



## Microbiology bulletin 50

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### **South African Listeriosis outbreak – Death toll continues to rise.**

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Sadly, the number of cases and associated fatalities continues to rise in the Listeriosis outbreak in South Africa. As of the 14<sup>th</sup> February 872 laboratory confirmed cases had been identified with 164 (28%) reported fatalities. Most cases have been reported from Gauteng Province (59%, 517/872) followed by Western Cape (13%, 111/872) and KwaZulu-Natal (7%, 62/872) provinces. Diagnosis was based most commonly on the isolation of *Listeria monocytogenes* in blood culture (73%, 640/869), followed by CSF (22%, 183/869). Where age was reported (n=849), ages range from birth to 92 years (median 23 years) and 43% (352/829) of the affected are neonates aged ≤28 days.

The European Centre for Disease Prevention and Control has stated that based on whole gene sequencing methods, no associated cases have been detected in the EU and that the risk of spread to Europe was very low.

### **Bruker announce AOAC approval for MALDI-TOF methods.**

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Bruker Instruments have announced that the International Association of Official Agricultural Chemists (AOAC) has approved the MALDI Biotyper solution for two new Official Methods of Analysis for the confirmation and identification of pathogenic and non-pathogenic bacteria. The two methods include *Salmonella* spp, *Cronobacter* spp, *Listeria* spp and *Listeria monocytogenes*, as well as the identification of other Gram-negative and Gram-positive bacteria. The MALDI-TOF method of offering rapid and reliable identification based on using proteomic fingerprinting by mass spectrometry is currently available in four of the ALS UK microbiology laboratories.

### **Hepatitis E virus found in 2.9% of shellfish purchased at retail in Scotland, and other foodborne virus outbreaks**

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In a recently published report, Hepatitis E Virus (HEV) has been found in 2.9% of Shellfish samples purchased from Scottish supermarkets. PCR sequencing revealed that all the detected strains belonged to the same genotype, 3 HEV. This is the first report of the detection of HEV in commercially sold shellfish in Scotland. The authors of the study expressed the hope that these findings may encourage further research that will help address the gaps in the knowledge in respect to foodborne transmission of HEV in Scotland and the rest of the United Kingdom.

In the West African country Namibia, there has been a reported outbreak of Hepatitis E, which has affected 643 people and caused 3 fatalities. Most cases have been reported from 2 areas around the capital Windhoek. A report into the outbreak estimated 89% of the population of these two areas use communal water points and 62% practice open defecation.

In America there is a current outbreak of Hepatitis A centred around Michigan, where the number of reported deaths stands at 25. The state has reported 751 confirmed cases, with more than 80 percent having required hospitalisation. In total, the number of people affected by the outbreak stands at 1,600 with cases spread across several states. Most children in the United States have been receiving hepatitis A vaccinations since this became a routine recommendation in 2006. Even though it has been available since 1996, the vast majority of adults have not been vaccinated.

In Denmark an outbreak of Hepatitis A which has so far affected 17 people has been linked to the consumption of imported dates from Iran.

The Olympic host town of Pyeong Chang in South Korea has been the site of a norovirus outbreak just before and during the Winter Olympics. It has been reported that almost 200 people, mostly support and security staff, have been affected. No athletes have been reported to have suffered any illness to date.

### **Food Standards Scotland publish Campylobacter survey results**

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Food Standards Scotland have published the latest results of their ongoing survey into the incidence of Campylobacter in Scotland. Between April 2015 and December 2016 isolates were collected from clinical cases in the Grampian region, where the epidemiological picture is considered to be representative of Scotland as a whole. Additionally samples of whole birds were collected from abattoirs (representing strains found on retail chicken), and caeca (representing strains found in the chicken gut and faeces). The isolates were analysed using whole genome sequencing and Multi-Locus Sequence Typing (MLST). Molecular models were used to attribute clinical isolates to specific host reservoirs such as chicken, cattle, sheep, pigs and wild birds. Information obtained from the cases via questionnaire's allowed greater understanding of routes of infection, seasonal trends and the risk factors associated with human Campylobacter infections. Molecular phylogeny methods (family trees) were used to detect case clustering of subtypes of Campylobacter in order to establish whether a direct link between cases and sources might be discernible.

The results of the survey showed that in Scotland, there was a decrease of 20.2% in the number of Campylobacter cases reported between 2014 and 2016. The findings of this study suggested that there was a downward trend in the number of chicken-attributed cases between 2015 and 2016 although the sensitivity of the molecular analyses used for determination of source attribution was not adequate to show this as a significant reduction. However chicken-related Campylobacter strains are still the most common cause of illness in humans, followed by strains from ruminant (cattle and sheep) sources.

Analysis of retail Campylobacter isolates from Scottish abattoirs showed that overall, prevalence and strain types were similar to that of abattoirs from the rest of the UK. Abattoir carcasses had heavier Campylobacter loads than retail birds which was likely to be due to the birds being sampled shortly after slaughter and there being less time for the organism to become less viable or die off.

The authors claimed that this study has provided an insight into the dynamic nature of Campylobacter and provides key data on prevalence and strain types in the main food vehicles and animal reservoirs. It provides evidence that chicken continues to be the most important source of human infection, most likely through the consumption of undercooked chicken or through cross-contamination in the kitchen.

### **Further evidence on the effect of the intestinal microbiome**

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A study published in the journal Science by scientists at the University of Florida, describes what may be a hidden cause of colon cancer. The researchers found that two types of bacteria, Bacteroides fragilis and a strain of E. coli, can pierce a mucus shield that lines the colon and normally blocks invasive bacteria from entering. Once past the protective layer, the bacteria grow into a long, thin film, covering the intestinal lining. E. coli then releases a toxin that damages DNA of colon cells, while B. fragilis produces another toxin that both damages DNA and inflames the cells. The study claimed that together they enhance the growth of tumours.

Not everyone carries the two types of bacteria in their colon. Those who do seem to pick up microbes in childhood, where they simply become part of the diverse mass of bacteria in the intestinal tract — the so-called microbiome.

The findings suggest that certain preventive strategies may be effective in the future, like looking for the bacteria in the colons of people getting colonoscopies. If the microbes are present, the patients might warrant more frequent screening; eventually people at high risk for colon cancer may be vaccinated against at least one of the bacterial strains.

Meanwhile, a study carried out by Gothenburg University in Sweden which studied data on 70,000 pregnancies claimed that pregnant women who drink milk containing probiotic bacteria are less likely to have premature births or pre-eclampsia.

Timing was everything though. Researchers found that women who drank probiotic milk early in their pregnancies, were 21 percent less likely to give birth prematurely compared to others. For pre-eclampsia, a 20 percent risk reduction went along with drinking probiotic milk late in pregnancy, but not earlier in gestation or before getting pregnant.