



Public Health
England

Protecting and improving the nation's health

2014 to 2015 report of UK National Reference Laboratory for food microbiology

Activities for *Listeria monocytogenes*, coagulase-positive staphylococci, *Escherichia coli* (including VTEC), campylobacter, salmonella and antimicrobial resistance

April 2014 to March 2015

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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Introduction

Public Health England (PHE – a successor organisation to the Health Protection Agency) was awarded the contract to provide the service of the UK's National Reference Laboratory (NRL) for food microbiology by UK's competent authority, the Foods Standards Agency (FSA) under EU regulation 882/2004 for the following work areas: *Listeria monocytogenes*, coagulase positive staphylococci, *Escherichia coli* (incl. VTEC), campylobacter, salmonella and antimicrobial resistance.

This report summarises the activities of the NRL between April 2014 and March 2015 covering secretariat services, advice and representation within the UK/EU and method development, audits and ring trials as part of the core functions listed in Table 1 below.

Table 1. PHE NRL core functions, April 2014 to March 2015

Core Function	Description
1.1	Disseminate information/advice supplied by the EURLs to FSA, OCLs and other UK laboratories in a timely and effective manner
1.1	Engage with the Scottish reference laboratories and ensure information flows from the EURL meetings
1.2	Co-ordinate the OCL User Day to update UK OCLs and other relevant UK laboratories to the NRL core functions
1.3	Maintain a mechanism for disseminating information by expanding information on the NRL webpages
1.4	Provide regular updates to the FSA on NRL activities by producing monthly reports
1.5	Establish food methods archive on NRL website
1.6	Maintain OCL accreditation list using audit data
2.1	Provide impartial expert advice to FSA, OCLs and other UK laboratories, upon request and establish and maintain a food examiner and an expert witness register, to be available to OCLs
2.2	Represent the UK at relevant EURL meetings, consult FSA prior to meetings and submit an internal report after attendance of meetings
2.3	Attend training workshop at the VTEC EURL for identification of the different groups of pathogenic <i>E. coli</i> (organised by EURL, ISS, Rome)
2.3	Participate and contribute to the scientific input at EURL meetings that support UK policy
2.4	Implement the UK coordination of the food aspect of the EU-wide AR monitoring (Decision 2013/652/EU), liaising with FSA, OCLs relevant reference laboratories and AHVLA
2.5	Keep abreast of methodology developments and advise FSA and OCLs
2.5	Prepare a list of reference facilities, including charging policies, for submissions of culture for all OCLs
2.5	Advise FSA on draft proposal relating to review of EU Regulation 882/2004

2.6	Establish links with the BSI AW9 microbiology committee
2.6	Identify and inform FSA and OCLs of emerging analytical issues or developments supporting the implementation of the amendment to Regulation 2073/2005 for detection of VTEC in sprouted seeds
2.7	Assist the FSA of a process for competent authority approval of methods under Article 5 (5) para 4 of Reg 2073/2005
3.1	Participate as UK-NRL in ring trials including method comparison or validation studies and other initiatives organised by the EURL (on-going) and report to FSA
3.2	Liaise with VLA, audit and review strategy for harmonisation of existing antimicrobial resistance testing
3.3	Organise training workshop for campylobacter isolation, detection, identification and enumeration
3.4	Liaise with FEPTU and monitor OCL's comparative testing performance
3.4	Produce reference materials for RT-PCR detection of VTEC genes for OCL availability
3.5	Report on outcomes of comparative testing and assist OCLs in the implementation of corrective measures

Core function one: Secretariat services

Maintain NRL web presence

Transfer of the UK National Reference Laboratory for Food Microbiology web pages from Health Protection Agency (HPA) to Public Health England occurred in August 2014. While there was a temporary loss of information and linking of NRL documents, this has now been re-established. At the time of writing, the website comprises general information about the NRL, expert witness information, contact details and 11 NRL documents. There are future plans to expand the NRL web presence by creating separate pages for each of the activities: *Listeria monocytogenes*, coagulase positive staphylococci, *Escherichia coli* (incl. VTEC), campylobacter, salmonella and antimicrobial resistance.

The website address is <https://www.gov.uk/government/collections/uk-national-reference-laboratory-for-food-microbiology>. For ease of access, official control laboratories (OCL) and other stakeholders are advised to use a search engine and type 'fwe nrl', as the NRL web page is normally the top hit.

Related to Core Function(s): 1.1, 1.3, 1.5.

Engage with the Scottish reference laboratories for *E.coli* and Salmonella

As the EU officially recognises the UK as one member state, it is important to notify the Scottish reference centres for *E. coli* and salmonella of any news or activities arising from the EURLs. The UK NRL therefore forwards any important information regarding EURL meetings, training or newsletters to the laboratories in Scotland. In addition, the director of the Scottish *E. coli* O157/VTEC Reference Laboratory and deputy director of the Scottish *Salmonella*, *Shigella* and *Clostridium difficile* Reference Laboratory were invited and presented at the OCL User Day in April 2014, to inform OCLs, the NRL, FSA and other relevant laboratories of their activities in Scotland.

