
Food Standards Agency
Project FS101057

Reducing the risk of vulnerable groups
contracting listeriosis

Report on current food safety management and
procurement practices in place in UK healthcare
organisations in respect of
Listeria monocytogenes - report 2

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Report on current food safety management and procurement practices in place in UK healthcare organisations in respect of *Listeria monocytogenes*

Introduction

The aim of project FS101057 undertaken on behalf of the Food Standards Agency (FSA) was to draft guidance to reduce the risk of vulnerable groups contracting listeriosis in healthcare settings (referred to within this report as 'the guidance').

This report (report 2) examined current food safety practices in place in healthcare organisations used to control listeriosis to help ensure the guidance was based on sound, reliable evidence via:

- Site visits
- A survey

Examining practices currently in place will:

- Help ensure the guidance is comprehensive.
- Help ensure the guidance is practical.
- Identify and potentially (adapt and) include good practice into the guidance.
- Raise awareness of listeriosis and the guidance.

This report was undertaken in parallel with two other reports upon which the guidance was drafted:

- A literature review (report 1).
- Examination of previous outbreaks of listeriosis and lessons learned from UK hospitals (report 3).

Methodology

There were two methods by which current practices in relation to the management and control of listeriosis in healthcare organisations were assessed:

- Site visits – comprising observations and interviews.
- A survey.

Site visits

Each site visit was carried out by one of the following team of interviewers:

- Hilary Byrne – Senior Environmental Health Officer, Belfast City Council.
- Dr Anita Eves – Reader in Food Management, the University of Surrey.
- Annabel Kyle – Food Safety Consultant, STS.
- Fiona Sinclair – Director, STS.

Site visits were undertaken from 10 January – 4 February 2014. To promote consistency between site visits, interviewers were provided with a brief for site visits (Appendix 1).

During the site visits, the operation was observed and interviews conducted with key contacts including where possible:

- Manager in charge of catering
- Lead nurse
- Lead for infection control
- Retail manager
- Dietitian

A questionnaire was used by interviewees to capture information. An initial version of the questionnaire was trialled during a site visit on 10 January. This was found to be too lengthy, and a decision was made to send a 'pre-questionnaire' (Appendix 2) to capture information in advance of the site visits in order to provide the interviewer with more information on the site to prepare from, and to free up more time whilst on site for observation and in depth discussion. The questionnaire used on site was amended (Appendix 3).

Sites were also provided with a 'what to expect' email (Appendix 4) and each person interviewed on site was asked to sign a consent form (Appendix 5).

Appendices 1-5 were approved by the FSA Project Officer and Social Scientist.

Various food safety documents were requested during each visit from the sites to help extract information on current and good practices.

Selection of sites

Trusts were selected from England, Northern Ireland, Scotland and Wales to ensure that all countries to who the guidance would apply were included and to enable any differences in practice or requirements to be captured. Participation by sites was voluntary.

A Trust hospital with each format of type of catering was selected ('Bought-in' cook-chill regeneration site was not included).

A summary of sites visited is provided below, both in terms of the type of healthcare organisations and the predominant type of catering provided to patients.

Types of organisation

Organisation	Number of sites visited
NHS Trust hospitals	5
Contract caterers within NHS Trust hospitals	2
Private hospitals	1
Care homes	1
TOTAL	9

Types of catering

Type of catering	Number of sites visited
Traditional cook	5
Cook-chill – produced in house	1
Cook-freeze – produced in house	1
Plated chilled - regenerated in microwaves	1
Bought in cook-freeze – regenerated on site	1
TOTAL	9

Online survey

The online survey was distributed via the Hospital Caterers Association.

The survey was released on 17 February with a completion deadline of 28 February (extended to 10 March for surveys completed via FSA/local authorities).

In total, 390 people from a wide variety of healthcare organisations responded to the online survey. The key points of the survey have been included in the Results section.

A summary of those participating is included below both in terms of type of organisation participating and type of catering provided for patients/residents.

Type of organisation

Type of organisation	Response %
NHS Trust	27.32
Individual Private Hospital	4.37
Group of Private Hospitals	4.64
Individual Nursing Home	7.92
Group of Nursing Homes	8.47
Individual Residential Home (elderly)	14.21
Group of Residential Nursing Homes (elderly)	4.92
Assisted living development	0.82
Day Care centre (elderly)	7.10
Contract Caterer to healthcare organisations	9.02
Other	11.20

Type of catering

Type of catering provided	Response %
Traditional Cook	72.22
Traditional Cook – belt system	7.78
Cook-chill (bought in)	13.06
Cook-freeze (bought in)	15.56
Cook-chill (produced on site)	10.28
Cook-freeze (produced on site)	6.94
Steam/Vacuum – plated (bought in)	4.44
Other	3.66

Results

Food Safety Management Systems (FSMS)

1. NHS Trusts

The FSMS in use at most NHS Trust hospitals visited were all very comprehensive and were very much treated as 'living' documents (being regularly updated and reviewed throughout the year). Some made more specific reference to *L. monocytogenes* and its control than others (often dependent on that Trust's experience with *L. monocytogenes*). FSMS were all based on HACCP principles. Some catering managers within NHS Trusts felt that their FSMS were possibly too large and somewhat unwieldy. NHS Trust catering managers all felt they received excellent levels of support from their local EHOs, reporting a flexible and communicative relationship on both sides, and use the EHOs to help develop/update their systems/procedures. Responsibilities for food safety at all levels were found to be clear and well set out. Some of the Trust hospitals had key critical control points (CCPs) on display around the catering areas so staff could easily refer to them while working.

The NHS Scotland Trust hospital visited was using the recent Food Safety Assurance Manual (FSAM) which was implemented across Scotland in April 2013. This is a generic document which individual sites personalise to suit their operation. The document was written in conjunction with Trust catering managers, EHOs and the Royal Environmental Health Institute for Scotland (REHIS). The FSAM requires annual review or review in case of significant change (either to operations or legislation, for example). The food safety responsibilities of different staffing levels was detailed however only reflected catering staff's responsibilities and not those of senior Trust management. Reference to *L. monocytogenes* was only made in general terms (as part of general food poisoning bacteria information).

The interviewer found the use of both target temperatures and critical limits in the FSAM system slightly confusing in their presentation and commented that potentially not all the Boards would be trying to achieve the lower temperature range which defeated the object of standardisation.

The Trust in Northern Ireland has a FSMS for catering and a Ward Manual. The FSMS was under review and not available during the site visit. The FSMS was drawn up by the Trusts HACCP team/catering committee and the HACCP plan for each site should be made specific. It was unclear as to whether the Trust had an overarching food safety policy. The Support Services Manager reported the current FSMS to be a 'live and workable document, reflective of practice'.

2. Contract caterers within NHS Trust hospitals

The contract caterer visited in one large NHS Trust hospital in England (caterer 1) had a compact but comprehensive HACCP-based system in place which was very much focussed to the hospital environment, including specific sections for ward kitchens. The FSMS was well-communicated and trained to staff with relevant sections posted in relevant areas (e.g. ward kitchen CCPs and practices displayed in ward kitchens, etc.). The FSMS is regularly reviewed and updated.

One of this contract caterer's FSMS included a table of foodborne illnesses and their associated bacteria. This included *L. monocytogenes*/listeriosis and briefly incorporated the symptoms of listeriosis, the onset/incubation period and a few examples of the type of foods which are commonly linked to contamination with *L. monocytogenes*; however it was far from comprehensive and did not link *L. monocytogenes* to specific food safety practices. The ability of *L. monocytogenes* to thrive in cool conditions is mentioned periodically in the procedures documented in the FSMS (e.g. fridge/freezer breakdown).

A second contract caterer in a large hospital Trust in England (caterer 2) was visited. This caterer held their FSMS almost entirely online with only the 'Catering Flow Diagram' and associated HACCP plan, the 'Transport of Food Flow Diagram' and associated HACCP plan and the 'Blast Freezing HACCP plan' printed out and held on file. It was therefore difficult to assess the FSMS as the company representative did not have access to these files during the visit. However, the documents available were concise, yet detailed and thorough.

This caterer communicated key CCPs around catering areas (this was particularly prevalent in ward regeneration kitchens where hand washing, temperature control and cleaning procedures were all clearly mounted on a large display board for staff reference).

This caterer's FSMS does not mention *L. monocytogenes* specifically, only general foodborne pathogens.

3. Private hospitals

The private hospital visited had a bespoke FSMS based on HACCP principles designed by a third party with input from the hospital's Executive Chef and Operations Manager. The document was one year old and was observed to be both extensive and practical. It included a section that explicitly explains what *L. monocytogenes* is and the risks associated with it.

The staff did not seem to be clear on when/how the document should be reviewed and advised that they would seek such guidance from their third party authors.

4. Private care homes

The private care home visited was part of a national group of communities across the country providing assisted living accommodation to the elderly with nursing provision. The FSMS in the home visited was revised specifically for this company by a third party and the result is a bespoke, detailed and practical system that is regularly reviewed and updated and refers in detail to *L. monocytogenes* and its control. The FSMS of this company specifies particular control measures required for *L. monocytogenes* and also contains a separate HACCP plan to minimise risks associated with it.

5. Survey respondents

An overwhelming majority of respondents (98.87%) advised their organisation had a documented FSMS based on HACCP principles. 36.52% of respondents use their own FSMS, either drawn up by their head office food safety team or by a third party. The remainder reported using Safer food, better business, Cook Safe, Safe Catering or the Food Safety Assurance Manual (Scotland) and over two thirds reported an annual review of their FSMS.

87.23% responded that the FSMS they used included higher risk food provided to patients/residents by the catering staff/department but only 43.62% confirmed that specific reference was made within it to the control of *L. monocytogenes*. Furthermore, less than a fifth of respondents described the level of detail in their FSMS relating to *L. monocytogenes* control as 'extremely detailed' – most (one third) felt their FSMS was 'moderately detailed' when referring to *L. monocytogenes* control and a quarter described it as 'detailed'.

Purchase

1. NHS Trusts

All English Trusts visited purchased from a national database of NHS-approved suppliers or, if purchasing from regional suppliers, they must be accredited by a NHS-recognised third party (e.g. BRC or STS Public Sector accreditation).

Scottish Trusts must order from approved suppliers only, approved as part of the NHS national procurement organisation for Scotland.

Northern Ireland Trusts purchase via PaLS Procurement and Logistics Service. The hospital order via eProcurement and it is not possible to purchase off contract unless

approved. Cash purchases are made from reputable supermarkets for specific individual requests e.g. 'free from' or specialist products.

Food safety concerns are reported via PaLS in Northern Ireland.

The Trust in Northern Ireland was in the process of drawing up specifications for high risk foods, to include for example shelf life and temperature requirements.

The Trust in Northern Ireland had gained agreement from two cooked meat suppliers to amend their product labelling with 'store at 5°C or below', rather than '3°C or below', so that the labelling and shelf life reflects actual storage conditions at the hospital.

Delivery procedures at all Trust hospitals were found to be with temperature checks made of all high risk/ready to eat (RTE) foods (some temperature check all chilled deliveries).

2. Contract caterers within NHS Trust hospitals

Both contract caterers can only purchase from a nominated suppliers list, from suppliers that have been approved / accredited (e.g. BRC or STS accreditation).

Delivery checks for caterer 1 were noted to be rigorous with close inspection of all goods and thorough temperature checks. Details such as the delivery van registration number were also included on the records. Food complaints were referred to the company's Food safety team for investigation.

Contract caterer 2 also made very detailed checks at delivery, both van and goods temperatures were taken (between pack probing for frozen foods and physical probing of a sandwich) as well as the time of delivery and the time the foods were subsequently being put into chilled/frozen storage. Records demonstrated that goods were being transferred into appropriate temperature controlled storage within 10 minutes.

In case of food complaint, the company's purchasing department are contacted by the catering unit and the complaint would be escalated to and investigated by the company's internal team of safety advisors.

In addition to suppliers being nominated, this caterer ensures suppliers complete a food safety questionnaire, produce copies of FSMS and allow the company to make a site visit to suppliers.

3. Private hospitals

Suppliers to the private hospital visited must all be accredited (BRC or equivalent). The site reported that they will involve their EHO and/or the FSA as necessary (and had done so previously when pre-portioned, pre-packed cheese was found to be mouldy within the manufacturer's shelf life).

Delivery checks were sporadic: the executive chef interviewed advised that deliveries are scheduled to take place when staff members are available to come down to the delivery bay to accept the delivery. However, there are some deliveries that are not delivered at scheduled times and, therefore, cannot be accepted by staff. These deliveries were put straight into the delivery bay refrigerators/freezers by the drivers as the stores staff will only sign the delivery note but will not make other checks, as they do not perceive such checks to be part of their duties. This presented a significant break in the cold chain.

4. Private care homes

Residential home catering facilities can only purchase from a nominated suppliers list, from suppliers that have been approved. The particular group that was visited employs a recognised third party to ensure suppliers hold appropriate accreditation.

Delivery checks were found to be thorough and deliveries were generally timed to be when chefs are in kitchens. The exception to this was the dairy delivery which often arrived very early, before the staff arrived on site. The dairy supplier has access to the key for the chiller and stores the delivery in the chiller on arrival, which prevents foods being out of chill. However, this can lead to the potential that the temperature on delivery was outside critical limits without being known as the food may have subsequently come down to the temperature of the chiller before checking. Not every delivery is checked, but high-risk deliveries are.

5. Survey respondents

Just over half of those participating in the online survey purchased higher risk foods from a company nominated supplier list (55.51%) and 29% purchasing from a national purchasing organisation. However, there was a significant proportion of respondents (around a quarter) who advised they purchase such foods locally and/or from supermarkets. Many of the respondents who purchase from supermarkets are likely to be larger organisations or contract caterers who are often authorised to purchase from the large, national supermarket chains in emergencies (as confirmed in supporting comments) however, there were a number of smaller businesses taking part in the survey who may use local shops and supermarkets to purchase all foods.

The majority of respondents (86%) reported clear policies being in place for purchase in terms of ensuring the food safety of higher risk food suppliers. The top five answers for minimum food safety requirements for suppliers were stated as:

- Third party certification (52.59%)
- Site visits by the respondents' organisation (50.43%)
- Requests for copy of suppliers' FSMS/HACCP (46.09%)
- Request for a copy of the latest EHO inspection report (26.72%)
- Completion of a food safety questionnaire (23.28%).

45% of respondents advised that safety requirements for suppliers go back one step in the supply chain and a quarter stated such requirements go back more than two steps.

These responses suggest that fairly robust procedures are in place for ensuring suppliers maintain appropriate standards of overall food hygiene and over 80% advise of clear procedures being in place for the reporting of supplier-related food safety complaints.

However, only 9.24% of those responding were able to confirm that their organisation/site had microbiological specifications in place for suppliers with regards to acceptable levels of *L. monocytogenes* for higher risk foods and none of these participants were able to advise exactly what acceptable levels should be, with only the odd respondent confirming via supporting comments that they were aware that FSA guidance and legislative requirements exist.

Training and awareness

1. NHS Trusts

Training in the NHS Trust hospitals visited were found to be thorough and well-supervised. However, in most hospitals training in relation to *L. monocytogenes* was only brief and included as part of wider, general training on foodborne illness and food poisoning. Two of

the sites visited had either experienced an outbreak of listeriosis or returned positive samples during swabbing of preparation/production areas and these sites both undertake more detailed and focussed *L. monocytogenes* training with food-handling staff.

