



Persistent Salmonella outbreak described in case study

A recently published case study in the US has illustrated the complex interplay between the restaurant environment and asymptomatic food workers, which combined to cause a persistent but sporadic outbreak of Salmonella.

Most outbreaks of foodborne illness peak and recede, however, one southern Michigan restaurant struggled with an intermittent Salmonella outbreak, as 35 cases of *Salmonella* mbandaka were traced to the restaurant over an 11-year period.

Although a significant number of environmental samples tested positive for the outbreak strain it was interesting that analysis of stool samples demonstrated that four employees were carrying the bacterium asymptotically. The report's authors stated that while asymptomatic carriage of *Salmonella typhi* and *Salmonella para-typhi A* is well understood, less is known about asymptomatic carriage of non-typhoid species, such as *Salmonella mbandaka*.

Long term Salmonella carriage happens when the organism can reside and persist in the hosts gall bladder. One of the reasons it can do this is because of its high tolerance towards bile salts, a property we utilise in many of the selective broths and agars used in detecting Salmonella in the lab.

Research has also suggested that long term carriage of Salmonella occurs because the bacterium can infect macrophages (which are an integral part of the immune system) and turn them from being active "seek and destroy" bacterial killers into being passive cells which the Salmonella can infect.

It is now over 100 years since Mary Mallon, also known as Typhoid Mary, an Irish-born cook infected 53 people with typhoid, three of whom died. She was the first person to be identified as an asymptomatic carrier of the disease, and the complex reasons why this happens is only now being fully understood.

Chronic carriers can intermittently shed the bacteria for a prolonged period. The intermittent nature can make detection of Salmonella carriers difficult by traditional methods such as stool testing but new metabolic test methodologies using mass spectrometry and gas chromatography have recently been developed which may enable a better chance of diagnosing asymptomatic carriers of Salmonella in food handlers.

Irish cheese recall due to Listeria

Over the last few weeks, the Irish cheese manufacturer Cahill's Farm Cheese has recalled several cheese products due to reported detections of *Listeria monocytogenes*.

At least 4 different varieties of cheese have been recalled in the UK, Canada, and the United States.

At the time of the recalls, there had been no reported illnesses associated with the consumption of the products.

Bagged salad - Salmonella outbreak

In America a company which produces bagged salad leaves is expanding a recall of its products because of potential Salmonella contamination. The latest update from the Centre for Disease Control states that there have been 11 illnesses and two hospitalisations in connection with the consumption of the bagged salads. Illnesses have been reported in Wisconsin, Michigan, and Illinois.

More Hepatitis A infections linked to imported dates – this time in Australia

Australian officials have reported three hepatitis A infections in New South Wales linked to dates imported from Jordan.

The strain is identical to the one that caused an outbreak of hepatitis A in the UK earlier this year (as reported in both the April and June bulletins), which was also linked to the consumption of fresh Medjool dates from Jordan.

Salmonella braenderup outbreak linked to melons – further update

In a second update to the Salmonella outbreak linked to the consumption of South American melons as reported in the May and June bulletins, the latest information suggests that contamination was associated with galia melons imported from Honduras.

Further investigation in Honduras has been inconclusive as the Honduran producer finished harvesting melons in April 2021 and they are no longer on the market. No further exports from Honduras are planned until the new season starts in December.

There have now been 350 confirmed and 50 possible infections recorded across the UK and Europe linked to this outbreak.

FSA expands its “safe to eat” advice to eggs produced by a second assurance scheme

The Food Standards Agency (FSA) and Food Standards Scotland (FSS) have recently stated that hen shell eggs produced under the Laid in Britain assurance scheme are now deemed safe to be eaten by infants, children, pregnant women and elderly people, either raw or in foods with lightly cooked eggs such as mousses and fresh mayonnaise.

In October 2017, the FSA changed its advice to allow consumption of eggs served raw or lightly cooked that were produced under the British Lion Code (which is run by the British Egg Industry Council), by people more vulnerable to infection.