Related to Core Function(s): 1.1, 1.3, 1.4

Co-ordination of 2014 NRL meeting (OCL user day)

A face-to-face meeting was held on the 23 April to inform the OCLs of the NRL's activities and update them on the EURL's work programmes. Preparations included drafting an agenda, confirming speaker's attendance and inviting OCLs and other stakeholders. Speakers were invited from the Food, Water and Environmental Microbiology Network (FWEMN), the Gastrointestinal Bacteria Reference Unit (GBRU), the Food and Environmental Proficiency Testing Unit (FEPTU) and the North East PHE Centre from PHE, the Scottish *E. coli* O157/VTEC Reference Laboratory, the Scottish *Salmonella*, *Shigella* and *Clostridium difficile* Reference Laboratory, and the UK ISO representative for food methods. Topics included news and activities from the respective European reference laboratories (EURL), the Scottish reference laboratories' activities, latest results from the European food microbiology legislation proficiency testing scheme, an update of ISO/CEN standards, and upcoming activities of the NRL (see Annex for agenda).

Forty participants attended from 12 OCLs, the Centre for Environment, Fisheries and Aquaculture Science (CEFAS), the Animal and Plant Health Agency (APHA; formerly the Animal Health and Veterinary Laboratories Agency), the FSA and other units of PHE. Participants were encouraged to ask questions and there were many fruitful discussions. A structured customer satisfaction survey revealed that feedback was positive; participants found the day very informative and a good opportunity to network, and all respondents (20/40 participants) stated they would recommend attending the user day to their colleagues. Participants were sent PDF versions of all the presentations for information; these can be made available on future request.

Related to Core Function(s): 1.1, 1.3, 1.4, 2.5, 2.6



Provide monthly reports on NRL activities

Monthly reports have been submitted to the FSA since April 2013 (see Annex). These are sent electronically to the FSA, along with an NRL document inventory, which is updated on a monthly basis. In addition, NRL representatives met with the FSA quarterly (18/06/2014, 23/09/2014, 02/12/14, 18/03/15) to discuss progress made, difficulties met and future activities (see Annex).

Related to Core Function(s): 1.4

Establish food methods archive on NRL website

Nine standard methods have now been re-formatted and approved via the Gateway process and reside as links on the NRL website (Table 2). To ensure harmonisation between these, the PHE in-house standard methods and the core ISO documents, updates using the quality management database will be performed quarterly. Other relevant standard methods have been identified that complement the NRL activities;

these will also be re-formatted and channeled through the Gateway process. In the interim, food methods written for the PHE FWEMN are available to OCLs upon request.

Table 2. List of standard methods archived on the NRL website, March 2015

Document No.	Title	Version No.	Effective Date
FNES8 [F12]	Enumeration of coagulase-positive staphylococci (<i>Staphylococcus aureus</i> and other species)	2	17/12/2013
FNES26 [F2]	Preparation of samples and dilutions, plating and sub-culture	1	02/06/2014
FNES3 [F8]	Enumeration of β -glucuronidase positive <i>Escherichia coli</i> : Pour plate method	3	17/12/2013
FNES22 [F19]	Detection and enumeration of <i>Listeria monocytogenes</i> and other listeria species	2	21/03/2014
FNES28 [F22]	Enumeration of B-glucuronidase positive <i>Escherichia coli</i> – most probable number technique	2	02/06/2014
FNES16 [F13]	Detection of salmonella species	2	03/03/2014
FNES15 [F21]	Detection and enumeration of campylobacter species	2	03/03/2014
FNES4 [E1]	Detection and enumeration of bacteria in swabs and other environmental samples	2	17/12/2013
FNES18 [Q4]	Guidance on public health response: involvement of PHE Food Water and Environmental Microbiology laboratory staff in the investigation of outbreaks of food or waterborne disease	2	12/03/2014

Related to Core Function(s): 1.5, 2.4, 2.7

Maintain OCL accreditation list

Following the 2013 OCL Audit, a list of all the tests requested was tabulated with accreditation status for each laboratory. To keep this list up to date, periodic checking of the UKAS website and specific email requests to the OCLs are performed. However, it is planned that a follow-up audit of the OCLs will be performed in 2015–16.

Related to Core Function: 1.6

Core Function Two: Advice and representation within the UK/EU

Provide impartial advice and establish a food examiner register

Specific requests for advice were received by the NRL between April 2014 and March 2015. These include comments concerning UK testing of lectins in food, advice on comparing alternative methods to ISO standards for listeria detection, comments on the 'Annexes on statistical and mathematical matters related to Principles and Guidelines for the Establishment and Application of Microbiological Criteria related to Foods', proficiency testing participation from private laboratories, training requests, a consultation of the building and infrastructure of a food microbiology laboratory, and a query regarding VTEC detection under ISO 13136 by a non-OCL.

In February 2015, the FSA notified the NRL of an FVO audit on the control of eggs and egg products in the UK. They requested information on the laboratory methods used and accreditation details for all the UK OCLs, which the NRL duly collated from the UK OCLs. In addition, the NRL, jointly with the PHE FW&E London laboratory, hosted the auditors for an afternoon where they collected detailed information on the following areas:

- laboratory accreditation certificates
- proficiency testing records
- staff Training records
- traceability records of samples
- interaction with NRLs in relation to egg and water testing (after isolation of organism)
- NRL interactions with OCLs

Initial feedback from the visit has been commendable to both the PHE FW&E London laboratory and the NRL. An official report will be produced by the FVO auditors in due course.