It is worth noting that one of the managers at the site, which had experienced a listeriosis outbreak, commented that the appropriate level of detail regarding *L. monocytogenes* /listeriosis needed for a hospital environment was only covered in their Level 4 training course. This observation was confirmed via questioning at another Trust hospital where catering staff trained to Level 3 did not demonstrate specific awareness of *L. monocytogenes* and appropriate controls.

All staff members were found to be trained to appropriate standards, commensurate with their duties and additional training is undertaken in some hospitals on section-specific procedures (e.g. cook-chill training for chefs in those sites that produce such foods). The NHS Scotland Trust provides formal training to REHIS Elementary standard (Level 2 equivalent) to all catering staff with supervisors and cooks trained to Intermediate (Level 3). More senior management were trained to Advanced (Level 4). This was comparable to the NHS England Trust levels of training. NHS Wales Trust managers are only trained to Level 3 (with the exception of one manager who has been trained to Level 4).

Most Trusts provide in-house training on the job, so staff members were undertaking informal food safety training with immediate effect. It was not clear if the NHS Scotland Trust is doing likewise and there is the potential that, if not, staff will receive no food safety training, except for the basics taught at induction, until they receive their formal training two - three months into employment.

Training of nurses and carers was difficult to confirm in most Trust hospitals visited; most report that nurses only receive essential food safety training (possibly none at all). The exception to this was one of the NHS England Trust hospitals that experienced a listeriosis outbreak and all staff at ward level, that have an involvement with food, must receive Level 1 training, including nursing staff, and; the NHS Scotland Trust hospital visited which undertakes mandatory food safety e-learning with nursing/caring staff (but it was not confirmed what level this was to).

A Northern Ireland Trust who experienced a listeriosis outbreak provides all nursing staff with a *Listeria* information sheet. No food hygiene training is given per se to nursing staff, although they have training on standard operating procedures which covers all aspects of food handling by the nurses. Catering staff receive Level 2 training every three years, delivered by catering managers, who also provide some training for dietitians.

The Northern Ireland Trust had *Listeria* posters displayed in the restaurant, cafe and ward kitchens.

2. Contract caterers within NHS Trust hospitals

There was no specific training taking place in relation to caterer 1. Training in its control was undertaken as part of wider, general training on foodborne illness/food poisoning and only made brief mention of *L. monocytogenes*. Overall, formal training was appropriate for the different staffing levels/needs (e.g. food handlers to Level 2, supervisors/managers to Level 3, etc.).

The training programme delivered by Caterer 2 involved completion of a 'passport' – a small booklet detailing both legal requirements and company procedures to a level

approaching Level 2 – and a box of training cards (including food safety basics which are expanded upon and cemented using the passport training). Card training must be completed within the first month and the passport within three months. All staff complete induction and pre-employment health questionnaires, including an agreement to report infections. Managers are trained to Level 3.

There was no specific training on *L. monocytogenes*, only general foodborne pathogen information.

3. Private hospitals

All catering staff received immediate, informal, food safety training on a one-to-one basis and signed to confirm completion of training in order to promote staff taking responsibility. Additionally, most chefs had an NVQ in Food and Beverage, which included the care of vulnerable people.

Formal training is to Level 2 standard for catering staff, with a view to training key personnel to undertake Level 3 training. The Executive Chef has received Level 4 training which the interviewer observed had clearly influenced his approach as the Executive Chef had made several changes to practices and procedures as a result of knowledge gained from this course.

Training in *L. monocytogenes* at this site was found to be very general (in terms of it being a pathogen that causes food poisoning) and without any specific detail. Additional training is taken by the hospital's Infection Control team (such as hand washing) but is not always relevant to the catering department.

4. Private care homes

The site visit to the private care home group community noted a strong and focussed commitment to training and improvement of training. There are both classroom-based and e-learning training options offered, however the e-learning training was reported to be unfocussed and less detailed on *L. monocytogenes* than the classroom-based version, which is focussed very much towards the community's demographic and needs and includes significant detail as to the control of *L. monocytogenes* (to Level 2 standard and required for all catering staff). The e-learning option is reported to only make reference to what foods to avoid in relation to *L. monocytogenes*. Supervisors/managers are trained to a minimum of Level 3 (senior management to Level 4).

5. Survey respondents

71.62% of respondents were aware that there have been outbreaks of listeriosis linked to higher risk foods such as sandwiches and cooked meats in healthcare settings. However, only slightly more than half of participants were aware of the FSA leaflet '*Preventing listeriosis in hospitals and nursing/care homes*'.

The survey results indicate that the perceived adequacy of food hygiene training increases according to a person's role, with those who have more food safety responsibility receiving better training. For example, the majority of survey respondents felt food hygiene training for those with food safety responsibilities and foods handlers (e.g. catering staff and managers) was extremely adequate but training in food hygiene for nursing and care staff was only seen as adequate by the majority.

Similarly, when responding to the question ‘Does the food hygiene training provided make specific reference to listeriosis/*L. monocytogenes*?’ participants answered that catering staff and managers received *L. monocytogenes*-specific training in some detail (42% and 36% respectively) while only 28% reported that nursing/care staff received this training in the same level of detail. Again, the participants responding that *L. monocytogenes*-specific training was provided ‘in detail’ to staff stated that it was catering staff and managers who received this training in greater numbers than nursing and care staff (34.5% and 31% respectively compared to 11.79% of nursing/care staff). However, it should be noted it was not clear what level of detail respondents felt ‘in some detail’ and ‘in detail’ were.

It may be important to note that, whilst nursing/care staff have an important role (particularly where they are responsible for patient feeding and ward management, including fridge temperatures and monitoring of bedside cabinets, etc.), the law requires that staff receive training ‘commensurate with their duties’.

Sampling

1. NHS Trusts

The NHS Trust catering units visited in England and Wales all take regular swabs in their preparation/production areas and undertake sampling either as per their EHOs requirements or independently. Of the three sites visited, one was an authorised meat cutting/processing plant and was therefore subject to a rigorous microbiological sampling regime and two have experienced either a listeriosis outbreak or tested positive during EHO sampling for the presence of *L. monocytogenes* in catering areas. Samples have not detected *L. monocytogenes* at levels exceeding the legal requirement of 100cfu/g. In fact, results generally returned much lower levels.

The NHS Scotland Trust hospital visited does not undertake any microbiological sampling at present.

The Trust in Northern Ireland sample three sandwiches every three months, from various steps in the distribution chain – one from storage, one that has been distributed to wards, and one that has been left at room temperature for an hour. Sandwiches sampled are those who are intended for immune-compromised patients. A sampling protocol was in the process of being developed. The Public Health Laboratory at Belfast City Hospital is used, and if unsatisfactory results were identified, the Trust would contact the local EHO.

2. Contract caterers within NHS Trust hospitals

There was no sampling taking place by both caterers visited, either via swabs or via food samples, although managers reported that their suppliers have to undertake regular sampling as part of the accreditation process.

Caterer 2 advised they understand the Trust’s Infection Control team undertake swabbing, but only of ward surfaces of which the kitchen surfaces are not included.

3. Private hospitals

There is currently no microbiological sampling regime in place at the private hospital visited. Food samples are only taken if there is a concern due to food complaint or patient health, etc. Testing is undertaken internally by the hospital’s pathology laboratory. No samples are held for testing at a later date.

4. Private care homes

No microbiological sampling is taking place at the residential care community visited although managers reported that their suppliers have to undertake regular sampling as part of the accreditation process.

5. Survey respondents

The majority of those responding to the online survey (77%) stated their organisation/site does not arrange for microbiological examination of food samples for *L. monocytogenes*. Similarly, 82% reported that environmental swabbing is not undertaken either. Only 10% undertake food sampling and only 5% participate in an environmental swabbing regime.

Audits/Inspections

1. NHS Trusts

NHS Trust catering facilities are generally well-inspected, experiencing frequent inspections plus regular visits. Trusts' in-house catering managers tend to liaise very closely with their local EHOs and verify whole-scale reviews of FSMS, or significant policies within them. NHS Trust catering facilities are subject to 3-monthly and annual inspections by catering managers and supervisors, but are not audited by third party inspectors. NHS Trust catering managers reported working closely with infection control but this is mainly associated with hygiene on the wards themselves rather than the procedures/practices in ward kitchens.

The manager interviewed during the visit to the NHS Scotland hospital advised that an annual audit is undertaken by another hospital within the same NHS Trust to provide an external perspective. However, the interviewer found that both the monthly internal and the annual audits/inspections were returning limited corrective actions or other feedback, when several areas of concern were noted during the visit.

2. Contract caterers within NHS Trust hospitals

The frequency of audit/inspection of the catering facilities run by the caterer 1 is very high. As well as being inspected by the EHO, this caterer is inspected annually by the Head Office Food Safety team, annually by a third party auditor, monthly by the catering manager and weekly by department supervisors. In addition, this caterer was subject to ward-level audits on a weekly basis by the NHS Trust inspectors.

Caterer 2 receives EHO inspections plus annual audits by the in-house safety team. The catering manager also undertakes a comprehensive 6-monthly self-audit and supervisors make weekly checks of due diligence records.

3. Private hospitals

Internal audits are undertaken on a monthly basis. External audits are undertaken on a 6-monthly basis by a third party and Infection Control undertakes inspections twice a year (and were reported to be very useful). There is also a weekly review of monitoring forms taking place.

4. Private care homes

The company's regional Dining Services Co-ordinator undertakes 6-monthly inspections and each site's General Manager undertakes an annual inspection of catering facilities.

5. Survey respondents

More than two thirds of participants advised of procedures for the monitoring of food safety standards of contract caterers on site being in place, with most being inspected by EHOs, Trust standards teams, third party consultants or representatives of the caterer's food safety team. Frequency of such inspections varies according to the type of audit/inspection and the company.

With regard to the audit/inspection of independent retailer food safety standards by the respondents' organisation/site, 50% advised they did not monitor standards with 25% stating they did.

Outbreak control

1. NHS Trusts

All Trust catering departments visited reported that they liaise closely with Infection Control and nursing staff in cases of alleged food poisoning. Many Trust catering managers also sit on Infection Control groups/committees to increase this interaction.

Three of the Trusts visited have experienced either a) detection of *L. monocytogenes* or as with b) and c) an outbreak of listeriosis.

- a) One Trust hospital tested positive for the presence of *L. monocytogenes* in foods and food production areas during EHO routine sampling. *L. monocytogenes* was detected from swabs taken from the cook-freeze production area floors and drains and in cook-freeze products produced in these areas. While the presence of *L. monocytogenes* was not deemed critical, as all foods produced in this area are thoroughly reheated in ward ovens prior to service, the matter was taken very seriously and the management worked very closely with their local EHOs to control the issue. Advice was sought from a technical consultancy as well as EHOs to adapt cleaning procedures (following complete replacement of the badly damaged flooring in the production areas, which was viewed to be the source of the contamination) and to re-organise practices to ensure proper separation of low risk and high risk activities. This included dedicated staff for each area wearing different coloured uniforms and not being able to move between areas, relocating the feeds bay to an entirely separate section of the high risk area, a detailed weekly sampling regime and a change in cleaning practices to ensure cleaning methods for the floors/drains did not cause contamination of other surfaces within the unit.
- b) An outbreak of listeriosis in one Trust hospital resulted in the death of three patients and a full investigation that involved both EHOs and the Health Protection Agency. While results were ultimately inconclusive, potential links were found to the supplier of bought-in sandwiches provided to patients and temperature controls at ward level. This led to a whole-scale review of the FSMS, re-education/re-training of staff, visits to the sandwich supplier, changes to a different sandwich supplier, changes to delivery checks for bought-in sandwiches, replacement of ward refrigerators, updating food safety training requirements at ward level and a 6-monthly microbiological sampling regime. The interviewer found managers at this Trust to be some of the most committed and passionate advocates of food safety, particularly in relation to *L. monocytogenes*.

The use of approved suppliers in all Trust hospitals makes product recall straightforward. Traceability was therefore generally good, with all sites visited demonstrating good record-keeping, particularly in terms of delivery and production records.

Availability and detail of patient food histories was difficult to verify at Trust hospitals as nursing staff are responsible for recording what a patient has eaten. At the hospital, one of the difficulties inspectors observed when investigating the listeriosis outbreak was the poor keeping of food charts at ward level, which made it extremely difficult to find out what the patients had eaten during their stay in the hospital.

- c) Seven cases of listeriosis were diagnosed following inpatient stays at two hospitals. All patients were over 60 years of age with concurrent debilitating illness. It is likely that these patients acquired infection whilst in hospital, and were exposed to food containing *L. monocytogenes*. A complex investigation found a possible link between four of the cases and sandwiches consumed by the inpatients. Three cases remained unclear as to the cause. Investigations revealed a strong link between some patients and sandwiches supplied to a retail shop within one of the hospitals. Investigations also found potential opportunity for multiplication of *Listeria* contaminated foods through the distribution of foods to the hospitals, and food handling processes within the hospitals.

2. Contract caterers within NHS Trust hospitals

The use of approved/nominated suppliers means that recall and traceability is straightforward. Caterer 1 buys in all patient foods (either plated cook-chill meals or sandwiches) and can easily trace these back to source. Ward temperature records were held for three months to enable full review as necessary.

Any case of alleged food poisoning would involve Infection Control, nursing staff and the catering department. The catering manager would rely on nursing staff to provide food histories for patients.

The other contract caterer visited buys in most of its foods frozen (cook-freeze) or pre-packed (sandwiches/salads). The records kept by staff enable quite simple traceability of foods. Any case of alleged food poisoning would involve the company's in-house safety team, Infection Control, nursing staff and the catering department. Again, the catering manager would rely on nursing staff to provide food histories for patients. If necessary, both caterers would involve the EHO and Public Health England.

3. Private hospitals

The use of nominated/accredited suppliers means recall and traceability is fairly straightforward. However, at this hospital, due to restricted storage space, larger quantities of foods are split and vac-packed then re-labelled with the manufacturer's shelf life. While re-labelling is restricted to the Executive Chef and his assistant only, this practice could potentially be accidentally extending the shelf life and affecting traceability. While it was reported that the Executive Chef and his assistant 'try' to retain the manufacturer's label, this did not seem to be formally recorded or documented in a procedure.

Any cases of alleged food poisoning would involve both the catering department and Infection Control. Computerised systems log food histories for all patients to ensure a full and thorough investigation is possible and effective.

4. Private care homes

The use of nominated/approved suppliers means recall and traceability is fairly straightforward, with traceability possible back to primary production. In terms of tracing

the food history of a resident, a recording system was planned that would allow a record to be extracted of all food eaten by the resident during their time in the community.

5. Survey respondents

Not applicable

Shelf life

1. NHS Trusts

The shelf life of foods varies from Trust to Trust. The majority tend to apply a same day usage policy to sandwiches, particularly those produced on site. Some reduce the sandwich manufacturer's shelf life to one day (usually from two days). Salads are generally given the same shelf life as for sandwiches (i.e. one or two days only) and leftover sandwiches tend to be disposed of after meal service or returned to chilled storage but not used for patient feeding.

The NHS Wales Trust hospital visited produced cook-freeze meals in large quantities for use not just in the hospital visited, but in all the hospitals within that Trust. Cook-freeze meals were given a shelf life of one year but the turnover was reported to be so great that stock was rotated much more frequently than that.

Those sites producing cook-chill meals on site applied a five day shelf life to these products, as per cook-chill guidelines, but tended to rotate dishes more frequently due to turnover (one site reported that turnover means foods were held only for a maximum of three days. This site had experienced an outbreak of listeriosis so was more cautious about shelf life and preferred to produce more frequently rather than hold stock for the full five days).

