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Current News

- ▶ **Human listeriosis linked to hospital sandwiches: implications for procurement and storage**

Infection Reports

STIs

- ▶ **Lymphogranuloma venereum in the United Kingdom: data to end of June 2008**

(Amended, 1 September 2008)

▶ **Human listeriosis linked to hospital sandwiches: implications for procurement and storage**

Human listeriosis linked to hospital sandwiches: implications for procurement and storage

Five cases of listeriosis were reported in Greater Manchester in April 2008, three of whom were elderly in-patients from a single hospital. These patients had been in hospital for 23, 24 and 35 days before onset of illness on 27 March, 5 April and 27 April respectively. Food histories were inconclusive with regard to a common source. Environmental investigation included sampling of foods (cooked meats, pre-packed sandwiches, a sandwich made on-site, rice salad, coleslaw, a dessert, cakes, ice cream and nutritional drinks), the environment and investigation of temperature control and storage of food.

Listeria monocytogenes at a level of <20 colony forming units (cfu) per gram was isolated from four different sandwiches supplied by an external manufacturer. *Listeria monocytogenes* was also isolated from a cutter blade in the sandwich manufacturing environment. Results of environmental investigation at the hospital indicated that temperature control and storage of sandwiches from external suppliers may not have been sufficiently rigorous to minimise the growth of *Listeria* spp. Environmental investigations at the sandwich manufacturer revealed no concerns with regard to processes, and all foods sampled tested negative for *L. monocytogenes*.

Subtyping (serotyping, amplified fragment length polymorphism (AFLP) and fluorescent AFLP (fAFLP) typing) revealed that one patient was infected with a strain indistinguishable from that isolated from three of the sandwiches (4b I P14) and the cutter blade, whilst another was infected with a strain indistinguishable from the fourth sandwich (1/2a IX P5b). The type from the third patient (4b XV P2a) was not isolated from any food or environmental samples examined as part of this investigation. Sero-AFLP types 4b I and 1/2a IX are the first and fourth most common subtypes in humans and the second and first most common subtypes in food. Fluorescent AFLP is not performed routinely on all isolates.

A review of all cases of listeriosis reported in the North West region since January 2008 was undertaken to ascertain if other cases might be associated with sandwiches from the same manufacturer. Epidemiological information with regard to possible acquisition of infection in hospital, or history of eating sandwiches whilst in hospital, did not indicate further cases linked to this exposure, though food histories were incomplete.

The hospital was advised to ensure: that patients consume pre-packed sandwiches as close to date of production as possible; that written food safety procedures are extended to ward kitchens; and that high-risk foods for listeria – such as pâté, smoked fish and mould ripened soft cheeses – are not consumed by vulnerable groups. Furthermore, hospital microbiologists in the region were contacted by letter to make them aware of the issue and to suggest that monitoring systems for sandwiches, and for temperature controls in ward kitchens, were checked. The North West NHS Procurement Hub was also advised with regard to the need for stringent procedures for storage and temperature control of sandwiches.

The outbreak control team concluded that, with regard to the three cases among in-patients at the hospital, there was a possible link to externally supplied sandwiches and that temperature and storage at the hospital could have led to multiplication of listeria. It did not find evidence of sandwich-associated infections among the 10 other cases of listeriosis reported in the North West since January 2008.

Recent outbreaks/incidents

Given the long incubation period for infection and the population at risk of infection, outbreaks of listeriosis are difficult to detect. Nevertheless, this outbreak represents the sixth incident/outbreak that may be linked to hospital sandwiches in recent years. It should be noted however that outbreaks in such establishments can be more readily ascertained than those in the community, where linking exposures amongst cases is more problematic.