As requested by FSA and following the audit in 2013, detailed information on Food Examiner status was collated from each OCL as this would highlight any gaps in training and will enable the NRL to support the OCLs further. This was performed using an online survey and included obtaining named food examiners, the numbers of colleagues currently undergoing training, what sort of training they require and when they will be qualified food examiners. The results from fourteen food microbiology OCLs and two additional shellfish OCLs were collated and sent to the FSA. This resulting register will not be published.

Related to Core Function(s): 2.1, 2.5, 2.7

Provide appropriate training for scientific post

The scientist has attended the EURL workshops for antimicrobial resistance, salmonella and campylobacter, to understand the EURL activities and functions, and interact with the other NRL representatives within the EU. Additional meetings attended include a food examiner update, the Food and Water Microbiology Proficiency Testing International Meeting, and the UK NEQAS Microbiology Division Scientific Meeting (gastrointestinal infections theme), all in London.

Related to Core Function(s): 2.2, 2.3, 2.5, 3.1

Representation at relevant EURL meetings and prepare meeting reports

There has been at least one UK NRL representative attending all the relevant EURL meetings for *Listeria monocytogenes*, coagulase-positive staphylococci, *Escherichia coli* (incl. VTEC), campylobacter, salmonella and antimicrobial resistance for the time period of this report (see Table 3; names in red are NRL/PHE representatives). As agendas for the meetings are received, these are forwarded on to the FSA (see Annex). Individual meeting reports have been submitted to the FSA within two months after the meeting (see Annex).

In addition, presentations from the UK were made at the antimicrobial resistance, salmonella, campylobacter and *E. coli* meetings.

Table 3. List of EURL meetings, April 2014 to March 2015

EURL Meeting	Date: From	Date: To	Location	EURL funded	NRL funded	Guest/other
Antimicrobial resistance	07/04/2014	08/04/2014	Kongens Lyngby, Denmark	APHA turn	Shona Neal	Martin Day
Listeria	09/04/2014	11/04/2014	Teramo, Italy	Kathie Grant	Marilyne Harvey	
Salmonella	26/05/2014	27/05/2014	Zaandam, the Netherlands	Shona Neal	Nic Elviss	Elizabeth de Pinna
Coagulase positive staphylococci	04/06/2014	06/06/2014	Paris, France	Caroline Willis		
Campylobacter	29/09/2014	01/10/2014	Uppsala, Sweden	APHA turn	Shona Neal	

<i>E. coli</i>	20/10/2014	21/10/2014	Rome, Italy	Claire Jenkins	Frieda Jorgensen	
Listeria	25/03/2015	27/03/2015	Paris, London	Shona Neal	Corinne Amar	

Related to Core Function(s): 1.1, 2.2, 2.3

Attend training workshops at campylobacter and VTEC EURLs

The UK NRL was invited to attend the EURL for training in enumeration, detection and species identification of campylobacter following reports of adequate results for the 2014 EURL detection and species identification proficiency test (PT). One participant from the UK attended this training in November 2014 and, although the methods used at the EURL were very similar to ones employed in the UK, recommendations on how to handle the EQA samples to minimise cross contamination and additional tests to screen campylobacter were gained. Attendance at this workshop has enabled the UK NRL to be more confident in the appropriateness of the UK's testing methods for campylobacter.

The VTEC EURL invited applications to attend training at the EURL in Rome, Italy, in topics ranging from direct detection of VTEC in food to molecular typing using PFGE. The UK NRL submitted four applications in January 2014, and in February the EURL told the NRL that an applicant had secured a place to be trained in the 'identification of the different groups of pathogenic *E. coli*' in November 2014. The participant received training in the detection of pathotypes and vtx subtyping. As a result, the laboratory is validating the ETEC PCR by the EURL methods and found the training to be extremely valuable in helping update the methods to EURL standards. This has supported the NRL in expanding the repertoire of assays to detect other important *E. coli*, which cause chronic disease.

Related to Core Function(s): 2.3, 2.6, 3.1

Liaise with FSA and APHA regarding EU-wide antimicrobial resistance monitoring (Decision 2013/652/EU)

Following the OCL User Day, the NRL contacted the FSA concerning the collection and testing of fresh meat samples at retail for the above EU decision. There was an agreement that as APHA were executing the slaughter sampling of this monitoring, which started 1 January 2014 and is the majority of the work, the FSA would contact and commission APHA to perform the retail sampling. A major benefit from this arrangement is that the same microbiological methods can be used for primary production as well as retail, creating a harmonised data set. The FSA has subsequently

contracted APHA to perform the retail sampling and testing for this decision, which started 1 January 2015. The NRL has forwarded recommended methods from the EURL to the FSA, for information.

Related to Core Function(s): 2.1, 2.4, 2.5, 3.2

Prepare a list of reference facilities

As part of the 2013 OCL audit, many OCLs requested a list of reference facilities in order to submit isolates or food samples for further confirmation or characterisation. This is currently in draft and awaiting inclusion of charging policies and advice to Scottish OCLs, as submission to one reference laboratory is dependent on the organism or test. The NRL will complete this as part of the 2015 – 16 work programme and make this available to OCLs.