The shelf life procedures at one NHS Trust hospital were not clear as there was disparity between the reported shelf life for different yet associated products. For example, sandwiches made on site are given a two day shelf life (day of production plus one); however, the sandwich fillings were reported to be given a four day shelf life which did not match. Managers reported that sandwiches and salads are generally given a two day shelf life but the different responses may indicate a training need.

One Trust's onsite retailer purchases pre-packed sandwiches with a shelf life of production plus two days. At the request of the retailer, the manufacturer labels these prominently with a 'eat immediately after purchase' sticker. Any sandwiches leftover at the end of the day are disposed of.

Pre-printed labels observed in one hospital worked well – pre-printed with item, produced on, use by and eat within one hour of receipt.

2. Contract caterers within NHS Trust hospitals

Caterer 1 adopted a blanket two day shelf life on all foods produced in all areas. This is contrary to the FSMS requirement of three days but the site found that as products changed/suppliers changed, there was a wide variety of different manufacturer's instructions applied to products (i.e. 'once opened on use within xx days' type of labelling), many of which were two days. They found it easier to apply a blanket two day shelf life rather than follow lots of different dating instructions. This newly implemented policy had positive benefits for food safety in a hospital environment.

Sandwiches and salads prepared on site must be eaten on the same day regardless of which area they are supplied to (i.e. patients on wards, coffee shops, restaurant etc.). All foods on wards not eaten are disposed of after service.

Caterer 2 applied varying shelf life dates depending on the type of food. Dating is generally informed by manufacturer's instructions as most products were bought in. Where foods were made on site (such as the odd sandwich for special diets and hot foods in the main restaurant) these were used on the day of production. All foods on wards not eaten were disposed of after service.

3. Private hospitals

All items are given a shelf life of two days, except patient sandwiches which are prepared on site and are eaten on the same day.

For reasons of storage space, there is a practice of splitting larger packs of delivered foods (including RTE foods) into smaller packs and resealing using either the raw meat vacuum packer or the cooked/RTE vacuum packer, then reapplying the manufacturer's shelf life. However, it is not clear if the date applied is the original manufacturer's use by date (which only applies before the pack is opened) or the 'once opened use within xx days' date. The interviewer visiting this site reported concern that this practice was undertaken with packs of RTE foods which are served to patients.

4. Private care homes

All foods made in the kitchen are eaten on the day of production. If a resident does not eat their entire meal, the remainder is disposed of. Should the resident want food later, a new dish is prepared for them. All excess food at the end of a service is disposed of (none is recycled into other dishes).

Foods such as pâtés, some soft cheeses, prawns and smoked salmon are served at this site. This is because the flats in this community are the residents' homes and it is therefore not considered appropriate or morally acceptable to stop residents (who may have been living at the community for many, many years) from eating foods they have habitually eaten throughout their lives. Instead, cheeses are served chilled (rather than at room temperature) and smoked salmon/prawns are used within 24 hours. Should any residents be considered 'high risk' then staff would provide verbal advice. Any very high risk foods would be removed from the menu.

Personal refrigerators in residents' flats were monitored by housekeeping and also weekly by the catering manager. Any out of date foods were thrown out.

5. Survey respondents

The survey only included questions relating to the shelf life of sandwiches provided on site, either made in-house or bought-in.

Of those respondents making sandwiches on site, just over 58% apply a shelf life of 'Use on Day of Production' while 13% apply a two day shelf life (day of production plus one). Most bought-in, pre-prepared sandwiches are supplied with a three day shelf life (day of production plus two days).

Temperature control

All sites visited take temperatures of chilled/frozen storage a minimum of twice daily with some sites undertaking monitoring three times a day.

1. NHS Trusts

Where sandwiches and salads are prepared on site, this is done so in temperature controlled rooms which operate at around 10-11°C. In one NHS hospital, the trolleys used to transport foods to wards are filled in a chilled preparation room (below 10°C) before being moved to another chiller at 0-3°C. These trolleys are made of insulated boxes which also contain ice packs for further cooling.

One NHS hospital visited prepared sandwiches in a chilled room at 11°C in small batches to reduce the time at this temperature and sandwiches are then returned to the cold room until packed for transport to wards.

One NHS hospital in Northern Ireland, which does not have a chilled preparation area, limits the maximum time for slicing cooked meats to 15 minutes and preparation of batches of sandwiches to 30 minutes. Actual preparation times were frequently checked and recorded as part of supervisory checks and management audits. Fillings such as canned tuna, bread, plates and packaging were pre-chilled, and chilled wells provided for high risk sandwich fillings during preparation.

During the visit it was observed that sandwiches were kept for long periods in the sandwich preparation area without being returned to the cold room (sandwiches prepared at around 10am were stored on a rack in the preparation room until they were moved out to the main kitchen to start plating at 11.30am). Additionally, sandwiches and salads were kept at ambient throughout the whole plating up time at the belt. Sandwiches checked during the belt process were recorded at 16°C. While there had previously been a chill unit in use at the plating belt, this was reported to have been discarded due to defects.

Furthermore, sandwiches that may have been at ambient from 10am until the completion of the belt process at approximately 12.45pm were then returned to the cold room for a later service. To demonstrate concerns, the interviewer followed one of the first trolleys to leave the kitchen to ward level and found the temperature of the sandwiches at delivery were 13°C. The sandwiches and salads were delivered to the wards in an ambient trolley along with hot food.

Additionally, the cold chain was not maintained at any of the three wards checked at the time of the visit. One ward was not carrying out any temperature monitoring as there was no gauge on the refrigerator (a sandwich in this fridge from the previous day with a patients name on it was probed at 10.4°C), a second ward had two refrigerators. One unit had accidentally been turned off, and had not been monitored since the beginning of January 2014, and the second unit had missing monitoring records associated with it. Monitoring procedures at ward level are to take a food temperature if the gauge reading was 5°C however, this practice was not being carried out. The third ward kitchen visited had temperature records above the critical limit with no corrective action recorded. Domestic-type refrigerators were found in ward kitchens, however two out of three of these were defective at the time of the visit.

One NHS hospital visited maintained all chilled foods in all areas at 8°C or lower. As there were no cook-chill foods produced or used on site there was no requirement to keep foods at 0-3°C. However, there are no stricter temperature controls in place in relation to bought-in pre-packed sandwiches.

During picking and packing and cold service on the wards there was no time or temperature monitoring taking place in most of the Trust hospitals visited.

The Northern Ireland Trust had gained significant investment for pre-chilled trolleys to take chilled food to wards. The trolleys were observed to maintain food such as sandwiches well below 5°C. The Trust in Northern Ireland maintained 5°C or less along the cold chain. Ward refrigerators were replaced with commercial refrigerators, which also helped to maintain this cold chain.

In all sites visited, any foods outside critical limits (established as part of the FSMS) were disposed of, including in case of breakdown. One NHS hospital had all refrigerators and freezers fitted with a telemetry monitoring system which raises an alarm in case of breach of critical limits.

Temperature monitoring of refrigerators using bottles of water as a food stimulant was observed in one hospital.

Automated temperature monitoring systems were used in the Northern Ireland Trust to verify temperatures for storage and transportation to wards (manual checks were still carried out), and to check delivery temperatures. Another site uses automatic monitoring of all refrigerators/freezers holding patient foods. Such telemetry systems can be a useful tool (providing they are serviced and calibrated regularly) as the almost constant logging of temperatures and raising of alarms where limits are breached allows staff to pinpoint more precisely when foods may have gone out of temperature control and therefore respond more appropriately.

Across all Trusts, cooking, reheating and hot holding critical limits are as per FSMS and, where appropriate, legal requirements. Hot held foods are generally served within 15-30 minutes of cooking. Blast chillers were in use to rapidly cool foods in all Trust hospitals visited. One NHS hospital also made use of blast freezers as part of their cook-freeze operation. The Trust in Northern Ireland had a blast chiller, although they had designed production methods to avoid the need for any cooling.

It is noteworthy that the Trust in Northern Ireland considered that the four hour exemption for chilled food was inappropriate for hospitals.

2. Contract caterers within NHS Trust hospitals

Caterer 2 kept chilled foods at 5°C or colder in the following areas: refrigerated storage, vending and ward/pantry refrigerators. The critical limit for delivery temperatures of chilled foods and for foods on display was below 8°C. The chilled preparation room (used for picking and packing patient meals) was held at 10°C and this is the target temperature for foods being transported around the hospital site via insulated boxes. A blast chiller and a blast freezer had recently been purchased to use in production of the small amount of cook-freeze foods on site.

There was concern at the time of the visit as the preparation of a cook-freeze Hawaiian pizza was observed. A frozen pizza base (including tomato sauce) was used then frozen diced ham and fresh pineapple and grated cheese were placed on top. The kitchen was very warm and the ham would have easily defrosted during production, and possibly the

frozen base too, due to the large numbers being produced at one time, rather than producing in smaller batches. As the finished pizzas were out of temperature control for at least half an hour, some of the pizza ingredients may then have been refrozen when the product was eventually put into the freezer. There was no time/temperature monitoring of such foods nor was there time monitoring during the picking and packing process.

All chillers and freezers used to store patient foods were fitted with remote monitoring systems which log temperatures almost constantly and raise alarms when critical limits are breached.

Foods were reheated to various temperatures, depending on the manufacturer's instructions. This is because there are a variety of cook-freeze meals served (the plated system requires a different reheat temperature to those packed and reheated in foil containers). These temperatures varied from a core temperature of plus 75°C to a core temperature of plus 85°C. Hot held foods in the restaurants were kept at plus 63°C.

Caterer 1 required all chilled foods (with the exception of cook-chill foods) to be held at 0-5°C. Cook-chill foods are kept between 0-3°C. However the walk-in refrigerator holding cook-chill meals was found to be running at 4.3°C during the visit (many employees were coming in/out at the time of the temperature check). Any refrigerator/freezer breakdown or fault was acted upon using the procedure set out in the FSMS. This section referred specifically to *L. monocytogenes* thriving in cool conditions and the subsequent importance of temperature control.

Sandwiches and salads were prepared in a chilled room (below 8°C) then transferred into a walk-in refrigerator adjoining this room, until required for picking/packing (which takes place in the same chilled room). This procedure was observed to be taking place at the time of the visit. Time and temperature monitoring was taking place during these processes. Foods were also temperature probed upon leaving the kitchen for the wards and the temperature taken on arrival/prior to reheat (for cook-chill foods).

All trolleys held insulated boxes for transporting foods to wards. These were filled in the chilled preparation room on the opposite side from the preparation tables.

Foods were reheated or cooked to a temperature of plus 75°C and held hot at plus 63°C.

Both contract caterers recorded hot holding and cold display temperatures in restaurant/coffee shop areas on a regular basis throughout service.

Foods outside hot and cold holding critical limits (i.e. below 63°C and above 8°C) can be served in accordance with the two hour and four hour exemptions and this was recorded on documentation.

3. Private hospitals

The private hospital refrigerators and freezers were monitored via telemetry with temperatures being constantly monitored and logged every 15 minutes. Should a refrigerator/freezer start to operate outside critical limits repeated alarms are raised so staff can take corrective action. As the temperature is logged constantly, it is evident how long equipment has been outside critical limits which would help inform corrective actions with regard to keeping/disposing of foods. Any faulty equipment was emptied and locked to prevent further use.

Temperatures were taken via probe thermometer, rather than the dial, and foods themselves are probed. The meat and fish preparation room was temperature controlled at 15°C. It was not clear if sandwiches and salads are prepared in a temperature controlled environment.

Hot foods are cooked and reheated to required temperatures (cooked to 78°C, reheated/regenerated to 85°C) and hot holding is similarly above legal requirements (vegetables, rice and soup to be held above 84°C and proteins above 75°C).

Patients had small refrigerators by their bedside which operated at around 11-12°C. These were clearly labelled to remind patients that they were only to be used for storing drinks and chocolate bars/sweets. They were checked for cleanliness by housekeeping staff but temperature/contents monitoring is not included as part of these checks.

4. Private care homes

There was no temperature controlled environment for the preparation of sandwiches/salads. These foods were prepared to order and served immediately to the resident (or immediately refrigerated if, for any reason, the resident was unable to eat the food immediately).

In case of refrigerator/freezer breakdown, foods were temperature-checked then moved. If the food temperature was outside critical limits (e.g. above 8°C) then the foods were destroyed.

Foods were cooked, reheated and held hot as per legal requirements. Foods were held hot in a bain-marie during the service periods (90 minutes - two hours).

The small, personal refrigerators in residents' flats contained fridge thermometers and were monitored by housekeeping staff. These were also monitored weekly by the catering manager.

5. Survey respondents

The vast majority of survey respondents aimed to keep chilled, higher risk foods at a temperature of 5°C or colder across the cold chain, with just over three quarters reporting an organisation/site policy of less than 5°C for higher risk foods in refrigerated storage, and over half requiring a receipt temperature of 5°C or lower at delivery.

Three quarters of respondents advised there were clear responsibilities for temperature monitoring and record keeping of ward/pantry refrigerators (22% responded 'not applicable' indicating they were unlikely to have ward/pantry refrigerators).

Almost a third of respondents advised they provided bedside refrigerators and approximately half of these advised of clear procedures for temperature monitoring and record keeping for these refrigerators.

31% of participants advised that their ward/pantry refrigerators were commercial grade, however 23% use only domestic refrigerators in these areas and 20% use a mixture of both.

During food service, two thirds of respondents control bacterial growth on higher risk foods by holding them in a chilled or refrigerated unit. 30% hold such foods at room temperature for a limited period of time and a similar percentage make higher risk foods to order.

Cleaning and disinfection

1. NHS Trusts

All Trust hospitals had comprehensive cleaning schedules in place using products supplied by commercial suppliers. Training was provided periodically by the chemical suppliers but can be undertaken more frequently on request. Otherwise, training tends to be provided by supervisors on the job.

Colour-coded cleaning equipment is used as per the Trust's policy (at each site).

Processing equipment was washed using the dishwasher. Any parts that could not be put through the dishwasher were washed in hot, soapy water and sanitised.

One NHS hospital used products from a well-known chemical supplier, including sanitiser which had a five minute contact time.

One NHS hospital used products from another well-known chemical supplier, as well as some Trust nominated products. There was sanitiser in use, but the contact time/dilution was not known.

Another NHS site was using several different suppliers' chemicals. A chemical supplier had just been taken on as the nominated chemical supplier but, at time of visit, only products from other suppliers were found on site. That meant there were two different sanitisers in use: one which had a five minute contact time and the other was a product where the contact time was unknown, but was reported to be shorter. The mixture of products was reported to be due to using up leftover supplies.

At this same hospital, much attention had been paid to the cleaning methods in the high risk area of the CPU following detection of *L. monocytogenes* in foods and on the floors/in the drains. Following advice from the EHO and a technical consultancy, the site now cleans the trough drains very carefully, avoiding jet washers or chemicals applied via spray/aerosol to limit any potential spread of bacteria onto cooking/work surfaces. Instead, a cleaning product that did not require rinsing or scrubbing was used.

At ward level in one hospital, staff were not using probe wipes to clean probes between uses but were filling a measuring jug with hot water from the mains-fed still and putting the probe into the water between uses. This practice had been recommended by the EHO. However, the interviewer was concerned that the water could quickly reduce in temperature during service and could quickly be in the temperature danger zone. Additionally, the water would get dirty with food debris which would then be transferred to other dishes via the probe.

