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Legionnaires disease outbreak

Ten people have died and a hundred others are suffering from pneumonia-like symptoms in a Legionnaires Disease outbreak in New York City. The majority of the people who have died were all older adults with underlying medical problems.

Most of the cases are in the South Bronx and have been reported since mid-July. Water sources at a hospital, hotel and three other buildings associated with the illnesses tested positive for Legionella.

Legionnaires' disease is transmitted by inhalation of water aerosols and/or soil contaminated with the Legionella bacteria. It is not a classical airborne infection and Legionnaires' disease is not transmitted from person to person. It thrives at water temperatures between 25 and 42°C, with an optimum temperature of 35°C. Sources where temperatures allow the bacteria to thrive include hot-water tanks, cooling towers and evaporative condensers of large air-conditioning systems, such as those commonly found in hotels and large office buildings.

Quite how the bacterium achieves the numbers to cause such widespread infections in each outbreak situation is still not fully understood. In the 1980's a colleague of mine working at the Leeds Public Health Laboratory (Dr Tim Rowbotham) investigated the relationship between Amoebae and Legionella. Although bacteria are a main food source for free-living amoebae inhabiting aquatic systems, some bacteria have the ability to prevent intracellular destruction and can survive and grow in amoebic cells as structures known as endosymbionts.

Free-living amoebae are well adapted to their hostile environmental conditions and are resistant to desiccation, elevated temperatures and various disinfectants. For their endosymbionts, amoebae represent perfect vectors, providing both protection against adverse environmental conditions and transportation. There is increasing interest in the potential role of free-living amoebae as reservoirs and vectors of pathogenic bacteria.

Dr Rowbotham hypothesized that the amoeba allowed the Legionella bacteria to multiply to critical levels before splitting open to release the bacteria, which were then transferred into the atmosphere via aerosols. His work never gained universal acceptance, but it is still acknowledged that the role of Amoeba as a "Trojan Horse" is an area of research which is worthy of further investigation.

FSA publish Meat Industry Guidelines

A newly revised 20-chapter version of Meat Industry Guidance has been published by the Food Standards Agency (FSA). The product is the work of a panel of government and industry representatives and was written to clarify legal requirements, provide useful tips and teach good practice principles.

The guide was written to help UK meat processors whose premises require approval and veterinary control under the European Union Food Hygiene Regulations. It covers slaughter, cutting, and processing of fresh meat.

Chapter 13 covers microbiological criteria. The whole guidance document can be accessed by the link.

<http://www.food.gov.uk/business-industry/meat/guidehygienemeat#toc-2>

Factsheet produced on Sous vide cooking

‘Sous vide’, which is French for ‘under vacuum’, is a method of cooking where food is vacuum-packed in a plastic pouch and heated in a temperature controlled water bath for a defined length of time. This cooking method can present some food safety risks which should be identified and controlled. These include the potential for survival and growth of bacteria that can grow under the anaerobic conditions created by the vacuum packaging, such as *Clostridium botulinum*.

Due to a rise in the popularity of sous vide cooking in restaurants and catering establishments, the Food Safety Authority of Ireland has prepared a factsheet which highlights the risks associated with this method of cooking. It provides guidance on managing these risks, in particular guidance on cooking temperatures and times. It also makes recommendations for cooling, storing and reheating sous vide products.

Listeria can use different biochemical pathways when growing in different environments

Research carried out at Department of Veterinary and Microbiological Sciences at North Dakota State University, Fargo has found that *Listeria monocytogenes* grows on cold smoked salmon by using different metabolic pathways to obtain energy from those it uses on laboratory media, even when the media was modified to have the same salt content and pH as the salmon.

To grow on the salmon, the bacterium switches on genes which enable it to use two compounds from cell membranes, ethanolamine and propanediol as energy sources. *L. monocytogenes*, as well as *Salmonella*, are known to use those same genes to grow within a host, both in the gastrointestinal tract, and on macrophages.

The researchers stated that understanding how a foodborne pathogen adapts to environmental stresses it encounters on a specific food could allow food microbiologists to develop inhibitors of metabolic

or stress response pathways that are necessary for the pathogen to grow or survive on that product.”

The information may also enable improved risk assessments, as virulence of a pathogen may be affected considerably by the stress responses and/or metabolic pathways used to survive on the food.

Cryptosporidium outbreak in the North West

More than 300,000 households in Lancashire have been told to boil drinking water after contamination with *Cryptosporidium*. Routine tests by United Utilities found traces of *Cryptosporidium* at Franklaw water treatment works outside Preston.

STEC outbreaks reported in the UK

Public Health England have reported that a butchers shop in Billingham Co Durham has agreed to a voluntary closure order after fifteen people who consumed cooked meat from the shop have been affected with the E. coli infection. Two affected children and two adults remain in hospital. Two other children previously in hospital have been discharged and are recovering at home, health chiefs confirmed.

Meanwhile, an outbreak of E coli has been identified in Dorset after a child was confirmed to be infected with the disease. The child is one of two from the county who are currently in hospital with haemolytic uraemic syndrome, a complication of E coli infection.

Measures to reduce infections on cruise ships

We have discussed in the past about the dangers of contracting Norovirus infections from cruise ships, so the next time you board a cruise ship, you may want to salute your captain instead of shaking his hand.

At least one luxury cruise line has made no handshaking between crew and passengers official policy. It's a policy that appears to work as according to the Centre for Disease Control, as the company has not reported any Norovirus outbreaks since 2013.