Related to Core Function(s): 2.1, 2.5

Establish links with the BSI AW9 microbiology committee

Biannual meetings have taken place within this twelve month period and have been attended by NRL/PHE representatives.

Related to Core Function(s): 1.1, 2.1, 2.6

Core Function Three: Method development, audits and ring trials

Participate in EURL ring trials and other initiatives as UK-NRL

Between April 2014 and March 2015, there have been thirteen ring trial distributions from all six EURLs, covering various aspects of the work of OCLs and reference laboratories, including detection, enumeration, typing and antimicrobial resistance. Table 4 lists these activities, and a summary of results and remedial action is in the Annex.

In addition, there have been several questionnaires, surveys and information from the EURLs. These are described below by work activity.

Listeria monocytogenes

In September 2014, the EURL requested the NRLs' views on the possibility of outsourcing parts of the proficiency testing that the NRLs organise for their own OCLs of detection/enumeration of *Listeria monocytogenes*. The EURL plan is draft a guidance document that lists criteria for outsourcing parts of the PT process to evaluate a third party provider. To enable this work, they requested volunteers to create a working group to draft this guidance document. The UK NRL did nominate a representative from the Food and Environmental Proficiency Testing Unit (FEPTU) as they had extensive experience of providing proficiency testing.

The EURL also offered training in PFGE typing for listeria in Autumn 2014. However, as the UK NRL does not perform this method routinely and uses alternative methods based on sequencing (ie MLVA and whole genome sequencing), we declined the offer. In addition, via the EURL, the Institute for Reference Materials and Measurements (IRMM) enquired whether there is a need for certified reference materials for PFGE typing for the NRLs. The UK NRL replied that PFGE is not performed, therefore certified materials are not needed.

Further training for food shelf-life studies was offered by the EURL in February 2015. This focuses on challenge testing and predictive microbiology using *L. monocytogenes*, where the travel and accommodation costs will not be covered by the EURL. As the UK NRL's main function is for official control, shelf-life testing for food business operators is low priority; therefore, the UK NRL declined the invitation for EURL training.

Coagulase-positive staphylococci

In 2014, various training dates for use of the European Screening Method for detection of staphylococcal enterotoxins in all types of food matrices and a confirmatory ELISA step were offered by the EURL. Due to the low numbers of food specimens submitted requesting CPS toxin detection, the UK NRL is unable to maintain competence and proficiency and declined the offer of training. In connection to this method, a laboratory outside the UK but within the EU has been identified to process these samples on behalf of the UK. A business case was submitted to the PHE Business Development Department and, at the point of writing, a draft Service Level Agreement has been drafted with another European Laboratory; details are being agreed.

Table 4. NRL participation in EURL ring trials, April 2014 to March 2015

Month Received	Organism – Test ¹	Reference	Matrix/Pure culture	UK Recipient ²	Comments
March 2014	Campylobacter – enumeration and detection	PT13	Minced meat	FWE Porton	Excellent enumeration, acceptable detection
March 2014	Campy – detection & characterisation	PT14	Milk	FWE Porton	Detection and identification needs improvement, due to <i>C. lari</i> and <i>foetus</i> in panel – attended EURL training in November 2014
April 2014	VTEC – typing	PT13	Pure cultures	GBRU	Good performance
June 2014	Enterococci – AMR	15 th	Pure cultures	AMRHAI	Good performance
June 2014	Staphylococci – AMR	15 th	Pure cultures	AMRHAI	Above the 5% deviation level, possibly due to transcription or interpretation errors
June 2014	E.coli – AMR	15 th	Pure cultures	AMRHAI	Good performance
October 2014	Listeria – detection		Iceberg salad	FWE Porton	Satisfactory performance
October 2014	Salmonella – AMR	16 th	Pure cultures	GBRU	Eliminated from evaluation as method does not meet monitoring EU Legislation
October 2014	Campylobacter - AMR	16 th	Pure cultures	GBRU	Eliminated from evaluation as method does not meet monitoring EU Legislation
October 2014	Listeria – typing	4 th	Pure cultures	GBRU	No deviations for serotyping, good performance
November 2014	VTEC – detection	PT14	Sprouted seeds	FWE Porton & Preston	Satisfactory performance
November 2014	Salmonella – typing	19 th	Pure cultures	GBRU	Good performance for serotyping
November 2014	CPS – enumeration		Cooked prawns	FWE Birmingham	No deviations, good performance

¹ AMR = Antimicrobial resistance testing, VTEC = Verocytotoxin-producing *E. coli*, CPS = Coagulase-positive staphylococci

² FWE = Food, Water and Environmental Laboratory, GBRU = Gastrointestinal Bacteria Reference Unit, AMRHAI = Antimicrobial Resistance and Healthcare Associated Infections Reference Unit

Escherichia coli (including VTEC)

The EURL invited applications to attend training at the EURL in Rome, Italy, ranging from direct detection of VTEC in food to molecular typing using PFGE. A new course, involving the organisation of proficiency tests for *E. coli* detection and typing was also offered. The UK submitted an application in January 2015 to attend the latter course, and while the EURL told the NRL that funding would not be available for the UK applicant, the NRL successfully secured training in summer 2015 for the former course. This will support the NRL in expanding the repertoire of proficiency testing offered to the OCLs in a more standardised European approach.