The FSA and FSS have now expanded this advice to eggs produced under the Laid In Britain Code of Practice, managed by the United Kingdom Egg Producers Association, as the eggs were considered to have a “very low” risk of Salmonella.

The Laid in Britain scheme is aimed at independent egg producers and retailers who supply both regionally and locally and is designed to ensure high standards of food safety, provide quality assurance and minimise the risk of Salmonella infection in people via contaminated eggs. Its Salmonella prevention measures include vaccinating all hens against the common serotypes of *Salmonella enteritidis* and *Salmonella typhimurium* and uses an additional methods of disease control such as competitive exclusion.

FSA Campylobacter survey published

It will come as no great surprise to anyone, but a recent Food Standards Agency survey has shown that chicken and poultry has been confirmed as the source of most Campylobacter infections.

The project assessed patient samples between October 2015 and September 2018 from a representative urban site in North Tyneside and a rural one in Oxfordshire alongside foods sampled from retail establishments in York, Salisbury and London.

The report estimated that 70 percent of *Campylobacter jejuni* and just under 50 percent of *Campylobacter coli* infections was linked to poultry as the source. These figures were relatively stable over time. Ruminants such as sheep were the second most common source while there was some link to pigs.

Just under 4,000 people completed the survey questionnaire and 2,725 respondents reported eating chicken in the five days prior to onset of symptoms. This was followed by duck, turkey or goose and liver pate or parfait.

Nearly two thirds of people ate out in the five days before the onset of symptoms and close to one in five reported travel abroad. The top countries were Spain, India, Portugal, France, and Turkey.

The study also revealed an increase in antimicrobial resistance in Campylobacter strains between 1997 and 2018.

There was a rise in fluoroquinolone and tetracycline resistance in *Campylobacter jejuni* human isolates.

Fluoroquinolone resistance was more frequent in *Campylobacter jejuni* isolates from chicken than other animals, whilst tetracycline resistance was more common in poultry and pig isolates than ruminants.

Recall of Tiger Brands cans highlights the scale of global food distribution

The scale of global food distribution has been illustrated by a recall of various tinned products manufactured by Tiger Brands in South Africa due to a manufacturing fault which has led to seam damage on the tins and the potential for microbiological contamination. A total of 20 million cans were recalled in South Africa in late July but the recall of canned vegetables, beans and spaghetti has now spread to Australia and New Zealand as well as parts of the United Kingdom. The Food Standards Agency announced a recall notice on the 8th on a precautionary basis because of a defective side seam weld in a small number of cans. They stated that the defect may cause the cans to leak and impact the safety of the product. The financial impact of the recall for the company has been estimated at between £25-32 million.

Tiger Brands were the company behind the huge outbreak of Listeriosis in South Africa in 2017-18 linked to the consumption of processed meat products including polony which affected over 1,000 people and caused more than 200 fatalities.

Salmonella outbreak caused by contaminated drinking water in Venezuela

A Salmonella outbreak has been detected which has affected 571 people in northeastern Venezuela. Officials have attributed the outbreak to problems with the distribution of drinking water. A similar outbreak was recorded in the same region last year which affected over 500 adults and children.

Is it safe to put RTE products in the freezer on their use by date?

We have probably all stood at the fridge door wondering if we can freeze something which is about to go out of date or should we simply throw it away. As the avoidance of food waste is currently a hot topic, the Food Standards Agency has published a strategic review on the effects of consumer freezing of food on its use by dates.

The findings were good news for those of us who don't like to throw food away as the review stated that pathogens should not be present in sufficient levels to cause foodborne illness on the use-by date, and they found little evidence to suggest any risk in freezing ready-to-eat food at this time. The review did however suggest that further research was needed on the risks due to low temperature survival and growth of *L. monocytogenes*, and it stated that there is a lack of research on the effects of freezing, defrosting and refrigeration on the growth and toxin production of non-proteolytic *C. botulinum*, and the growth of Salmonella during domestic freezing and thawing.