Dishwasher temperatures were taken a minimum of twice daily for all pieces of equipment and most sites recorded these checks (with the exception of the one NHS hospital). This hospital calibrated their dishwashers on a monthly basis (performed by catering supervisors).

One NHS hospital had a 5* service contract in place for the dishwashers and the dishwashers are fitted with an alarm if they are operating incorrectly (rinse below 88°C). The alarm operates by monitoring the temperature of the cleaning chemicals.

Deep cleans of catering areas and equipment were reported to be taking place either quarterly or 6-monthly, however this was often of ventilation and high level cleaning only.

2. Contract caterers within NHS Trust hospitals

Comprehensive cleaning schedules were in place at both the contract caterers visited and both were using national, commercial chemical suppliers. Training on both sites was provided by the chemical supplier at intervals and could be undertaken more frequently upon request. Otherwise training was undertaken in-house by managers/supervisors. Both caterers used a colour-coded system for cleaning equipment.

Food contact equipment (such as blenders and processor attachments) was washed wherever possible in the dishwasher to achieve effective disinfection. Should some parts not be able to be washed in this manner, they were washed by hand in hot soapy water then sanitised using sanitising solution. One of the contract caterers used a sterilising equipment washing liquid for this purpose and in case of dishwasher breakdown.

One of the contract caterers used products from a well-known chemical supplier, including sanitiser. It was not possible to confirm the concentration and contact time required for the sanitiser in use at the time of the visit.

The other caterer used products from another well-known chemical supplier and sanitiser was in use. The sanitiser offered a one minute contact time at 3% dilution. This was used in all areas except the ward pantry kitchens as Infection Control did not want sprays to be used in these areas. Instead sanitising wipes (with the same efficiency) were used in these areas.

Both caterers monitored and recorded all dishwasher temperatures a minimum of twice daily and required a minimum rinse temperature of 82°C.

Deep cleans were reported to take place every six months (including ventilation) although this was organised by the Trust. The ventilation canopy in the main restaurant of one of the caterers was very dirty with grease visibly dripping from it.

3. Private hospitals

A comprehensive cleaning schedule was in place and chemicals used were supplied by a well-known chemical supplier. The supplier provided most of the chemical training and there was also one-on-one Control of Substances Hazardous to Health (COSHH) training provided to new starters.

The kitchen used different cleaning equipment to the rest of the hospital but it was not colour-coded. Catering staff stated that they would be able to recognise equipment from other areas within the hospital and would dispose of it if it appeared in the kitchen. It was also noted that other areas in the hospital used colour-coding.

The contact time for the sanitiser in use was not specified to the interviewer but the supplier stated that this product kills *Listeria*.

Dishwashers were set to rinse at above 80°C and were checked using the digital display daily with additional checks being made four times per year by an external contractor.

Deep cleans were undertaken of kitchens and all equipment, including ventilation, on a quarterly basis.

4. Private care homes

The private community visited was found to be very clean with detailed cleaning schedules in place. Chemicals are supplied two well-known chemical suppliers. There was no in-house training; training was provided only by one of the chemical suppliers. Cleaning equipment was colour-coded (as per NHS practices).

Processing equipment and utensils were all washed through the dishwasher and there were no items reported that needed alternative methods of washing.

The contact time for the sanitiser in use was not confirmed.

Dishwashers operated at a temperature of 82°C and this was checked using the visual display. Dishwashers had an alert if they were not reaching this temperature.

Deep cleans of kitchens, equipment and ventilation were reported to take place quarterly.

5. Survey respondents

Not applicable

Cross-contamination

1. NHS Trusts

Generally, the separation of different processes was very good in NHS hospital catering areas with good provision not only of colour-coded equipment but also separate sections within kitchens or separate rooms for raw, cooked, vegetable, dairy, special diets etc. This extended to chilled and frozen storage as well.

At one of the NHS hospitals visited, different coloured uniforms and disposable aprons were worn for different processes and cleaning in different areas (e.g. cleaning toilets and cleaning in the kitchens). At this same hospital, cooked meats were bought in raw and cooked on site to avoid contamination from bought in RTE foods. Additionally, trolleys used in the packing areas were washed after use then returned directly to this same area so they did not go through food preparation areas. Furthermore, meat slicers were used only for cooked meats and were used for one meat only before cleaning. They were sprayed with antibacterial spray before use and once/twice a day the machine was dismantled for a full clean. Chefs using the equipment had to sign off temperature and cleaning checks.

Practices were generally observed to be very good with good work flow and cleaning procedures. However, there was several contamination issues noted in the kitchens of the NHS Scotland hospital, such as: staff wiping boards between uses with sanitising wipes rather than putting through the dishwasher in the sandwich preparation areas. There were also several separation issues in this area of this hospital: poor separation of prepared sandwiches/salads and unprepared raw vegetables; boxes of unwashed salad vegetables placed onto RTE boards and adjacent to washed tomatoes and lettuce; washing of salad

vegetables being carried out at same time as slicing of washed tomatoes and slicing of cooked meats; unwashed salad vegetables handled above containers of RTE foods; handling food after touching the bin lid with no hand washing in between. However, on a positive note, raw meat preparation was well-separated from high risk and colour-coded aprons were observed to be in use in high risk areas.

In another NHS hospital there was good use of colour-coded equipment (such as boards) in the main catering areas. In the CPU where the cook-freeze products were produced, staff working in the low risk section wore blue uniforms and disposable aprons and those working in the high risk area wore white uniforms and aprons. There was no access for blue uniformed staff to enter the high risk area, with raw foods weighed/prepared for cooking pushed through a vestibule into the high risk area. All those entering the high risk area must wear hat, hairnet, protective clothing and put on shoe covers as this was the area where *L. monocytogenes* was present in the drains. However, full separation of foods in chilled/frozen storage in the main restaurant was not possible in the walk-in refrigerator and freezer due to their small capacity. Instead, raw meats were stored on the opposite side of the units from the cooked/RTE foods.

At this same hospital, the cooked foods were cooled in blast chillers or blast freezers (as appropriate) in a separate room of the high risk zone which was maintained at a cool temperature of approximately 11°C. Cooked meats were sliced in this section also (for use in roast dinners). Non-sterile feeds were also being prepared in a completely separate room (that could not be accessed directly from either the low risk or other high risk areas) within the high risk zone.

Salad vegetables, whole fruits and uncut vegetables were not washed using a salad wash product in all but one of the Trust hospitals (one of the NHS England hospitals visited used a commercial salad wash solution for this purpose). The sites not using salad washes, cleaned vegetables and fruits under running water.

2. Contract caterers within NHS Trust hospitals

Both contract caterers demonstrated good separation of low risk and high risk foods in both storage and preparation areas although some of the walk-in refrigerators and freezers were not used solely to store raw foods/RTE. Where there was not sufficient space to separate these foods, good procedures were noted with high risk RTE foods being stored on the opposite side of the fridge or above raw meats.

Both contract caterers also used salad wash products (such as chlorinated tablets) to wash salads. One contract caterer washed salads in a designated sink outside the chilled preparation area before bringing into the sandwich/salad preparation area to reduce the risk of soil contaminants entering this area.

There was very limited space in the private patients' ward kitchen in caterer 1 hospital. While this was not a large ward, the kitchen was very small with few preparation surfaces meaning that surfaces were having to be used for different processes and meals served on this ward were traditional cook. Chefs interviewed described good hygiene procedures with good 'phasing' of work processes and thorough disinfection between processes. However, the interviewer was concerned that, if the sanitiser in use did have a five minute contact time, there was the potential for cross-contamination of foods, particularly if chefs were running behind.

3. Private hospitals

Separate areas were provided for raw meats and sandwiches/salads so they were not in danger of cross-contamination from being prepared in the same room or area.

Additionally, although the knives at this hospital were not colour-coded, the boards were and the sandwich and salad sections had their own knives and boards provided. All boards/knives in the kitchen were changed hourly (although the raw meat boards were observed to be flipped over on occasion during the visit). The lack of colour-coded knives was not considered to be an issue by the catering staff as they were washed through the dishwasher.

Salad vegetables, whole fruits and uncut vegetables were not washed using a salad wash product but were washed under running water.

4. Private care homes

The kitchen of the residential care community visited did not have enough space to separate processes into different, divided rooms/sections. Instead, due to the restricted space available, raw and RTE foods were prepared on different, separate preparation tables/areas so one surface was used for one process – these were not mixed.

Colour-coded boards were in use but the knives were not colour-coded. Instead, they were used for one job then immediately sanitised via the dishwasher.

Salad vegetables, whole fruits and uncut vegetables were not washed using a salad wash product.

Every effort was made to prevent contamination when serving foods to residents. Care staff helped patients to avoid cross-contamination by taking food from the salad bar for them. Care staff also wore a different coloured disposable apron when taking food to a resident's room from the dining area so they could not return straight to the dining area. Additionally, care staff did not clean rooms; this was undertaken by housekeeping staff. All these steps were Infection Control measures but were likely to help to reduce risk of contamination from food poisoning bacteria as well.

5. Survey respondents

Not applicable

Personal hygiene

1. NHS Trusts

Across all NHS Trust sites visited, the policy on reporting illness and returning to work was the same, with catering staff only being allowed to return to work after being symptom-free for 48 hours. Disposable aprons were worn by all staff on wards involved in food handling or service (including nursing staff involved in feeding patients).

At one of the NHS hospitals, it was the policy that all illness must be reported as well as infected cuts or similar on hands. The procedure on return includes back to work interviews and occupational health involvement. Those who are ill were medically suspended from work. Designated protective clothing was provided for use in high risk food handling areas and stored in the relevant area. Disposable gloves were used and were changed every 20 minutes or if cut/damaged.

At one NHS hospital, colour-coded aprons were in use in high risk areas and red aprons in raw preparation areas. There was limited use of gloves (only at the salad bar in the dining area of the restaurant due to customer visual preference).

At another NHS hospital, ward kitchen staff wore blue disposable aprons and further protective clothing (such as disposable gloves) were used when serving patients in barrier (infectious) rooms. In the CPU staff all wore disposable aprons, hats, hair nets and chefs' whites. These were colour-coded according to where they were working (blue for low risk area and white for high risk area). In addition, overshoes were worn in the high risk area (which is where *L. monocytogenes* had been detected).

2. Contract caterers within NHS Trust hospitals

Both the contract caterers required employees to sign an agreement to report infections document before starting work, clearly stating that staff must report a number of illnesses that could compromise food safety as soon as they are aware they are suffering from them (e.g. diarrhoea and vomiting, skin lesions etc.). The form also required them to report if they had been in contact with anyone who they were aware was suffering from these illnesses.

Both caterers required employees to be symptom-free for 48 hours before returning to work in the case of vomiting and/or diarrhoea, unless only one bout was experienced in which case this time was reduced to 24 hours.

Staff preparing sandwiches and salads for caterer 1 wore disposable gloves when preparing these items. These were changed between processes/tasks. They also wore fleeces and hats for use in this cold area, however these were not designated for use solely in this area as staff members seen preparing foods or picking and packing trolleys were also observed wearing these items in the office and during transportation of trolleys. Both caterers required the ward staff to wear disposable aprons and either hats or hairnets (one required both).

3. Private hospitals

All chefs wore whites but these were not colour-coded according to process as the team was only small. However, disposable gloves were used and were changed between jobs. Chefs did sometimes forget to change and had to be stopped by another team member so they tended to police each other.

4. Private care homes

All chefs wore whites but these were not colour-coded according to process due to the size of the kitchen and the team. However, disposable gloves were available for use and, if used, were changed between each task. Hand washing training was given frequently as not all chefs wore gloves. Antibacterial hand washes were available throughout the kitchen.

5. Survey respondents

Not applicable

Patient food service

1. NHS Trusts

Refrigerator temperatures were monitored and recorded either twice or three times daily at all sites visited. Responsibility for this varied from Trust to Trust – in some Trusts the

housekeeping staff made checks but the records were reviewed by the catering manager, in others the ward catering staff were responsible. Methods of temperature checking varied, with one site relying on temperature display, which were not calibrated.

In all sites visited, foods stored in the ward refrigerator were clearly labelled with the use by date and the patient's name (if patient foods). Catering department foods were clearly labelled with the appropriate use by date. Regular checks of dates were made and all sites reported to dispose of foods that did not meet these labelling criteria.

In the Northern Ireland Trust, butter portions and opened milk which had been out of refrigeration are disposed of following each meal service.

It should be noted that the policy on storage of non-catering department foods varied across sites. The general consensus was that it was preferable to not store foods for patients but that it could not always be avoided (although one of the NHS Trusts visited only stored patient food in the ward kitchen refrigerators).

There were no personal refrigerators provided at patients' bedsides in any of the hospitals visited although all beds had lockers next to them which patients could use to store personal effects (including drinks). There is a possibility that foods could be kept in such lockers as they are not checked by catering or nursing staff.

Chilled high risk foods were either delivered directly to patients upon arrival at ward level or kept in the ward refrigerators. Some hospitals used trolleys which contained chilled cabinets which maintain these foods at chilled temperatures.

High risk foods were disposed of in general waste bins. Most hospitals used a licensed waste carrier, however one NHS hospital took part in its local council's food recycling scheme and one of the NHS sites put waste foods into an anaerobic digester.

Generally, only catering ward staff prepared foods for patients, with nurses only able to prepare items such as toast, tea/coffee, cereals, etc. 24 hour feeding provision varied from hospital to hospital. The NHS Scotland hospital furnished a designate ward with a refrigerator of sandwiches and snacks which can be accessed by nursing staff when the ward kitchen is closed. The NHS hospital that experienced a listeriosis outbreak made similar provisions but created a robust paper trail documenting what sandwich was removed, who by and which patient/ward it went to and restricts access to the refrigerator by locking it.

One NHS hospital provided a stock of cheese and crackers (hard cheeses only) in ward kitchen refrigerators for when the kitchen was closed. The main ward refrigerator was in a locked room to prevent access when ward kitchen staff were not present.

All sites reported that patients were not allowed to use or enter the ward kitchens and this was well signed on doors. The nursing staff at the one NHS hospital reported that they prevented patients from entering the kitchen. One Lead Nurse advised that use of ward kitchen by patients' relatives was at the discretion of the nurse in charge, for example it may be permitted for relatives of end of life patients.

Across all sites, hot foods were regenerated in ward kitchens and the final cooking temperatures of each menu item taken via probe thermometer and recorded on the relevant record. In general, hot holding temperatures were not taken as service was

reported to take place over very short periods (usually no more than 30 minutes). However, one NHS Scotland site holds back two meals on offer in insulated boxes and takes the temperature after end of service to check residual temperature after service. This site also ensured a supervisor double-checks the final cooking temperatures prior to service.

With regard to foods being brought in to patients from other outlets (either within the hospital or wider community) there did not appear to be any strict policy on this at any of the Trust hospitals visited. The Trust in Northern Ireland did display posters in retail outlets advising against providing high risk foods purchased to patients.

None of the sites allow takeaway outlets to deliver directly to patients. However, there were no controls evident preventing visitors from bringing in foods for patients either from other catering facilities within the hospital, from home or from takeaway outlets in the community.

One NHS hospital Senior Nurse advised that any such food must be brought in hot. No reheating was allowed in the ward kitchens and no temperature checks of food temperatures were made (it is viewed as the responsibility of the person bringing in the food). It should be noted that in Wales it is obligatory to display National Food Hygiene Rating Scheme scores in food businesses so locals are able to assess food safety easily (the Senior Nurse advised that she believed consumers were very savvy as a result). The Senior Nurse advised that it was usually patients who eat Halal foods that have foods brought in for them, particularly during Ramadan.