In February 2015, the EURL also offered bioinformatics training in management and analysis of whole genome sequence (WGS) data. As the UK NRL has utilised this technology recently, attendance to this training may support the harmonisation of WGS analysis and interpretation internationally. Therefore, the UK submitted an application in March 2015 to attend the course and was successful to attend in summer 2015.

Following an EURL questionnaire regarding accreditation of the new ISO 13136 method in June 2014, the EURL sent the UK NRL a follow-up email to request updated information on the UK status. The UK replied with the following:

‘The UK has a PHE FW&E laboratory (Porton) who has recently sought UKAS accreditation and have a deadline of 21 August to send additional evidence to UKAS to obtain accreditation for the screening detection of VTEC in foods, according to ISO 13136 (with amendments). The laboratory did not seek accreditation for the isolation part of the ISO; therefore the accreditation covers Part 4.1 a. microbial enrichment, b. nucleic acid extraction and c. detection of virulence genes. However, the other two stages (4.1 d. detection of serogroup-associated genes and e. isolation from positive samples) can be performed as unaccredited processes.’

Salmonella

No additional information was requested from the NRLs in this reporting period. However, three newsletters were received by email link, informing NRLs of the EURL activities, including proficiency test and workshop preparations and a literature search of relevant salmonella scientific papers. These are forwarded to the FSA, the OCLs and other relevant laboratories in the UK. In addition:

- the April edition reported the activities of the salmonella EURL for 2013
- the October edition included the EURL workplan for 2015

The newsletters can be found in the Annex.

Antimicrobial resistance

In June 2014, the UK NRL received a questionnaire from the EURL regarding participation in the EURL activities, including European data reporting, proficiency testing and the EU antibiotic resistance monitoring Decision 2013/652/EU. As the UK has designated two NRLs for antimicrobial resistance (APHA for animal and animal feed and PHE for food), the questions were answered with this knowledge and details are found in the Annex.

The NRLs received the annual EURL newsletter in December 2014 (see Annex), which contains information regarding a new EQA to isolate ESBL-carbapenamase- or AmpC-producing strains directly from a matrix, new EURL protocols to isolate ESBL-carbapenamase- or AmpC-producing strains, tentative breakpoint for quinopristin/dafopristin in *Enterococcus faecium*, a phenotypic/genotypic comparison of resistance genes, and the draft WHO Global Action Plan on antimicrobial resistance.

Related to Core Function(s): 3.1

Organisation of campylobacter training workshop for isolation, detection and enumeration for UK OCLs

The NRL hosted a practical workshop for the detection and enumeration of campylobacter in food on 16 –17 October 2014. As only one UK Official Control Laboratory (OCL) held UKAS accreditation for campylobacter enumeration in 2014, the workshop was designed to support service development in this important area and nine people participated from seven OCLs.

The workshop ran over two days and started with a presentation on the background of campylobacter. Following this, participants were able to gain practical knowledge over the next one and a half days in detection and enumeration techniques. Activities included a demonstration of processing samples, reading and interpreting colony counts and morphology, and confirmatory tests for further reporting of results. There were also tours of the PHE London food, water and environmental microbiology and the campylobacter reference laboratories (see Annex for agenda).

The workshop concluded with a general question and answer discussion and talk about how the NRL can provide for future needs. Feedback from the participants was overall very good; participants gained both further understanding of the theoretical and practical

elements of campylobacter detection and enumeration, and obtained useful advice to gain accreditation.

Related to Core Function(s): 1.1, 3.3

OCL participation in the European Food Microbiology Legislation Proficiency Testing Scheme

Since identifying the European Food Microbiology Legislation (EFL) Scheme in 2014, OCLs have been testing a common set of EQA samples and, for the first time, the NRL has received direct comparative testing data. The scheme, provided by the Food and Environmental Proficiency Testing Unit (FEPTU), comprises four distributions each year with three samples per distribution; further details can be found at this link:

<https://www.gov.uk/government/collections/external-quality-assessment-eqa-and-proficiency-testing-pt-for-food-water-and-environmental-microbiology#european-food-microbiology-legislation-scheme>

In 2014, 15 EFL distributions provided data for twelve samples and, although not all laboratories tested all samples, overall the twelve participating OCLs which returned results were all awarded with good performance (see Table 5). Where there was under performance, FEPTU gave a clear interpretation and recommendation (eg, where the test is not performed in their own laboratory, they should seek testing elsewhere) to enable OCLs to fully demonstrate their obligation under the EU regulation 2073/2005.

One of the twelve OCLs did not return any data for all four distributions. The NRL requested FEPTU enquire whether there were any problems, and the OCL responded that they will report their results for subsequent distributions.

