective, OSHA has described what makes or does not make an illness due to food ingestion work-related and therefore, being a potential recordable incident. In a case where an employee experiences an allergic reaction (food allergy) at a company provided lunch or while attending a meeting, the OSHA regulation, 29 CFR 1904, "Reporting and Recording Occupational Injuries and Illnesses," states that such an occurrence is not work-related. However, if an injury or illness which is solely the result of an employee eating, drinking, or preparing food or drink for personal consumption (through an employer sponsored event, such as a picnic or award dinner) and the illness is not due to an allergic reaction, the incident is work-related. Depending on the severity of the illness (i.e. lost work days, type of medical treatment, hospitalization or even death) the illness would be categorized in the same manner as any other workplace incident and recorded on the OSHA 300 log.

The greatest way to live with honor in this world is to be what we pretend to be. Socrates (died via drinking poison of hemlock, as his sentence)