Only the NHS Scotland hospital provided guidance for visitors wishing to bring in food for patients. The guidance included general hygiene standards required (hand washing, not preparing food for patients if not symptom-free for 48 hours, etc.) and required foods to be brought in within an hour of purchase, using hot/cold packs. This guidance was being updated and the draft copy made available to interviewer indicated a much more prescriptive approach than in previous guidance available, clearly stating dating/labelling/packaging requirements and what foods were not suitable for bringing in for patients. The draft guidance also clearly stated that foods must not be stored in bedside lockers. Locker checks by nurses are in place at one Trust.

2. Contract caterers within NHS Trust hospitals

Caterer 1 was very strict about storage of foods in the ward kitchen refrigerators – no patient foods are to be stored in the refrigerators and all foods in the refrigerators must be labelled. Catering department foods are all disposed of at the end of the day if any are left over in ward kitchen refrigerators.

Sandwiches and salads were served directly to patients and kept chilled in the ward kitchen refrigerators upon delivery from the main kitchen. Patients were not allowed to use the ward kitchens and nursing staff did not prepare anything more than tea and toast for patients at most and only when ward hostesses were not available. There was a snack box provision for 24 hour feeding (usually a sandwich, a packet of crisps and a piece of fruit (or similar) however, there was no control as to what happens to these after they were delivered to patients and there was no information provided on high risk products in these boxes as to how they should be stored and when they should be eaten by (particularly if kept out of temperature control).

Hot foods on wards at this hospital were heated to above 75°C. However, Paninis were served on the oncology ward menus and these were not tested for core temperature upon finishing grilling, yet many contained cooked ham which was effectively being reheated.

The catering ward staff reported that takeaway outlets were allowed to deliver directly to patients but there was no evidence that this actually happened and staff reported to never have observed it. Long-term patients were often given meal vouchers for use in on-site food retailers so they could have some variation in their diet as they might have had menu fatigue. There was no control as to what they could eat and what they did with the food (i.e. take away), although advice was provided by nursing staff and both the NHS Trust and caterer's in-house dietitians.

There was no written guidance/policy for patients or visitors about bringing in their own foods (confirmed by the NHS Trust Infection Control Officer spoken to). A nurse questioned on an oncology ward advised that they allowed visitors to bring in food from home and provided verbal advice to them about what they were allowed to bring in. This advice stated that the food must be cooked in a clean environment and must be brought fresh from home and could not be something that had already been reheated or was to be reheated. However, there was no way of checking standards in any area and temperature checks of foods on arrival were not made. The nurse noted that it was usually patients who eat Halal foods that had their families bring in foods as they did not like what was offered on the special diets menu (which was more limited than the main menu). The lack of guidance and controls at ward level was of particular concern.

Personal refrigerators were only provided in a couple of wards (oncology and private patients). These were very small (designed to hold drinks only) but might have been used to hold small food items such as yoghurts. They were not temperature monitored and nursing staff cleaned periodically. Patients would alert nursing staff if they did not think the temperature was cold enough.

Both caterers monitored ward kitchen refrigerator temperatures either twice or three times daily, using both machine display temperatures and food simulants. Hot food temperatures were taken upon completion of the reheating cycle on the ward ovens and were required to be at 75°C or above.

Caterer 2 had a variety of reheat temperature requirements dependent on which brand of cook-freeze product was being reheated. This meant that staff may be looking for one of three or four different final reheat temperatures which had the potential to cause confusion and result in either poor quality or under-cooked foods. Cold foods were served immediately to patients or stored in ward regeneration kitchen refrigerators until needed. However, during visit to one ward two plated meal cook-freeze dishes were observed out of temperature control with no ward staff in the kitchen: one dish was found in the microwave and had just been heated up and another was uncooked, on a tray next to the microwave waiting to be heated up. As the ward hostess had served the other meals and gone to another ward for service it appeared that it may have been the NHS staff who had removed these foods from the freezer and started to reheat them, however it was not possible to confirm this was the case. While the uncooked meal was clearly partially defrosted it would be cooked through thoroughly, however the meal in the microwave was no longer piping hot and had clearly been in the microwave for some time.

This caterer required that all foods in ward regeneration and pantry kitchens were clearly labelled with use by date and patient name/bed number and refrigerators were clearly marked with this requirement on the doors (signage mounted by NHS staff). Out of hours feeding was provided via nurses using the pantry kitchen where they had a dedicated toaster and microwave to reheat soups and make tea/coffee and toast for patients. This is the only provision.

There was no guidance produced by either caterer regarding visitors bringing in foods to patients. Both stated this would be at the Trust's discretion.

3. Private hospitals

Daily checks of ward refrigerators were undertaken (but not clear on frequency each day) using a food simulant held in the refrigerators. All foods were date labelled and daily checks were undertaken and any undated or out of date foods disposed of.

Personal refrigerators were provided at the bedside, although they were only small. They were labelled to remind patients that only certain things should be stored inside (e.g. chocolate or cartons of drinks). The refrigerators ran at 11–12°C. Housekeepers checked that they were working, but do not check temperatures or what was in the refrigerators. Refrigerators were cleaned regularly. In practice, there was little need to store food in these refrigerators as, if a patient wants something, they could request it from the kitchen. This was an area of concern as the possibility existed for foods to be stored in the refrigerators without control over the length of time it was left there. The catering manager questioned the need for the refrigerators, given foods could be requested at any time. With this in mind, there was no provision of snack boxes.

Nursing staff were involved in limited food preparation, e.g. toast, salad garnishes, other garnishes or putting together a salad bowl from provided ingredients. Foods arrived in serveries in individual portions, which the servery staff put onto crockery for service. The trays were then delivered directly to patients' rooms. Trolleys containing cold items were delivered first using ice blocks to maintain temperature. If a patient had also ordered hot food, the food was not put on trays until all food had arrived. If necessary, the cold items would be put into the servery refrigerators.

Hot food temperatures were boosted in the microwave if required (e.g. if something like a soup had lost temperature) but would usually be returned to the main kitchen if anything else had dropped in temperature. Chilled, high risk foods were kept cold until delivered to patients.

With regard to takeaway outlets delivering directly to patients, this was not permitted but was difficult to enforce as such items bypass catering. The catering manager was concerned about this and suggested this should be prohibited for some groups. There was advice available on appropriate foods for visitors to bring in and, if food was bought in by a visitor, the patient was asked to sign a disclaimer. If a chilled item was brought in for reheating, it should arrive in a chilled state and be probed upon arrival to check the temperature. Such foods were sometimes stored in the servery refrigerator. If chilled food was brought in, staff may not be aware as it was only when a request was made for reheating that it became apparent.

4. Private care homes

The care home visited did not have ward kitchens as it was a long-term residential community and foods were served only in the dining room. If foods were required in a

resident's flat for any reason, this was brought to the resident directly from the dining room by the care staff.

There was a separate section within the community dedicated to those residents suffering from dementia. This section had its own dining area with a very small kitchen. Very few foods were held in temperature controlled equipment in this kitchen (only items such as ice creams, for example). Foods were brought across to this kitchen from the main kitchen in hot trolleys and were served from these trolleys.

Foods were probed before dispatch of heated trolleys and on arrival in this section. The heated trolleys were hot holding devices only and the food was put into the trolleys hot. Foods held in the bain-marie were probed at the beginning of service and half way through. Cold foods were held either in the kitchen refrigerator or in the chilled trolley they were transported in to ensure cold foods were not out of temperature control.

If residents wanted food outside of the kitchen operating times, their carers could prepare toast/toasted cheese sandwiches in the kitchen servery area. The carers did not have access to the main chillers, which were locked overnight. Carers would only make foods at these times; otherwise food was requested from the kitchen.

Housekeepers monitored the temperature and content of the residents' personal refrigerators (found in their flats). Each fridge was equipped with a fridge thermometer and any out of date foods were removed.

Takeaway outlets were not allowed to deliver directly to residents. Food was available on demand from the kitchen and chefs make items off menu if the ingredients were available and doing so was within guidelines.

With regard to visitors bringing in foods for residents, this could be difficult as the flats are the residents' homes. However, visitors only occasionally brought food items to the residents and the home would, where necessary, destroy foods that might present a risk or decline to prepare raw foods. For example, a pâté brought in for a resident as a gift was destroyed, as there was no way of knowing the temperature control that the item had been exposed to before arriving in the community, and these reasons were explained to the visitor. Similarly, because of a lack of traceability, raw meat brought in by a visitor, would not be prepared by the kitchen. Visitors were advised that food gifts should be non-perishable, and if they did not accept this, they were taken through the food safety plan to explain the reasons.

5. Survey respondents

Only slightly more than a quarter of respondents advised their organisation provides bedside refrigerators, of which just over half stated there were clear responsibilities for ensuring foods were consumed within their marked use by dates. Three quarters of participants advised there were clear responsibilities for date labelling and disposal of foods in ward/pantry refrigerators.

Only 7% of participants stated their organisation/site refrigerated higher risk foods left over at the end of meal service, with the vast majority (90%) disposing of left over higher risk foods. Disposal was mostly undertaken by the catering department (83%) with only 18% disposing of foods at ward level.

With regard to the provision of guidelines to service staff as to the risks from inappropriate food storage by patients (including storage of higher risk foods in bedside lockers) slightly more than one third provided written guidance to their service staff and a third only provided it verbally. There were still a significant percentage of organisations/sites who responded that no guidelines were provided to service staff regarding this matter.

With regard to policies for food brought in for patients/residents by their visitors, 67% of survey respondents reported that their organisation produced one, but only 18% stated their organisation/site always provided written guidance to patients/residents and their visitors regarding food safety. The majority of respondents noted that verbal advice was provided but only sometimes (32%).

Concerning foods that are susceptible to contamination with *L. monocytogenes*, 60% of participants reported that their organisation/site did not avoid specific menu items for patients/residents due to the risk of listeriosis. Additionally, the majority of respondents (68%) advised they (or their organisation/site) did not provide guidance to specific patients/residents on what foods should be avoided due to listeriosis. Of the 13% that do, they advised that the types of foods that should be avoided would be pâtés, soft cheeses and unpasteurised products (such as raw milk/cheeses and eggs) and the types of patients/residents who would be subject to guidance provision would be pregnant women, elderly people and those who are immune deficient and therefore needed a 'clean' diet.

Restaurant/Coffee shops/Vending

1. NHS Trusts

All trust restaurants and coffee shops at sites visited carried out temperature monitoring of refrigerators/freezers as per the ward kitchen and main kitchen regimes.

The restaurant at the one NHS hospital did not take hot holding temperatures as it only had foods on hot display for two and a half hours and the foods were restocked several times during this period, meaning no food on hot display was out for more than around an hour at maximum. The chilled temperatures for displayed foods were taken three times daily, but only using the digital displays on the grab and go refrigerators, one of which (containing sandwiches, cooked meat snacks, etc.) was probed at 6.9°C during the visit.

The vending machines at this hospital were also temperature checked via the display three times a day and cleaning/dating checks were carried out daily.

One of the NHS hospitals visited displayed salad items in the restaurant for a maximum of two hours and checked the vending machine temperatures as per other refrigerators using a food simulant held inside.

The NHS Scotland hospital only stocked confectionary in vending machines.

2. Contract caterers within NHS Trust hospitals

Both contract caterers carried out temperature monitoring of refrigerators/freezers as per the ward kitchen and main kitchen regimes.

Both monitored hot and cold displayed foods in the restaurants and coffee shops throughout display times, hot foods approximately every one - two hours and chilled foods three or four times per day. Both utilised the two hour and four hour exemptions for hot

and cold foods. One of the salad wells in the hospital restaurant of caterer 1 was found running above 10°C so foods had to be moved. Smoked fish and soft cheese were displayed in this well, but had only been brought out within the previous 15 minutes; however these were susceptible items in respect of *L. monocytogenes* and needed to be closely monitored. Additionally, one of the coffee shops managed by this caterer had Victoria sponge cakes on ambient display, which possibly contained either cream or butter and no four hour exemption had been applied.

Caterer 2 had a number of grab and go display refrigerators for sandwiches and boxed salads in the main restaurant, none of which were holding at a temperature below 8°C. The foods in each fridge all had a four hour exemption applied which was well monitored. At the end of the four-hour period, all foods remaining inside these refrigerators were logged on documentation and thrown away as wastage, then refrigerators were re-stocked using stock from the kitchen storage refrigerators.

The only vending machines managed by the contract caterer 2 were two small coffee dispensing units. The contract caterer for this site was responsible for refilling the machine with coffee and beans, checking temperatures were below 8°C and cleaning.

3. Private hospitals

There was a vending machine on site which was not under the catering manager's control, however it contained sandwiches. It was temperature checked using a probe and food simulant twice daily.

4. Private care homes

Not applicable

5. Survey respondents

Not applicable

Special diets

1. NHS Trusts

In most of the NHS Trust hospitals visited halal, kosher, gluten free and other special diet meals were bought in from an external supplier. The NHS Scotland site, like many of the other sites, used a specific diet bay providing soft diets and dietary supplements. All sites operated the same FSMS for special diets.

At one NHS site, any special diets in terms of fortified or renal diets (for example) were specified directly to nurses and catering staff by the dietitian. If foods required protein powders adding for fortification then these were added to meals by nursing staff themselves. Additionally, non-sterile feeds were provided to maternity wards (prepared in a separate room in the high risk end of the CPU) and to adult patients as required. At this site, if the dietitian advised particularly vulnerable patients to eat or avoid certain foods then these were provided / avoided as required.

The current guidance provided by the NHS Scotland hospital did not comment on specific foods to be avoided due to *L. monocytogenes*, but the new draft guidance sheet for visitors bringing in foods did list suitable and unsuitable food items (High Risk).

The dietitian at the Northern Ireland Trust advised that dietitians adhered to the food avoidance information provided in the booklet 'Patient information – dietary advice for haematology patients with neutropenia' by Leukaemia and Lymphoma Research. This provided food safety advice and foods to avoid for patients with neutrophil count below $2.0 \times 10^9/\text{litre}$ and $0.5 \times 10^9/\text{litre}$. For each food to be avoided, alternative foods were suggested.

At risk patients were also provided with the Public Health Agency's leaflet 'preventing food poisoning in a hospital and at home'. These leaflets were available throughout the hospital. The leaflet provided a very good section on food safety in hospital, which stressed that patients should not bring in foods or buy foods from other sources such as the cafe or shops.

At one of the NHS sites, where there was a high risk of infection, foods were prepared in chilled areas and were given a reduced shelf life. Soft diets that required liquidising were also prepared in a chilled area. At this site, foods susceptible to *L. monocytogenes* were not supplied to at-risk patients. However, some of these items could be found in other foods, such as sandwiches, available from the coffee shop so, in principle, these could have been purchased for these patients by visitors. In addition, at-risk patients were provided with more hot foods than cold. If they did have salad, it was wrapped and chilled. The catering manager at this site provided advice when queries were raised about foods that could be given to certain patient groups.

2. Contract caterers within NHS Trust hospitals

Special diets are catered for, from gluten-free/vegetarian to Halal/Kosher to renal and neutropenic diets. These were bought-in by both caterers in cook-freeze form. Both caterers provided low salt, fortified and other diets as requested by the Trust dietitians. Caterer 1 had an in-house dietitian to liaise with Trust dietitians and to check menus offered.

No specific guidance was provided to patients regarding foods to avoid due to *L. monocytogenes* by either caterer and they were not aware of Trust staff doing so either.