Table 5. Overview of results from the 2014–15 European Food Microbiology Legislation Scheme

Sample code	Brief sample details	Required examination(s)	OCLs conforming with intended results ¹
EFL085	Minced lamb at shelf life	Salmonella spp. detection	8/8
EFL086	Minced beef at end of manufacturing	Aerobic colony count <i>Escherichia coli</i>	8/8 8/8
EFL087	Turkey carcasses after chilling	Salmonella spp. S. Enteritidis – S. Typhimurium	8/8 0/3 ²
EFL088	Unpasteurised soft	<i>Listeria monocytogenes</i>	11/12

	cheese at shelf life	enumeration <i>Salmonella</i> spp. detection	11/12
EFL089	Dried infant formula for under 6 months old at shelf life	<i>Salmonella</i> spp. cronobacter spp. <i>L. monocytogenes</i> detection	11/12 2/2 ³ 6/6
EFL090	Whey powder at end of manufacturing	<i>Enterobacteriaceae</i> Coagulase positive Staphylococci enumeration	11/11 8/11
EFL091	Chocolate mousse at shelf life	<i>L. monocytogenes</i> enumeration <i>Salmonella</i> spp. detection	10/10 9/9
EFL092	Unpasteurised soft cheese at manufacturing	Coagulase-positive Staphylococci enumeration	9/9
EFL093	Cooked crab meat at end of manufacturing	<i>E. coli</i> enumeration Coagulase-positive staphylococci enumeration	10/10 10/10
EFL094	RTE meal for infants at shelf life	<i>L. monocytogenes</i> detection	11/11
EFL095	RTE bean sprouts at shelf life	<i>L. monocytogenes</i> enumeration <i>Salmonella</i> spp. Detection STEC detection	7/8 11/11 2/2 ⁴
EFL096	Dried infant formula at end of manufacturing	<i>Enterobacteriaceae</i> detection Presumptive <i>Bacillus cereus</i> enumeration	10/11 8/10

¹Those that did not return any data or did not examine samples were not included in this table

²The three OCLs would refer the sample on for serotyping confirmation; this sample was sent out for educational purposes

³Three OCLs stated that they would refer the sample on for *Cronobacter* detection; the remaining OCLs either did not examine the sample (6) or did not return data (1); sample omitted from scoring

⁴Five OCLs were aware that STEC detection should be performed on the sample

The EFL scheme is organised completely independently from the NRL, Participants' results remain confidential and no individual laboratory will be identifiable to the FSA or the NRL, unless permission from the participant is granted. Consolidated results will be available for all laboratories and, if persistent poor performance is identified, the individual laboratory will be invited to seek assistance from the NRL.

The NRL has invited all OCLs to register to the above scheme for the 2015–16 distribution, as recommended by the FSA (see Annex). Although it is not mandatory to join the scheme, the NRL stressed that continued participation of all OCLs will provide overall assurance of laboratory competence, identify areas of weakness and OCLs will have access to expert advice and support from the Food and Environmental Proficiency

Testing Unit (FEPTU) and/or the NRL. In addition, individual performance data will be helpful to support future compliance with the ISO 17025 standard and UKAS accreditation.

Related to Core Function(s): 3.4, 3.5

Support the implementation of the amendment to Regulation 2073/2005 for detection of VTEC in sprouted seeds

The UK NRL has continued to support the OCLs in this significant change in the Microbiological Criteria Regulation (EU Regulations 208-211/2013) since its implementation on 1 July 2013. Various activities and initiatives have involved the UK NRL; these are listed below.

At the time of writing, four PHE OCLs have the capacity to perform detection of VTEC by real-time PCR, and one of these gained UKAS accreditation for this in October 2014. One further PHE OCL gained accreditation in June 2015. NRL has been informed of at least one other OCL, based in Scotland, which obtained Schedule 5 registration and will be seeking accreditation in the future. In addition, the PHE OCLs have been involved in both routine testing of beansprouts and outbreak investigations of watercress.

VTEC teleconference meetings

There have been two teleconference meetings involving the NRL and other PHE OCLs held in the reporting period, to review and enact the practical arrangements needed to apply the new regulations. Topics have included the drafts of the relevant PHE standards, production of risk assessments and reporting algorithms, and acquisition of reference materials, and validation and performance data.

Acquisition of reference materials

The NRL searched the internet to determine whether any certified reference materials were available for the detection of VTEC in food. One appropriate provider which produces material suitable for the validation of ISO TS 13136:2012 (Microbiology of food and animal feed -- Real-time polymerase chain reaction (PCR)-based method for the detection of food-borne pathogens -- Horizontal method for the detection of Shiga toxin-producing *Escherichia coli* (STEC) and the determination of O157, O111, O26, O103 and O145 serogroups) was identified. The NRL has also sent this reference material to the OCL in Scotland to validate their method for accreditation.

Preparation of documents

Two SOP methods have been created for guidance for all OCLs. The first SOP involves screening the *vtx1*, *vtx2* and *eae* genes from all matrices, including beansprouts, seeds intended for sprouting and irrigation water, and the second SOP details the further serogroup and isolation steps to confirm presence of VTEC. These are now at a final editing stage and, once approved by the FWE PHE Methods Group, they can be Gateway-approved and deposited on the NRL web-page for OCL access. A risk assessment has also been produced and can be made available to OCLs upon request.