- ▶ In March 2007, several thousand sandwiches were withdrawn from hospitals in London and southeast England following the isolation of *L. monocytogenes* at high levels (>100 cfu/g) from sandwiches sampled routinely at the manufacturer who supplied the hospitals. Additional sampling at the factory in Kent revealed that two *L. monocytogenes* subtypes were readily isolated from sandwiches and from the sandwich-making environment, leading to temporary voluntary closure of the facility. Although subsequent active surveillance only identified a single case of human infection linked to this incident, retrospective typing demonstrated an increase in reports of one of these subtypes from laboratories in the southern half of London and the southeast from 2005 to 2007.
- ▶ In September 2004, two elderly male cases developed listeriosis after attending the same renal unit in the east of England. Different *L. monocytogenes* isolates were isolated from the patients' blood but epidemiological evidence implicated the consumption of hospital sandwiches. *L. monocytogenes* was isolated from hospital sandwiches, sandwiches from the manufacturer and from the manufacturing environment. Two isolates were indistinguishable from that recovered from one patient, but the strain from the other patient was not recovered from any food or environmental samples. The sandwich manufacturer distributed widely outside the hospital but no associated cases were identified outside the hospital.
- ▶ Five pregnancy-associated cases of listeriosis were reported in southwest England in October 2003 [1]. All were infected with the same subtype and three cases (and possibly a fourth) were linked to the same hospital retailer. The implicated strain was subsequently recovered from the local sandwich manufacturer (one sandwich and one environmental site); two other *L. monocytogenes* strains were recovered from three other environmental sites in the factory. All sandwiches sampled at the sandwich manufacturer were contaminated at low levels.
- ▶ In 2003 two cancer patients attending the same oncology unit in Wales developed indistinguishable *L. monocytogenes* infections. Epidemiological investigations revealed that both patients consumed sandwiches from a hospital canteen where inappropriate temperature storage had taken place. Testing at the hospital and the sandwich factory revealed frequent low-level *L. monocytogenes* contamination and the same strain was isolated from 49 sandwiches and 11 environmental sites within the sandwich-manufacturing environment.
- ▶ Four immuno-compromised individuals developed listeriosis following the consumption of sandwiches from a single hospital in northeast England in 1999 [2]. The same *L. monocytogenes* strain was isolated from two of the patients, sandwiches bought in the hospital and the sandwich-manufacturing environment. It is not known if the sandwiches produced by the manufacturer were distributed elsewhere, but no associated cases were identified outside the hospital.

Microbiological studies

Two recent microbiological studies have focussed on the quality of sandwiches served to selected vulnerable groups in the UK. A UK-wide study of over 3000 sandwiches served in hospitals and residential/care homes found *Listeria* spp. in 7.6% of sandwiches, with 2.7% of samples containing *L. monocytogenes* at <10 cfu/g and one at 20 cfu/g [3]. Similar contamination rates for *Listeria* spp. (5.6%) and *L. monocytogenes* (3.1%) were found in 950 hospital sandwiches sampled in Wales [4]. In both studies, the presence of *Listeria* spp. and *L. monocytogenes* was more often associated with sandwiches that were supplied to hospitals rather than those made on-site. The former study also highlighted the absence of a hazard analysis system, the collection of sandwiches from sites other than the hospital kitchen (eg wards, cafeterias or shops) and the storage/display of sandwiches above 8°C as factors associated with the presence of *Listeria* spp. and *L. monocytogenes*.

Given the contamination rates above 3%, approximately 100 sandwiches would need to be tested to have a 95% chance of identifying a single sample positive for *L. monocytogenes*. This should be considered during environmental investigations conducted as part of outbreak investigations.

Legal aspects

Levels of *Listeria monocytogenes* below 100 cfu/g in ready-to-eat foods are considered very low risk for most population groups. Current EU legislation reflects this, in that *L. monocytogenes* should be at or below 100 cfu/g during the shelf-life of ready-to-eat foods [5]. The processing areas and equipment used in the manufacture of ready-to-eat foods must also be monitored for *L. monocytogenes*.

Recommendations.

The current (contracted) annual value of sandwich sales into the NHS is £13m, which equates to approx 16 million sandwiches at an average price of £0.80 (source: NHS Supply Chain). This does not account for the sandwiches that are bought from non-contracted suppliers or made in-house. Clearly, sandwiches are commonly consumed by patients in hospital.