3. Private hospitals

The following special diets were catered for: soft diets, low residue, clear fluids, neutropenic and low salt. Chefs did not feel that these presented any particular problems with regard to handling or temperature control.

With regard to the provision of guidance as to which foods to avoid in relation to *L. monocytogenes*, chefs would sit down with patients to discuss their food requirements and explain what should be avoided / restricted. Neutropenic patients had their own menu and advice as to restrictions was provided.

4. Private care homes

Diets provided included items for residents with dysphagia and diabetes. Chefs received special training on the preparation of such diets with the aim of offering the same menu to all residents which included reconstructing puréed foods so they resembled the whole food. These meals were not perceived to involve more handling, but strict timelines were kept in order to prevent excessive time outside temperature control.

Those that were immunocompromised were advised on appropriate foods, and if necessary different dishes were provided. These did not involve extra processing/handling precautions, as existing controls ensured all foods are safe.

In general, no guidance on what foods should be avoided due to *L. monocytogenes* was provided to specific residents. However, if a resident questions a practice (for instance serving cheese cold) the reasons for this would be explained. If a patient presents a particular risk, a one-to-one conversation would take place to advise the resident on higher risk items. The company priority for older people was often about ensuring that the person ate enough, thus too many restrictions could present different problems in relation to health.

5. Survey respondents

Not applicable

Independent retailers

1. NHS Trusts

As only NHS Trust hospitals carried any independent retailers on site and it was the Trust or their representatives who had contractual arrangements with the retailers, all retailer information has been included solely in this section.

The NHS Scotland hospital visited operated two cafés and one shop. They were run by a charitable group called the Hospital Volunteers which operated solely on this site and had been doing so for many years. The hospital had little to do with the organisation and they operated completely independently. The group used the FSA CookSafe pack Scotland and bought foods from reputable suppliers. They purchased sandwiches from two suppliers, one being the hospital kitchen and the second an independent sandwich producer who had no auditing or approval in place.

The group was monitoring chill storage and display units using the gauges. They were working to a maximum temperature of 5°C however; there were temperature records observed above 5°C with no corrective action recorded. The hospital supplied sandwiches have a shelf life of two days and the independent retailer sells these on both days of the shelf life. This second supplier provided sandwiches on a sale or return basis and the dates are checked daily, removing those at the end of shelf life.

The NHS Wales hospital visited had a large retail concourse at the main entrance, operated by a Private Finance Initiative (PFI). The PFI currently rents space to a variety of well-known retail shops, four of which sold food. Two of the food retailers are operated by a contract caterer.

All four of these sites sold pre-packed sandwiches and salads with all, except one retailer, buying in their foods from an external supplier. One retailer made its own sandwiches every morning in a small preparation room. Another retailer also sold bacon, cooked ham slices, cheese slices, ready meals and other similar products, rather like a small convenience store.

Although it was not possible to see food safety documentation associated with these outlets, the managers of all four sites reported regular temperature checks throughout the day and required refrigerator temperatures to be between 0-8°C with the exception of one retailer who required a temperature of between 0-5°C when in a healthcare setting.

Sandwich/salad shelf life in all sites buying in these products was set as per manufacturer's instructions. The retailer making its own sandwiches applied a one day shelf life, with all sandwiches unsold disposed of at the end of the day.

All suppliers to all four outlets must be approved and on a nominated suppliers list. These sites all reported regular audits by their own company's safety teams and by the PFI who operated the concourse.

At one of the NHS England hospitals visited there was a newsagent and small coffee shop, both operated by a contract caterer. Both offered pre-packed bought in sandwiches, hot pies/pasties, milk drinks and smoothies with the coffee shop also offering Paninis.

Temperature parameters were 0-8°C for chilled foods and all foods were bought from a nominated supplier. The manager also reported regular audits by the contract caterer's in-house safety team. The shelf life of products was as per the manufacturer's dating information on the pack. The hot held pies were required to be held above 63°C, however checks were made only twice per day and would not allow correct application of the two hour exemption which the manager claimed was utilised. Similarly, the temperatures of the grab and go refrigerators were only being taken and recorded twice daily (due to these being used as storage refrigerators) which would not allow correct application of the four hour exemption which the manager claimed was utilised.

A further NHS England hospital had a small number of independent retailers on site, two very small retail shops (both selling pre-packed sandwiches) and a small retail food outlet. Unfortunately, it was not possible to speak to the managers of these sites at the time of the visit to discuss practices.

The Northern Ireland Trust have a private independent retailer on site that ran a shop selling pre-packed sandwiches and cafes, who use the FSA Safe Catering pack. The sandwich supplier was not Trust approved, but did have food safety certification. The owner was questioned and found to have good awareness, although had not received food hygiene training (his staff and co-owner had level 2).

None of the outlets in any of the NHS Trust hospitals visited reported being aware of monitoring or auditing by the Trust and it was not possible to confirm contractual agreements in place regarding food safety as the contracts were all reported to be held at head office. The Northern Ireland Trust was in the process of reviewing their contracts with the on-site retailer to include food safety aspects.

5. Survey respondents

Of those who participated in the online survey, that advised independent retailers were used, (90 responses given to this question) 38% advised that contractual arrangements were in place between the healthcare organisation and the retailer regarding food safety (a further 33% reported that they did not know and the remainder stated there were no arrangements in place). 35 respondents went on to answer a question as to what was included in these arrangements, to which 86% advised the requirement to have a documented FSMS based on HACCP principles, 46% reported a requirement to ensure food handlers received suitable training/instruction and supervision and 37% answered a requirement to have a policy for purchase of high risk foods.

31% of those responding advised that all independent retailers must have their own approval procedures in place for the purchase of higher risk foods; however 41% did not know what system independent retailers had to have in place in terms of purchasing high risk food to ensure the safety of their suppliers.

Interviewee comments

At the end of the site visits, interviewees were asked whether they had any comments with regard to the guidance. Comments received were:

- One Trust commented that they were pleased that caterers were being involved with the project.
- The dietitian at one Trust wanted to make sure no food would be avoided unnecessarily, stating there was a need to balance nutritional intake with the risk of listeriosis. The dietitian also questioned the classification of cancer patients as vulnerable groups as not all are immunocompromised.
- Comments from the catering team at one hospital visited were that they would like to see clear, practical guidelines that leave nothing to interpretation - more of an operations manual focussing on hygiene than a textbook.
- Comments from the catering team at the private care community visited were that they would like the guidance to be clear but more comprehensive than the interim advice issued by FSA. Temperature requirements should be stated clearly, dictating what should happen, so nothing is left to interpretation. They also commented that it would be good to 'sense-check' the guidance with those who would be putting them into practice to ensure they were practical.

Good practices observed

Good practices observed during site visits with regard to different aspects of food safety management are summarised below:

FSMS

- The approach by the Scottish Government Health Department to commission the production of the FSAM would appear to have provided a standard approach to food safety throughout Scotland. A joined up approach like this would appear to be a better use of resources and provides a degree of standardisation.
- The use of the FSMS as a living document, reflective of practice and with regular review/updating taking place.
- The provision of a separate HACCP plan for risks attached to *Listeria*.

Purchase

- One of the hospitals visited undertakes their own inspection of sandwich suppliers to ensure their confidence in this arm of the supply chain. This is in addition to third party audits.
- A hospital that reduces the two day manufacturer's shelf life for sandwiches to one day (except for on Saturdays as there is no Sunday delivery).
- Specifications written for suppliers of high risk foods, to include temperature and shelf life requirements.

Training/awareness

- Executive Chef with Level 4 training which is used to review and alter practices/procedures where they are not protecting food safety adequately.
- Catering departments that collaborate closely with the in-house Infection Control team.
- Detailed training regimes, training all staff to levels commensurate with their duties.
- Frequent refresher training and supplementary training as required (e.g. as identified in audits).
- *Listeria* specific leaflets given to nursing staff.
- Display of listeriosis posters front and back of house.

Sampling

- The setting up of internal swabbing/sampling regimes.
- Corrective actions taken in liaison with EHOs for borderline/unsatisfactory results.
- The drafting of a sampling protocol.

Audits/inspections

- Frequent in-house audits, including by the general manager (care home), which ensures it demonstrates their commitment to food safety and keeps them in touch with catering practices and procedures.
- External audits to increase knowledge and improve practices.

Shelf life

- Good labelling policy in place in several sites for foods stored in ward kitchen refrigerators.
- Use of pre-printed labels.
- Shelf life and date labelling controls worked well when policy was not just being upheld by ward kitchen staff but by nurses as well.
- Sandwiches at ward level labelled 'eat within one hour'
- Foods eaten only on the day of preparation.
- Retail outlet required manufacturer of pre-packed sandwiches to label them prominently with 'eat immediately'. Leftover sandwiches in retail outlet disposed of at end of day.

Temperature control

- Preparation of salads and sandwiches in separate, chilled rooms.
- Scottish FSMS has placed emphasis on target temperatures for chilled foods of 0-4°C.
- Maintenance of cold chain at 5°C.
- Pre-chilled trolleys that maintain food at 5°C or less.
- Limits set for time during high risk food preparation. Strict monitoring of time adherence.
- Use of automated monitoring for refrigerators, freezers, chilled trolleys and hot foods.
- Hospitals that destroy/dispose of foods that have exceeded temperature control requirements rather than implement the four hour exemption.
- Hospitals that probe the temperature of a number of sandwich samples upon delivery, with sample sandwiches being delivered expressly for this purpose.
- Monitoring of the time taken to transfer foods into chilled/frozen storage upon delivery – allows for good demonstration of maintenance of the cold chain.
- The provision of a separate, chilled area for meat preparation.
- Design of menu and production methods to avoid any cooling/blast chilling.

- Commercial refrigerators at ward level.
- Design of menu and preparation methods to avoid in-house freezing.

Cross-contamination

- Kitchens large enough to be able to provide appropriate separation of different processes, usually in different rooms and, if not, divided by low walls.
- Different coloured uniforms to easily differentiate staff from each area and ensure they do not move between the two areas.
- The complete separation of the feed/formula preparation area within a CPU preventing contamination of feeds for the most vulnerable groups.
- Use of chlorinated salad washes to remove dirt, soil and bacteria from all whole fruits, whole vegetables and salad vegetables.
- The washing of all whole fruits and vegetables as well as salads before preparation, thus minimising the risk of harmful bacteria being transferred from the skins/outside of these foods to the flesh. E.g. whole fruits sliced for use on wards (melons, oranges, apples, etc.) are all washed in salad wash (chlorinated) solution to remove dirt/bacteria.

Patient food service

- Detailed information for patients and visitors regarding what foods are acceptable to be brought in for patients. Clear examples are provided of unacceptable/high risk foods and how foods should be prepared at home.
- Visitor food information provided for patients and their visitors that the ward manager has the final say on what food is allowed or is acceptable for that patient.
- Information booklets available in bedside lockers.
- Locker checks by nurses to check for stored high risk food.
- The policing/control of the 24 hour sandwich feeding provision to allow for good traceability as it establishes a food history during out of hours feeding. This includes a signing in/out procedure.
- If not used or leftover, then foods are disposed of.
- Ability to store residents' food histories which will improve traceability and ease the investigating process should an outbreak of foodborne illness occur.
- Foods being left out at ambient temperatures for very short periods, if at all (e.g. during ward service times).
- HPA leaflets advising patients of food safety advice in hospital.

Areas of weakness observed

Similarly, where interviewers felt there were areas of weakness with regard to *L. monocytogenes*, these are summarised below:

FSMS

- The FSMS at two sites were not available for review by interviewer, either in existing or reviewed form.
- *L. monocytogenes* was not specified within several FSMS.
- For the Scottish system, the interviewer found the use of both target temperatures and critical limits in the FSAM system slightly confusing in their presentation and commented that potentially not all the Boards would be trying to achieve the lower temperature range, which defeated the object of standardisation.

Temperature control

- There were breaks in the cold chain where deliveries are made at one site when kitchen staff were unable to accept them and foods are subsequently being delivered into refrigerators but without temperature checks being made.
- The practice of early morning dairy deliveries at one site being put directly into the chiller by the delivery driver compromises the cold chain as temperature on delivery cannot be verified and products may have gone out of temperature control without knowing how long for or to what temperature.
- The cold chain was not maintained at one hospital site with sandwiches being kept out of temperature control for extended periods and then arriving at wards at unsatisfactory temperatures.
- There were occasional gaps in ward temperature monitoring records at one of the hospitals visited.
- The temperature of refrigerators at ward level is often only taken and recorded using the machine display.
- Unclear procedures for checking fridge/chilled trolley temperatures at ward level.
- At one hospital, the lack of temperature monitoring, cleaning and stock control checks of personal refrigerators that are in use in the private and oncology wards.
- Personal, bedside refrigerators in one site are not currently temperature monitored or contents checked by catering or ward staff.
- The lack of temperature control in one of the wards visited where foods had been left out on the side/in the microwave.
- The use of both fresh and frozen products to make cook-freeze pizzas in a warm kitchen at one caterer's facilities. Lack of time/temperature control during this process.
- The chilled pick and pack rooms in both caterers were operating above the target temperature of 5°C (one at 8°C, the other at 10°C).
- One of the caterers serving bought-in cook-chill meals was storing them in a separate fridge which was found to be running just below 5°C which is above the recognised guidelines of 0-3°C.

Shelf life

- Five day shelf life applied for cook-chill food however while cook-chill foods must be held at 0-3°C this is a potential risk area if refrigerated equipment cannot maintain such a temperature consistently.

Cleaning and disinfection

- Many of the healthcare caterers visited used sanitiser which appeared to have a five minute contact time at low concentration in order to be effective. This is of concern as it is not at all practical for catering staff to have to wait for a full five minutes between each task when trying to prepare meals for patients/residents, particularly in the smaller kitchens associated with the private care homes, private patients' ward kitchens or ward kitchens/pantry's.
- The structure of one of the hospital's catering areas were in very poor condition but was reported to be the subject of an ongoing capital expenditure project
- The method used for cleaning the drains/floors in the production areas of one hospital could result in bacteria from the floors/drains splashing onto equipment/food preparation surfaces.

Audits/inspections

- Few of the NHS Trust hospitals visited could confirm if the catering areas were included in Trust inspections, either by infection control team members, ward sisters or others. None of the independent retailers on site could confirm that they were monitored by NHS inspections.
- One interviewer commented that, on the surface, practices can appear to be very good, however a variety of weaknesses revealed themselves on closer inspection. This was evident by the level of detail in both internal audit reports as well as the EHO report, neither of which had picked up on the issues noted during the interviewer's visit. This lack of detail may indicate a need for training with EHOs and auditors with regard to the significant issues around *L. monocytogenes* and a need for a more focussed inspection process.

Patient food service

- A catering manager at a site that has experienced an outbreak of listeriosis noted that the ward sisters (who are in charge of everything on the ward, including kitchens and checking completion of monitoring records) still do not view catering facilities and the practices in them as part of their remit, although it clearly is defined as such. This manager described an ongoing struggle between catering and the majority of ward sisters in terms of them checking that due diligence monitoring had been undertaken.
- Few of the NHS Trust hospitals visited could confirm how patient food histories are recorded at ward level as this is carried out by nursing staff. A NHS hospital visited, which experienced an outbreak of listeriosis several years ago, commented that one of the reasons the outbreak investigation results were ultimately inconclusive was because patient feeding chart completion had been very patchy and inconsistent by nursing staff. The catering manager observed that he could not confirm if this had improved as he did not have control or access to such information.
- Commonly no known control over what patients can keep in their bedside lockers (and refrigerators, where provided).
- Commonly a lack of information/guidance provided to patients and their visitors at some sites regarding foods being brought in for patients from outside the hospital or from other catering/retail sites within the hospital.
- The lack of temperature monitoring of foods brought in for patients by visitors or checks as to how it was produced, etc.
- The lack of checks of bedside cabinets in wards to check that temperature-sensitive foods are not being stored there and the lack of guidance regarding this matter.
- Several foods are served which are *L. monocytogenes* susceptible and therefore present a risk to vulnerable patients.
- Commonly a lack of controls in the restaurant and other retail areas regarding patients taking foods back to the ward or preventing vulnerable groups from eating *L. monocytogenes* susceptible foods (guidance is provided by dietitians, however they do not accompany patients to eat/choose foods).