Related to Core Function(s): 1.1, 1.2, 2.1, 2.2, 2.3, 2.5, 2.6, 3.4

Annex

Core Function One: Secretariat services	
<p>Maintain NRL Web Presence <i>Related to Core Functions: 1.1, 1.3, 1.5</i></p> <p>Engage with Scottish Reference Laboratories <i>Related to Core Functions: 1.1, 1.3, 1.4</i></p> <p>Coordination of 2014 NRL meeting (OCL user day) <i>Related to Core Functions: 1.1, 1.3, 1.4, 2.5, 2.6</i></p> <p>Provide monthly reports on NRL activities <i>Related to Core Functions: 1.4</i></p> <p>Establish food methods archive on NRL website <i>Related to Core Functions: 1.5, 2.4, 2.7</i></p> <p>Maintain OCL accreditation list <i>Related to Core Functions: 1.6</i></p>	<ul style="list-style-type: none"> • User day 2014 agenda_CONFIRMED • UK NRL Monthly Log_Apr14_FINAL • UK NRL Monthly Log_May14_FINAL • UK NRL Monthly Log_June14_FINAL • UK NRL Monthly Log_July14_FINAL • UK NRL Monthly Log_Aug14_FINAL • UK NRL Monthly Log_Sep14_FINAL • UK NRL Monthly Log_Oct14_FINAL • UK NRL Monthly Log_Nov14_FINAL • UK NRL Monthly Log_Dec14_FINAL • UK NRL Monthly Log_Jan15_FINAL • UK NRL Monthly Log_Feb15_FINAL • UK NRL Monthly Log_Mar15_FINAL • Minutes_18.06.14_FINAL_JMcLa • Minutes_23.09.14_FINAL • NRL Minutes_02 12 14_FINAL_JMcL • NRL Minutes_18-03-15_FINAL_JMcL
Core Function Two: Advice and representation within the UK/EU	
<p>Provide impartial advice and establish Food Examiner Register <i>Related to Core Functions: 2.1, 2.5, 2.7</i></p> <p>Provide appropriate training for scientific post <i>Related to Core Functions: 2.2, 2.3, 2.5, 3.1</i></p> <p>Representation at relevant EURL meetings and prepare meeting reports <i>Related to Core Functions: 1.1, 2.2, 2.3</i></p> <p>Attend training workshops at Campylobacter and VTEC EURLs <i>Related to Core Functions: 2.3, 2.6, 3.1</i></p> <p>Liase with FSA and APHA re: EU-wide antimicrobial monitoring <i>Related to Core Functions: 2.1, 2.4, 2.5, 3.2</i></p> <p>Produce a list of reference facilities <i>Related to Core Functions: 2.1, 2.5</i></p> <p>Establish links with BSI AW9 microbiology committee <i>Related to Core Functions: 1.1, 2.1, 2.6</i></p>	<ul style="list-style-type: none"> • Agenda workshop EURL_AR 2014_v26022014 • AgendaLm2014 - 10 - 11 April 2014 • Programme of workshop 2014 draft 140412 • AgendaCPS2014-dist • Preliminary programme - Campy EURL workshop 2014 • Provisional Agenda 2014_new [E.coli] • DraftAgendaLm2015 • Indiv Report 8th EURL-AR Workshop • NOTES_Individual Report - 10 and 11th April 2014 EURL Listeria • Indiv Report of the 2014 EURL workshop • Report on the 8th Annual Workshop of the European Union Reference Laboratories for Coagulase Positive Staphylococci • Indiv Report 9th EURL-Campylobacter Workshop • EURL VTEC Workshop 2014 Rome Individual Report
Core Function Three: Method development, audits and ring trials	
<p>Participate in EURL ring trials and other initiatives as UK-NRL: <i>Listeria monocytogenes</i>, coagulase-positive staphylococci, <i>Escherichia coli</i> (including VTEC), Salmonella, Antimicrobial resistance <i>Related to Core Function: 3.1</i></p> <p>Organisation of Campylobacter training workshop for UK OCLs <i>Related to Core Function: 1.1, 3.3</i></p>	<ul style="list-style-type: none"> • UK Participation of 2014 EURL Proficiency Tests • EURL-Salmonella Newsletter April 2014 • EURL-Salmonella Newsletter October 2014 • EURL-Salmonella Newsletter December 2014 • UK food NRL PHE response EURL-AR_survey_June2014 • 2014_12_newsletter_no8_final • Campy Workshop Programme - 16 10 14 and 17 10 14_FINAL

<p>OCL participation in the European Food Microbiology Legislation Proficiency Testing Scheme <i>Related to Core Functions: 3.4, 3.5</i></p> <p>Support the implementation of the amendment to Regulation 2073/2005 for detection of VTEC in sprouted seeds: VTEC teleconference meetings, Acquisition of reference materials, Preparation of documents <i>Related to Core Functions: 1.1, 1.2, 2.1, 2.2, 2.3, 2.5, 2.6, 3.4</i></p>	<ul style="list-style-type: none">• 2015-16 PT Registration form
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Proposed PHE NRL Activities, April 2015 – March 2016

1 Core Function One: Secretariat services

- 1.1 Disseminate information/advice supplied by the EURLs to FSA, OCLs and other UK laboratories in a timely and effective manner.
 - 1.a. Produce and circulate quarterly newsletter to FSA, OCLs and other UK laboratories
 - 1.b. Co-ordinate the OCL User Day to update UK OCLs and other relevant UK laboratories to the NRL core functions.
 - 1.b. Review content of the UK Food Examiner Register.
 - 1.b. Establish a liaison meeting with APHA Salmonella and AMR NRLs and produce a protocol for working with APHA.
 - 1.d. Provide regular updates to the FSA on NRL activities by producing monthly reports and meet on a quarterly basis.
 - 1.d. Produce and submit annual report to the FSA on NRL activities for 2015 – 2016.
 - 1.e. Maintain and update the NRL web content on the PHE website.