The vast majority of sandwiches are safe and the small number of individuals affected by the outbreaks/incidents described above highlights the low risk associated with them. Nevertheless, sandwiches have the potential for contamination with *L. monocytogenes*, either because they include several components and are subject to extensive handling during preparation of the filling and sandwich assembly, or as a result of cross-contamination from the environment. As sandwiches are ready-to-eat foods, this underlines the importance of high-quality ingredients, hygienic manufacture, appropriate shelf-life, and correct storage in the maintenance of product safety.

The current and recent outbreaks highlight the potential for sandwiches contaminated with *L. monocytogenes* to cause severe infection in vulnerable people. Furthermore, microbiological food studies demonstrate that sandwiches served in hospitals can be contaminated with low levels of this pathogen on a relatively frequent basis. *Listeria monocytogenes* has been found in a range of chilled ready-to-eat foods, including pre-packed sandwiches, pâté, butter, soft mould-ripened cheeses, cooked sliced meats and smoked salmon.

All foods consumed by hospital patients should be free from potential pathogens, including *L. monocytogenes*, and those responsible for procuring sandwiches for hospitals should ensure the safety of vulnerable patients in their care. Businesses manufacturing sandwiches should aim to ensure *Listeria monocytogenes* is absent from their product wherever possible. The British Sandwich Association recommend a target level of <10 cfu/g for *L. monocytogenes* in sandwiches [6].

Written food safety procedures for hospitals should ensure that they include ward kitchens, and ward fridges should be monitored regularly to ensure temperatures remain below 5°C. Temperature control should be maintained from production until food is served, and sandwiches should be consumed as close as possible to their production date. Foods which carry a greater risk for listeria – such as pâté, soft mould-ripened or blue-veined cheeses – should not be given to vulnerable patients.

References.

1. Dawson SJ, Evans MR, Willby D, Bardwell J, Chamberlain N, Lewis DA. Listeria outbreak associated with sandwich consumption from a hospital retail shop, United Kingdom. *Euro Surveill* 2006; **11**: 89-91.
2. Graham JC, Lanser S, Bignardi G, Pedler S, Hollyoak V. Hospital-acquired listeriosis. *J Hosp Infect* 2002; **51**:136-9.
3. Little CL, Barrett NJ, Grant K, McLauchlin J. Microbiological safety of sandwiches from hospitals and other health care establishments in the United Kingdom with a focus on *Listeria monocytogenes* and other listeria species. *J Food Prot* 2008; **71**: 309-18.
4. Meldrum RJ, Smith RM. Occurrence of *Listeria monocytogenes* in sandwiches available to hospital patients in Wales, United Kingdom. *J Food Prot* 2007; **70**:1958-60.
5. European Commission. Regulation (EC) No 2073/2005 of 15 November 2005 on microbiological criteria for foodstuffs. *Official Journal of the European Union* 2005; **L338**:1-26 (as amended by Regulation (EC) No 1441/2007).
6. British Sandwich Association. *British Sandwich Association Manufacturer Code of Practice* (updated August 2007) [accessed 4 July 2008]. Available at: http://www.sandwichesonline.org.uk/about_the_bsa/manufacturer_code_of_practice.htm.

Infection reports

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▶ **Lymphogranuloma venereum in the United Kingdom: data to end of June 2008**

Lymphogranuloma venereum in the United Kingdom: data to end of June 2008

Recent data on lymphogranuloma venereum (LGV) within the United Kingdom (UK) shows that in the first half of 2008 there was an increase in the number of cases diagnosed. The UK already has the largest cohort of LGV cases in Europe and although the numbers diagnosed each quarter are not particularly great (the average in 2007 was around 47* per quarter) the rise in numbers (to 68* per quarter) in the first half of 2008 is disappointing in terms of prevention of what should be a controllable outbreak.