Training and awareness

- It was not clear from visits to most hospitals what level of food safety training nursing staff received and nurses are often involved in feeding or preparation of snacks. They are also responsible for fetching and serving snack boxes for patients where these or their equivalent are provided.

- Very few organisations visited provided their staff with specific training on *L. monocytogenes*. Training does not commonly include information as to the severity of listeriosis to at-risk patients.
- Across all sites visited it was noted that those sites where managers had undertaken Level 4 training appear much better focussed towards *L. monocytogenes* than those without. Managers at one of the NHS England hospitals visited noted that they felt they only received the level of detail of training in *L. monocytogenes* they require at Level 4. The executive chef at the private hospital noted that he had reviewed a number of practices since undertaking Level 4 training and felt he had a better understanding of food safety at the level required since this training.

Discussion

Variable standards were identified in terms of food safety practices to control *L. monocytogenes*.

Good practices were particularly prevalent in the hospitals that have had incidents with listeriosis, and where EHOs had taken a close interest and provided detailed support. These hospitals have updated their FSMS to include more detail as to appropriate controls for *L. monocytogenes* and who undertake more rigorous self-scrutiny.

Information was gathered as far as practicable. Limitations included limited availability of personnel available for interview at some sites, and a limited number of site visits to private hospital and care homes. Furthermore the care home and private hospital had FSMS in place written by the project authors. Whilst the site visits to the care home and private hospital may not be completely representative, nevertheless these site visits provide worthwhile insight into practicable controls, good practices and potential areas for weakness in care home and private hospital settings.

The fact that all sites volunteered to host site visits meant that sites with the highest standards and/or with management with the highest levels of interest in the subject may have been those most likely to volunteer and/or agree to participate.

The survey results will also provide further insight into current practices in place in care homes, private and Trust hospitals.

Conclusion

Research into current practices in place within healthcare organisations to reduce the risk of listeriosis has provided useful information to consider and upon which to build the guidance. The research has identified areas of tried and tested good practice and common weak areas for which the guidance provides an opportunity to strengthen.

The interviewers are very grateful to the healthcare organisations for their assistance with this research.

Appendix 1 – Brief for site visits to healthcare organisations

Introduction

The overall purpose of this FSA project is to draft guidance to provide healthcare organisations with practical, comprehensive and effective advice on what measures to include in their food safety management system, in order to reduce the risk of Listeriosis.

Research will be undertaken as part of the project prior to drafting the guidance, and includes:

- Research into current practices in place in relation to management and control of *Listeria monocytogenes* via site visits with healthcare establishments
- Research into previous outbreaks, including causes and lessons learned

This brief is designed for those carrying out site visits so that they are clear as to the purpose of the site visits, approach to take, information to gather, and how to record the results. Site visits shall comprise: interviews, observations and collection of documentation. It is intended that the guidance produced as a result of this project is as comprehensive and practical as possible, and therefore the input and support of healthcare organisations will help ensure this is achieved.

Objectives

The Objectives of the site visits/interviews are:

1. To ascertain current practices in relation to *Listeria monocytogenes*.
2. To flag up any examples of 'good practice' which may be considered for (adaption and) inclusion in the draft guidance.
3. To identify any additional risk areas for *Listeria monocytogenes*, and suggested controls.
4. Where applicable to gain information on causes of previous outbreaks and measures in place to reduce the risk of recurrence

The site visits should look at all routes by which food can be provided to patients/residents to include:

- Public restaurant
- Coffee shops
- Food retailers
- Main patients catering
- Special diets
- Vending
- Food brought in by patients and their visitors

Method

Site visits will be carried out to a variety of healthcare organisations. During site visits, interviews will be conducted with key managers, observations will be made and documentation gathered.

Interviewers

Visits to healthcare organisations will be undertaken individually by the following participants in this FSA project:

- Hilary Byrne, EHO, Belfast City Council
- Dr Anita Eves, Reader in Food Management, The University of Surrey
- Fiona Sinclair, Director, STS

Additional interviewers may be appointed in prior agreement with the FSA Project Officer. Interviewers have different backgrounds, yet all have a good foundation knowledge of *Listeria monocytogenes*. It is envisaged that the different perspectives that the interviewers have will be of benefit to the project.

Interviewers must have regard to provisions set out within the [Joint Code of Practice for Research \(JCoPR\)](#).

Pre visit information

STS will send the key contact at the site a questionnaire regarding current practices in relation to the management and control of *Listeria monocytogenes*. The recipient will be requested to complete and return the completed questionnaire prior to the site visit, in consultation with colleagues where necessary. A copy of the completed questionnaire will be provided to the interviewer to read in preparation for the site visit. The interviewer should identify any responses which require clarification during their site visit. The main contact will also be sent a copy of the project brief for participating organisations, a 'what to expect' email and consent form for signature when on site.

Approach

The interviewers are encouraged to take a collaborative approach to the interviews, and work alongside the healthcare organisations. *Confidentiality*

Interviewers will appreciate that the information collected during interviews is confidential and with the exception of STS not to be discussed with a third party.

Although healthcare organisations will be advised prior to the visit that interviews are confidential interviewers are requested to reassure this during the opening meeting with **each** interviewee. Whilst information gathered by the site visits may be published in support of the guidance, no individual respondents or organisations will be identified. Each interviewee should be asked to read and sign the consent form whilst on site.

Equipment

Interviewers are requested to take protective clothing, calibrated probe thermometer and probe wipes.

A Dictaphone can be used to record the interviews if agreed with the healthcare organisation. Alternatively, written notes can be taken if preferred by the interviewer and/or interviewee.

Interviewees

It is envisaged that site visits will be conducted to represent at least one each of the following:

- NHS Trusts in England, Northern Ireland, Scotland and Wales
- A variety of types of NHS healthcare catering (i.e. cook-chill, traditional cook etc.)
- Contract caterer in healthcare
- Care homes
- Private hospitals
- NHS Trusts with experience of listeriosis outbreak

The interview dates will be arranged by STS and the healthcare organisation. The healthcare organisations will be made aware of the scope of the site visit and that

interviews will be beneficial with others in addition to the main contact for catering, for example the person(s) overseeing special diets, infection control, food safety training, food purchasing, contracts with on-site caterers and retailers.

The interview/site visit

One day will be allowed on site; however the visit may take less time depending on findings.

Opening meeting

A brief opening meeting should be held, to include at least:

- Introductions
- Objectives of site visit
- Reminder regarding confidentiality and signature of consent form
- Plan for the day – best timings to observe key activities and speak with key personnel
- Preferred method of recording (written/Dictaphone)
- Complete organisational information to gain scope of operation (see interview questions)

Interviews

The interviews will be conducted using the interview questions as a framework (see separate document). The interviews can be conducted during the walk of the site, or separately as the interviewer (and interviewees) deem most efficient and appropriate.

The interview questions provided are a guide only. The interviewer may use their judgement to ask additional questions, and the nature of the operation may mean that some questions are not applicable.

Observations

As well as gathering information via interviews, an important purpose of the site visit is to observe the operation. This will provide the interviewer with an opportunity to assess the food safety system in practice, practicality of controls, flag up unidentified risk areas etc.

Timings should be organised so that key aspects of the operation can be observed wherever possible, for example sandwich/salad preparation, ward service, restaurant service etc.

Any observations and additional comments should be noted and recorded in the relevant section of site visit report.

Documentation

Copies of documentation should be requested as indicated in the interview questions. These may be provided to the interviewer as hard copies or electronic copies. The interviewer may consider it appropriate to request additional documentation which may be of interest to the project.

Closing meeting

A brief closing meeting should be held, to include at least:

- Thanks
- Confirm any documentation to be sent to the interviewer/other action points following the meeting
- Confirm arrangements for telephone contact of any personnel not present during site visit.

Results

It would be appreciated if the interviewers can document the findings of the interviews/site visit report as soon as practicable, but no later than 31st January 2014.

Please provide the following:

- Write up of site visit interview questions and observations
- Copies of healthcare organisations documents (electronic or hard copies)
- Overview of outbreak including summary of causes (if applicable)
- Summary of lessons learned from outbreak (if applicable)
- Signed consent form

Many thanks for your help!

Appendix 2 – Pre-questionnaire - survey

Organisational information

1.Type of organisation:

NHS Trust *

Individual private hospital *

Group of private hospitals **

Individual nursing home *

Group of nursing homes **

Individual residential home (elderly) *

Group of residential homes (elderly) **

Assisted living development *

Day care centre (elderly)

Contract caterer to healthcare organisations ***

Other (please specify): _____

* Drop down list for size of operation:

0-25 beds

26-50 beds

51-100 beds

101-500 beds

501-1000 beds

1001+ beds

** Drop down list for size of operation:

0-10 sites

11-25 sites

26-50 sites

51-100 sites

101+ sites

Followed by drop down for average size of each site – see above *

***Drop down for contract caterers (select more than one if applicable):

Cater for NHS Trusts

Cater for private hospitals

Cater for residential homes (elderly)

Other (please

specify): _____

2.Type of catering provided for patients/residents (select more than one if necessary):

Traditional cook – bulk

Traditional cook – plated

Cook-chill – bought in

Cook-freeze – bought in

Cook-chill - produced on site
Cook-freeze - produced on site
Steam/vacuum - plated – bought in
Other (please specify): _____

3. Who undertakes the catering for patients/residents?

Staff employed 'in house'

Contract caterer

If contract caterers, are you the contract caterer?

Yes

No

4. In which part of the UK is your organisation situated (select more than one if necessary)?

England

Northern Ireland

Scotland

Wales

Food Safety Management System

5. Does your organisation have a documented food safety management system based on HACCP principles?

No

Yes

If yes please specify:

Safer Food Better Business

Cook Safe (Scotland)

Safe Catering (Northern Ireland)

Other (please specify): _____

6. In terms of the scope of your food safety management system, which of the following does it incorporate (select more than one if necessary)?

*Please note: **Foods which may present a higher risk of listeriosis are generally ready-to-eat, able to support the growth of *Listeria monocytogenes* and are stored under chilled conditions.** *Listeria monocytogenes* has been found in a variety of foods (e.g. cooked sliced meats, smoked salmon, shellfish, cooked meat and poultry, pâté, sandwiches, some soft mould-ripened cheeses, prepared and dressed salads, pre-cut fruit) although other foods can also be affected.*

Higher risk food provided to patients/residents by the catering department

Yes

No

Don't know

Higher risk food provided by the catering department within restaurants and coffee shops

Yes

No

Don't know

Catering department do not have restaurant/coffee shop(s)

Higher risk food provided by contract caterers on site

Yes

No

Don't know

No contract caterers

Higher risk food provided by independent retailers on site

Yes

No

Don't know

No independent retailers

Higher risk food provided by charity based shops on site

Yes

No

Don't know

No charity based shops

Higher risk food provided in vending machines on site

Yes

No

Don't know

No higher risk vending machines

Food provided to patients by nurses, care staff, volunteers, housekeepers etc.

Yes

No

Don't know

Special dietary foods provided e.g. dietary supplements

Yes

No

Don't know

7.Does your documented system specifically refer to listeriosis/*Listeria monocytogenes*?

Yes in detail

Yes a little

No

Don't know

8.When did your organisation last review, and where necessary update your documented food safety management system to ensure it is up to date and reflective of your operations?

Within the last year

Within the last 2 years

Within the last 3 years

More than 3 years ago

Not applicable (no system in place)

Don't know

Purchase

9. How does your organisation purchase **higher risk** foods (as outlined above) (select more than one if applicable)?

Purchase via national purchasing organisation(s), please specify: _____

Purchase via regional purchasing organisation(s), please specify: _____

Purchase from a company nominated supplier list

In house purchasing department

Local purchasing

Emergency purchasing from supermarkets

Other (please specify): _____

10. Are there clear policies in place for purchase in terms of ensuring the food safety of higher risk food suppliers?

Yes

No

Don't know

If yes, please specify the minimum requirements (select more than one if applicable):

Third party certification

o BRC

o STS Public Sector

o SALSA

o Other (please specify): _____

Food safety questionnaire

Request for EHO report

Request for copy of documented food safety management system/HACCP

Site visits by your organisations

o If site visits are carried out by your organisation please specify qualifications of auditor _____

Other - please specify _____

Don't know

If yes, do the requirements for suppliers apply one step back in the supply chain, or further back in the chain?

One step back

Up to two steps back

More than two steps back

Other (please specify): _____

11. Does your organisation have microbiological specifications in place for suppliers with regard to acceptable levels of *Listeria monocytogenes* for higher risk foods?

Yes

No

Don't know

If yes please specify acceptable levels: _____

12. Do you have a clear procedure in place for reporting food safety related complaints relating to suppliers?

Yes

No

Don't know

If yes please specify: _____

Training and awareness

13. Were you aware that there have been outbreaks of listeriosis linked to higher risk foods such as sandwiches and cooked meats in healthcare settings?

Yes

No

14. Are you aware of the Food Standards Agency leaflet 'Preventing listeriosis in hospitals and nursing/care homes'?

Yes

No

15. How adequate would you rate the food hygiene training in place within your organisation in terms of controls such as temperature, shelf life, cleaning and disinfection and personal hygiene?

Please rate:

1 = Extremely adequate

2 = Adequate

3 = Neither adequate or inadequate

4 = Inadequate

5 = Extremely inadequate

Catering staff

1 2 3 4 5 Not applicable

Porters

1 2 3 4 5 Not applicable

Nursing and care staff

1 2 3 4 5 Not applicable

Housekeepers

1 2 3 4 5 Not applicable

Managers

1 2 3 4 5 Not applicable

16. Does the food hygiene training provided make specific reference to listeriosis/*Listeria monocytogenes*?

Yes in detail

Yes a little

No

Don't know

Shelf life

17.If your organisation makes patients'/residents' sandwiches on site, what shelf life do you allow?

Not applicable (sandwiches not produced on site)

Use on date of production

Date of production plus one day

Date of production plus two days

Date of production plus three days

Other (please specify): _____

Don't know

18.If your organisation purchases sandwiches pre-packed for patients/residents, what shelf life is given by the manufacturer?

Not applicable (sandwiches not purchased prepacked)

Use on date of production

Date of production plus one day

Date of production plus two days

Date of production plus three days

Date of production plus four days

Date of production plus five days

Other (please specify): _____

Don't know

Temperature control

19.What is your organisation's policy for the maximum temperature of higher risk foods at the following stages of your operation?