2 Core Function Two: Advice and representation within the UK/EU

- 2.a. Provide impartial expert advice to FSA, OCLs and other UK laboratories, upon request.
- 2.b. Represent the UK at relevant EURL meetings; consult FSA prior to meetings and submit an internal report after attendance of meetings.

- 2.c. Attend training workshops at the VTEC EURL for 'Organisation of Proficiency Tests' and 'Basic New Generation Sequencing management and analyses' (organised by EURL, ISS, Rome).
- 2.d. Assist the FSA of a process for Competent Authority approval of methods under Article 5 (5) para 4 of Reg 2073/2005
- 2.d. Advise FSA on future draft proposals relating to review of EU Regulation 882/2004.
- 2.e. Keep abreast of methodology developments and advise FSA and OCLs (e.g., reference material for ISO 13136, STEC RT-PCR).
- 2.f. Identify and inform FSA and OCLs of emerging analytical issues or developments; supporting the implementation of the amendment to Regulation 2073/2005 for detection of VTEC in sprouted seeds.
- 2.g. Strengthen links with the BSI AW9 microbiology committee.

3 Core Function Three: Production of standard operating procedures, codes of practice and guidance documents

- 3.a. Update and expand food methods archive on NRL website.
- 3.a. Prepare a guidance document for OCLs and the FSA on the use and validation of alternative methods for testing Official Controls.

4 Core Function Four: Compliance assessment via audits and ring trials

- 4.a. Ensure consistency and quality of testing approached applied by UK OCLs and support where necessary
- 4.b. Liaise with FEPTU and monitor OCL's comparative testing performance and assist OCLs in the implementation of corrective measures.
- 4.b. Produce poor performance protocol for OCL participation to FEPTU's European Food Microbiology Legislation Scheme.

4.d. Participate as UK-NRL in ring trials including method comparison or validation studies and other initiatives organised by the EURL (ongoing) and report to FSA.

4.e. Organise training workshop for Measurement of Uncertainty.

5 Core Function Five: Coordination within the UK of EURL initiatives

5.a. Support the food aspect of the EU-wide AR monitoring (Decision 2013/652/EU), liaising with FSA, OCLs relevant Reference Laboratories and AHVLA. Liaise with VLA, audit and review strategy for harmonization of existing antimicrobial resistance testing.

Proposed NRL activities for April 2015 to March 2016 (revised JMCL)

Activities	Function	Core	0	1	2	3	4	5	6	7	8	9	10	11	12
			0 2015 March	1 April 2015	2 May	3 June	4 July	5 August	6 September	7 October	8 November	9 December	10 January 2016	11 February	12 March
OCL User Day meeting at NRL, 13 th	Meeting	1.b													
Produce & circulate quarterly newsletter to FSA, OCLs & other labs	Disseminate information	1.a													
Maintain and update NRL web content on PHE website	Website	1.e													
Monthly reporting to FSA	Coordination	1.d													
Annual report to FSA	Coordination	1.d													
Meetings with FSA	Coordination	1.d													
Review content of UK Food Examiner register	Secretariat	1.b													
Listeria 9 th Workshop in Anses, Paris 25-27 th	EURL Workshop	2.b													
Antimicro Resist 9 th Workshop in Kgs. Lyngby, 23-24 th	EURL Workshop	2.b													
Salmonella Workshop in Berlin, 28-29 th	EURL Workshop	2.b													
Coag+ Staph Workshop in Anses, Paris 28-29 th	EURL Workshop	2.b													
Basic New Generation Sequencing management & analyses, 11-12 th	VTEC EURL Training	2.c													
Organisation of VTEC Proficiency Tests, 6-10 th	VTEC EURL Training	2.c													
Campy 10 th Workshop in Sweden, 28-30 th	EURL Workshop	2.b													
E.coli 8 th Workshop in Rome, 5-6 th	EURL Workshop	2.b													
Strengthen links with BSI AW9 microbiology committee	Advice & representation	2.g													
Campy detect/enum in mince meat PT from EURL (15 th)	EURL PT	4.d													
Campy detect/char in sock PT from EURL (16 th)	EURL PT	4.d													
VTEC EQA in bean sprouts from EURL (PT 15)	EURL EQA	4.d													
E.Coli id and typing EQA from EURL (PT & PT-PFGE4)	EURL EQA	4.d													
Coag+ Staph enum in a food matrix EQA from EURL	EURL EQA	4.d													
AMR for <i>E. coli</i> , enterococci and staphylococci EQA from EURL	EURL EQA	4.d													
AMR Salmonella & Campylobacter EQA from EURL	EURL EQA	4.d													
Salmonella detect in food or animal feed	EURL EQA	4.d													
Listeria enum in iceberg salad from EURL	EURL EQA	4.d													
Listeria typing EQA from EURL	EURL EQA	4.d													