The basic epidemiology of LGV in the UK is similar to that described previously [1] in that the group at highest risk is men who have sex with men (MSM) who are predominately white, often co-infected with HIV and other STIs, and present to clinical services with proctitis. A few heterosexual cases have, however, been reported, including a single case in a woman.

The HPA developed a case definition and started enhanced surveillance in 2004 [1] and has continued to offer a diagnostic service for LGV in symptomatic cases who are chlamydia positive. To the end of June 2008, 5346 samples had been sent to the Sexually Transmitted Bacterial Reference Laboratory (at the Health Protection Agency's Centre for Infections) for confirmatory testing, of which 775 were confirmed as cases of LGV (figure 1).

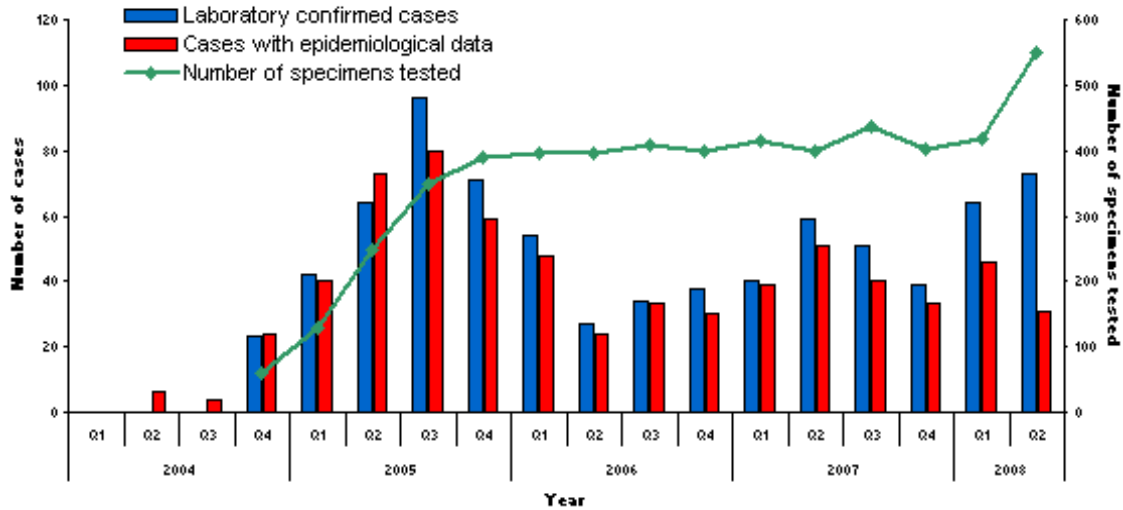
Detailed epidemiological data were available for 662 of these cases. Co-infection with HIV was seen in 73% (481/662), 49% of whom (235/481) were on antiretroviral therapy. Co-infection with gonorrhoea, syphilis and hepatitis C were seen in 18% (122/662), 6% (37/662) and 2% (15/662), respectively. Thirty cases were diagnosed with HIV at the same clinic visit.

Most cases (72%; 480/662) were seen in London, 7% (46/662) in Brighton and 4% (28/662) in Manchester. Scotland and Wales reported 22 and three cases, respectively, and the first case from Northern Ireland was reported in 2008.

Seventy nine percent (527/662) of infections are reported to have been acquired in the UK whereas 9% (60/662) were acquired elsewhere in Europe.

* Figures amended, 1 September 2008

Figure 1. Laboratory confirmed cases of lymphogranuloma venereum (LGV), United Kingdom: 2003 to 2008 *



* Data to end of June 2008

Despite attempts to raise awareness among MSM and healthcare professionals, the infection has not been controlled. The UK LGV incident group would like to stress the importance maintaining awareness and prompt identification of potential cases.

References

1. Ward H, Martin I, Macdonald N, Alexander S, Simms I, Fenton KA, et al, for the UK LGV Incident Group. Lymphogranuloma venereum in the United Kingdom. *Clin Infect Dis* 2007; **44**:26-32.

Further information:

<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1191942171559?p=1191942171559>