Stage	3°C or colder	5°C or colder	8°C or colder	10°C or colder	Other - please specify	Don't know	NA
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Delivery

Refrigerated storage

Chilled

preparation room

Internal

transportation

Display e.g.

salad bars,

display cabinets

Vending

Ward/

pantry refrigerators

Appendix 3 – Amended on-site questionnaire and observations

Contents

1. Organisational information
2. Food safety management system
3. Purchase
4. Training and awareness
5. Sampling
6. Audits/inspections
7. Outbreak control
8. Shelf life
9. Temperature control
10. Cleaning and disinfection
11. Cross contamination
12. Personal hygiene
13. Patient food service
14. Restaurant/coffee shops/vending
15. Special diets
16. Contract caterers
17. Independent retailers
18. Interviewee comments
19. Interviewers summary
20. Observation checklist
21. Documentation checklist

The main contact at the site is likely to be the manager who oversees the catering. In addition to interview of the main contact, it may be appropriate to interview the following managers/directors:

- Nursing (e.g. questions regarding training, personal hygiene, patient food service, special diets)
- Domestic/housekeeping (e.g. questions regarding training, personal hygiene, patient food service)
- Purchasing (e.g. questions regarding purchasing, contractors)
- Contracts officer (e.g. questions regarding purchasing, contractors)
- Human resources (e.g. questions regarding personal hygiene, training)
- Control of Infection (e.g. questions regarding outbreak control)
- Retail Manager (e.g. questions regarding independent retailers)
- Manager of contract catering (e.g. food safety questions and questions regarding contract caterers)

Observations to be made where possible by interviewer are highlighted below in **green**, and listed under observation checklist.

Copies of documentation to be obtained where possible by interviewer are highlighted below in **blue**, and listed under documentation checklist.

1. Organisational information

Interviewer name:

Name of organisation:

Scope of operation (e.g. patient feeding, maternity wing, cancer centre, coffee shops, retail outlets, vending, public restaurants):

Details of organisational structure (or please obtain organisational chart):

Person(s) interviewed	Job title and food safety responsibilities	Contact details	Signed consent form?

2. Food safety management system

Interviewer to examine documented HACCP plan and food safety management system.

- How was the documentation developed (e.g. who by and how?)
- How comprehensive, relevant and in depth is the documentation?
- How and when is the documentation reviewed and updated?
- What does the system specifically cover in relation to *Listeria monocytogenes*?
- Are food safety responsibilities of senior management clearly identified?
- How is the system communicated/staff trained?
- Does the interviewee feel there are any deficiencies in the current system?

If possible verify awareness/training of personnel during the audit.

If possible please obtain copy of HACCP plan/food safety management system

Additional comments:

3. Purchase

Auditor to observe a delivery if possible.

In practice, what procedures are in place to ensure the food safety of food supplied into the organisation?

- How far back in the process do any food safety checks of suppliers go e.g. distributor, manufacturer, and suppliers to manufacturers?
- What is the procedure for reporting food safety related complaints relating to suppliers?
- How are new suppliers appointed in terms of food safety checks, and what happens if a supplier is suspended?
- Do suppliers provide microbiological sampling results and if so what is in place for reviewing these?
- What happens if a delivery arrives too early, or outside acceptable temperatures etc.?

Where possible verify the findings during the audit, e.g. select a supplied product to check approval status of supplier, question delivery reception staff on rejection procedure etc.

If possible please obtain copy of purchasing policy, nominated supplier list and supplier complaints procedure

Additional comments:

4. Training and awareness

Observe food hygiene practices by staff and management

What happens in practice regarding food hygiene training for different types of food handler?

- Please include frequency, level (e.g. essentials, awareness, level 2, 3, 4 etc) and method (e.g. elearning, classroom based).
 - Catering staff
 - Porters
 - Nursing and care staff
 - Housekeeper
 - Managers
 - Bank/agency/casual staff
 - Other
- What reference, if any, does the food hygiene training provided make specific reference to *Listeria monocytogenes*?
- How long is a new member of staff in post before provided training on food safety?
- How often is refresher training provided?

Additional comments and/or observations:

5. Sampling

Details of any food sampling in place:

- Results for last year:
- What corrective action procedures are in place for unsatisfactory results?
- What accreditations are held by laboratory?

Please obtain policy and results from last year if possible

Additional comments:

6. Audits/inspections

Details of any internal and/or external audits with a food safety element in place:

Who	Frequency	Areas covered	Aspects of food safety covered?

- Details of last EHO inspection:
- Do Control of Infection personnel inspect the food handling areas of the hospital and if so what areas?
- Have audits/inspections identified any issues on terms of Listeria?

Verify during the audit that corrective action has been taken

If possible please obtain a copy of last EHO inspection report

Additional comments:

7.Outbreak control

What procedures are in place for dealing with a report/outbreak of food borne disease?

- Who is involved in investigating a case of alleged food poisoning?
- Have there been any cases or outbreaks of Listeriosis? Provide details regarding causes, action taken etc.:
- What procedures are in place for traceability?
- What procedures are in place for product recall?
- Has a recall been carried out? Provide details regarding causes, action taken etc.:

Obtain copies of procedures if possible

Additional comments:

8.Shelf life

Observe date labelling of foods in all areas such as storage, display, service

What happens in practice with regard to date labelling, shelf life and disposal of out of date food?

Include shelf life given to products decanted from original packaging and any specific controls in respect of food susceptible to Listeria:

Please obtain copy of date labelling procedure if possible

Additional comments and/or observations:

9.Temperature control

Observe the cold chain temperature control of foods in all areas such as storage, preparation, dispatch, transportation, service and display

Observe salad/sandwich preparation

What happens in practice with regard to temperature control and monitoring including corrective actions?

- What time/temperature control and monitoring is in place during high risk food preparation (e.g. salad and sandwich preparation) and cooling?

- What procedures are in place if a fridge or freezer isn't maintaining food at the correct temperatures?
- What happens to the food that exceeds established temperatures?

Observe the temperature control of hot foods in all areas such as storage, preparation, dispatch, transportation, service and display

- What is the organisation's policy for the maximum temperature of high risk foods at the following stages of the operation?

Hot	°C
Cooking	
Reheating	
Regeneration	
Hot holding	
Other	

Temperature checks carried out by interviewer:

Additional comments and/or observations:

10. Cleaning & disinfection

In practice what procedures are in place for cleaning and disinfection?

Observe cleaning and disinfection of food contact equipment

Include (where applicable):

- Cleaning plan in place
- Is a commercial supplier of cleaning materials contracted?
- Does the supplier provide training to staff on correct use of chemicals
- What other training on cleaning and chemical use is provided
- Colour coded system in place for cleaning equipment
- How is food contact equipment such as blenders used for purees cleaned and disinfected?
- Details of sanitizer in use
- What policies and procedures are in place for monitoring temperatures of dishwashers – main kitchen and wards?
- Are professional deep cleans carried out for structure and equipment (e.g. what frequency)?

Additional comments and/or observations:

11. Cross contamination

What procedures are in place to avoid cross contamination from raw to ready to eat foods?

Observe cross contamination controls in place

Include (where applicable):

- Is separate equipment used for raw and ready-to-eat foods?
- Is there a colour coded system in place for chopping boards and knives?
- How is food contact equipment such as knives and chopping boards cleaned and disinfected?
- How are areas for preparing high risk foods separated from preparation of other foods

Additional comments and/or observations:

12. Personal hygiene

Observe personal hygiene practices in place e.g. hand washing, protective clothing worn, and glove use

What policies are in place for personal hygiene?

Include (where applicable):

- What is the policy for reporting illness?
- What is the procedure for return to work following illness?
- Is designated protective clothing provided for high risk food handling for example salad and sandwich preparation?
- Are disposable gloves used and if so for what purpose?

Additional comments and/or observations:

13. Patient food service

What procedures are in place to ensure food safety at ward level/during patient food service?

Observe patient food service in at least three wards, including examination of the ward pantry.

- What procedures are in place for temperature monitoring and recording of ward/pantry refrigerators?
- What procedures are in place for date labelling and disposal of food in ward/pantry refrigerators?
- If patients/residents are provided with their own personal refrigerators, what monitoring is in place?
- Where are cold high risk foods e.g. sandwiches, salads kept during food service?
- How are high risk foods disposed of?
- What arrangements are in place for 24 hour feeding (e.g. snack boxes) and associated controls?
- Do nursing/ward/domestic staff prepare food for patients/residents?
- Are patients/residents allowed to use the ward kitchen/pantry?
- What procedures are in place for temperature/time control of hot foods?
- Are takeaway outlets allowed to deliver direct to patients/residents?

Please request copies of any written guidance/policies etc. e.g. for patients bringing in own food etc.

Temperature checks carried out by interviewer:

Additional comments:

14. Restaurants/coffee shops/vending

Observe lunch service in restaurant, coffee shop and observe high risk vending machine(s)

What procedures are in place for temperature/time control and stock control in restaurants/vending/coffee shops?

Temperature checks carried out by interviewer:

Additional comments/observations:

15. Special diets

What foods are provided for patients with special diets and what controls are in place?

- Does the organisation provide guidance to specific patients/residents on what foods should be avoided due to *Listeria monocytogenes*? If so please provide detail:

Additional comments and/or observations:

16. Contract caterers

Details of contract caterers on site and how do the organisation ensure the food safety of contract caterers:

- What contractual agreements are in place with contract caterers regarding food safety?
- What monitoring of the contract caterer is undertaken by the Trust/hospital/home?
- In terms of purchase of high risk food by contract caterers, what system do they have in place to ensure the safety of their suppliers of high risk food?
- What procedures does the retailer(s) have in place with regard to reporting food complaints?

If possible please obtain copy of relevant documents

Additional comments and/or observations:

17. On site independent retailers

Visit any shops on site selling high risk foods such as pre-packed sandwiches – check cabinet temperature and dates

Details of independent retailers on site and how do the organisations ensure the food safety of independent retailers?

- What contractual agreements are in place with independent retailers regarding food safety?
- What monitoring of the retail outlets is undertaken by the Trust/hospital/home?
- In terms of purchase of high risk food by independent retailers, what system do they have in place to ensure the safety of their suppliers?
- What are the temperature controls and monitoring are applied?
- What shelf life is used by for pre packed sandwiches?
- What procedures are in place for the removal and disposal of date expired product?
- What procedures does the retailer(s) have in place with regard to reporting food complaints?

Temperature checks carried out by interviewer

If possible please obtain copy of relevant documents

Additional comments and/or observations:

18. Interviewees comments

Any comments by the interviewee:

What would the interviewee(s) like to see in the guidance?

19. Interviewers summary

Please summarise findings from the visit, in particular:

- Good practices identified in relation to control and management of *Listeria monocytogenes* which may be considered for (adaption and) inclusion in the draft guidance.
- To identify any risk areas for *Listeria monocytogenes*, and suggested controls.
- Areas that require further investigation
- Where applicable to summarise key causes of previous outbreaks and key measures in place to reduce the risk of recurrence

20. Observation checklist

Section	Observation	Observed? Yes/No
3 - Purchase	Delivery	
4 - Training and awareness	Food handling practices	
8- Shelf life	Date labelling of foods	
9 – Temperature control	Cold chain	
9 – Temperature control	Sandwich/salad preparation	
9 – Temperature control	Hot temperatures	
10 - Cleaning & disinfection	Cleaning and disinfection of food contact equipment	
11 - Cross contamination	Cross contamination control during raw preparation	
13 - Patient food service	Food service – at least 3 wards	
14 - Restaurant/coffee shop/vending	Time/temp controls and stock control: Restaurant Coffee shop Vending	
17 - On site independent retailers	Time/temp controls and stock control	
Other		

21. Documentation checklist

Section	Documentation	Examined? Yes/No	Copy provided/ requested?
1-Organisations info	Organisational chart		
2-Food safety management system	Food safety management system/HACCP		
3-Purchase	Purchase policy Nominated supplier list Supplier complaint procedure		
5-Sampling	Sampling policy Sampling results		
6-Audits/inspections	EHO inspection report		
7-Outbreak control	Outbreak procedure Traceability and product recall procedures		
8-Shelf life	Data labelling procedures		
13-Patient food service	Written guidance for patients Written guidance for staff		
15-Special diets	Written guidance to patients		
16-Contract caterers	Food safety elements of contract Purchase policy		
17-Independent retailers	Food safety elements of contract Purchase policy		
Other			

Appendix 4 – ‘What to expect’ email

Subject: Site visit – what to expect

Dear [enter name],

Thank you for agreeing to be participants in this research project.

The purpose of the project, which STS have been appointed by the FSA to undertake, is to provide guidance for healthcare organisations to reduce the risk of Listeriosis. Please find attached the project brief. Just to confirm the meeting in March for participants is [enter date] at the University of Surrey.

Prior to drafting the guidance, we are undertaking site visits to help ascertain current practices in place in healthcare organisations, and gather examples of good practice. Information gathered from site visits will help to ensure that guidance drafted is as comprehensive and practical as possible for healthcare organisations.

The site visits will include discussion (‘interviews’), and a walk of the operation in order to gain an understanding of current practices in relation to Listeria control. The questions will encompass hospital wide procedures, so it would be ideal if we can speak to the managers in charge of catering (yourself), and with other key managers (e.g. lead for nursing, control of infection, dietitian, retail manager). In terms of observation, it will be particularly important for us to observe resident/patient meal service, as well as key activities as sandwich/salad preparation. We are looking to gather examples of best practice so it may be helpful, if you are in agreement, for us to have copies of some documentation.

The visit is likely to take at least half a day on site. To save time whilst on site, please find attached a pre-questionnaire which we would very much appreciate for you to complete and return prior to the visit (I know that timescales are tight – apologies).

To confirm, your site visit is arranged for [enter date and time].

Your site visit will be undertaken by [enter details].

Please also find attached a consent form which explains confidentiality and data protection in relation to this project. If those managers we shall be speaking with would kindly read the consent form, we can seek signatures on the day of the site visit.

Thank you again for agreeing to participate – it is much appreciated.

Please let me know should you have any questions.

Kind regards,
Fiona Sinclair
Director

Willey Mill House, Alton Road, Farnham, Surrey, GU10 5EL
Office: 01252 728300 **Mobile:** 07715 749129 **Fax:** 01252 734121

NEW Website: www.sts-solutions.com

Appendix 5 – Site visit consent form

Dear Participant,

Thank you for agreeing to host a site visit in order to assist STS to gather information for the above project, the purpose of which is to provide guidance for healthcare organisations to reduce the risk of Listeriosis.

This study is being undertaken by STS and funded by the Food Standards Agency (FSA), a central government department.

The site visit will help to ascertain current practices in place in healthcare organisations, and provide examples of good practice. Where site visits are carried out to sites which have experienced a Listeria outbreak, the visit will also look at the causes of the outbreak and lessons learnt. Information gathered from site visits will help to ensure that guidance drafted is as comprehensive and practical as possible for healthcare organisations.

Your establishment identity and personal details will remain confidential, held securely and destroyed within two years of completion of the project (in accordance with the Data Protection Act 1998).

From the information gathered during site visits, STS intend to submit reports to the FSA regarding current practices and previous outbreaks. These reports will not identify specific organisations or individuals. For each individual person, participation is voluntary.

Please sign below to confirm that you understand the above and are willing to be involved:

Name	Job title	Signature	Agree to be recontacted?

Re-contact information

The FSA, or research organisation acting on their behalf, may wish to re-contact you in the next 12 months to ask further questions about the research or invite you to take part in future research on this subject. There would be no obligation for you to take part.

Would you be willing for your contact details (name, email address and telephone number) to be passed to FSA, or a research organisations acting on their behalf, so they can contact you for further research? The information will be used for research purposes only.

Please sign below to confirm that you understand the above and are willing to be re-contacted:

Name	Email	Tel. no.	Signature

Many thanks for your assistance with this project.

Yours faithfully,
Fiona Sinclair
Project Leader, STS