



Public Health
England

Communicable Disease Outbreak Management

Operational guidance



Food
Standards
Agency
food.gov.uk

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 advocacy, partnerships, world-class science, knowledge and intelligence, and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

Public Health England
133-155 Waterloo Road
Wellington House
London SE1 8UG
Tel: 020 7654 8000
<http://www.gov.uk/phe>
Twitter: @PHE_uk

This version prepared by: Helen McAuslane, Dilys Morgan, CIDSC

For queries relating to this document, please contact:

© Crown copyright 2014

You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v2.0. To view this licence, visit OGL or email psi@nationalarchives.gsi.gov.uk. Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned. Any enquiries regarding this publication should be sent to publications@phe.gov.uk.

You can download this publication from www.gov.uk/phe

Published August 2014

PHE publications gateway number: 2014252

DOCUMENT INFORMATION		
Title	Communicable Disease Outbreak Management: Operational Guidance	
For use by:	PHE Centres, Health Protection Teams, Field Epidemiology Services, NHS & Public Health Microbiologists, Directors of Public Health, Local Authority Public Health Specialists, Environmental Health Officers, NHS England and partners.	
Authors	Helen McAuslane, Dilys Morgan, Caroline Hird, Lorraine Lighton, Marian McEvoy (version 1.3),	
Other Contributors	<i>Public Health England</i> Sooria Balasegaram, Graham Bickler, Roberta Marshall, Catherine Quigley (version 1.3), André Charlett, Vivien Cleary, Mark Evans, Richard Elson, Claire Jenkins, Margaret Logan, Helen Maguire, Isabel Oliver, Amal Rushdy, Jeremy Hawker, John Simpson <i>Association of Directors of Public Health</i> Ruth Milton, <i>Chartered Institute of Environmental Health</i> Ian Gray, <i>Food Standards Agency</i> Will Creswell, Cathy Alexander, <i>Health and Safety Executive</i> Duncan Smith,	
Approved by		
Approved Date		
Version	2	
DOCUMENT HISTORY		
Version Number	Date	Reason for update
1	November 2011	-
1.3	May 2012	Appendix 6: Media relations revised
2.0	October 2013	Reorganisation of public health
DOCUMENT REVIEW PLAN		
Responsibility for Review	Dilys Morgan	
Next Review Date	August 2015	
Nominated Lead - Programme Board sign off	Date August 2014	Name Dr Dilys Morgan

Contents

Preface.....	5
Foreword	6
Standards for Managing Outbreaks.....	7
Outbreak Management Overview.....	8
1. Introduction.....	9
2. Policy and Legal Context.....	9
3. Aim of this Guidance.....	11
4. Definition of an Outbreak.....	11
5. Management Arrangements for Handling Outbreaks.....	12
6. Recognition of Outbreak and Initial Response.....	14
7. Declaration of an Outbreak.....	14
8. Convening an Outbreak Control Team.....	15
9. Role of an Outbreak Control Team.....	15
10. Investigation and Control of the Outbreak.....	16
11. Communications.....	17
12. End of the Outbreak.....	18
13. Audit.....	19
Appendices.....	20
Appendix 1. Public Health England Structure.....	21
Appendix 2. Public Health Incident Levels.....	21
Appendix 3. Outbreak Control Team.....	25
Appendix 4. Legal Duties and Powers	36
Appendix 5. Risk Assessment.....	38
Appendix 6. Outbreak Investigation and Control	41
Appendix 7. Investigation Protocol.....	45
Appendix 8. Conducting an Analytical Study.....	45
Appendix 9. Media Strategy.....	47
Appendix 10. Constructive Debriefing and Lessons Learnt.....	48
Appendix 11. Final Outbreak Investigation Report.....	51
Appendix 12. Audit Tool for Outbreak Standards.....	59
Appendix 13 Outbreak Specific Guidance.....	61
Appendix 14. Examples of Local Outbreak Plans.....	64
Appendix 15. Bibliography.....	65
Appendix16. Abbreviations.....	66

Preface

Endorsement by Public Health England partners

The Association of Directors of Public Health, the Chartered Institute of Environmental Health, the Food Standards Agency and the Local Government Association recognise the importance of engagement by all partners in the development and implementation of this important health protection document.

The primary objective in outbreak management is to protect public health by identifying the source and implementing control measures to prevent further spread or recurrence of the infection. The investigation and management of outbreaks and implementation of necessary control measures requires multidisciplinary expertise and collaboration. This operational guidance sets out in detail the roles of the key agencies, the responsibilities of their key personnel and the agreed procedures which can ensure successful implementation.

We commend this document to our staff, our members and those we will work with in protecting the public's health.

Foreword



By Dr Paul Cosford,
Director for Health Protection and Medical Director, Public Health England

One of the most important functions of Public Health England is to protect the public from infectious disease outbreaks. This needs us to establish and implement effective outbreak control arrangements for any infectious disease threats as it arises. To respond effectively Public Health England need a comprehensive plan for the response, whether to a discrete local incident or to a major national outbreak.

The Public Health England Outbreak Control Plan describes the overall approach and responsibilities of different parties in responding to infectious disease outbreaks. It clarifies how we work with our partner agencies, who have invaluable contributions to achieve control when it is needed, to provide effective action.

This plan is aligned with Public Health England's National Incident Response Plan (2013) and Concept of Operations (2013) and together they outline a combined, coordinated and cohesive incident response.

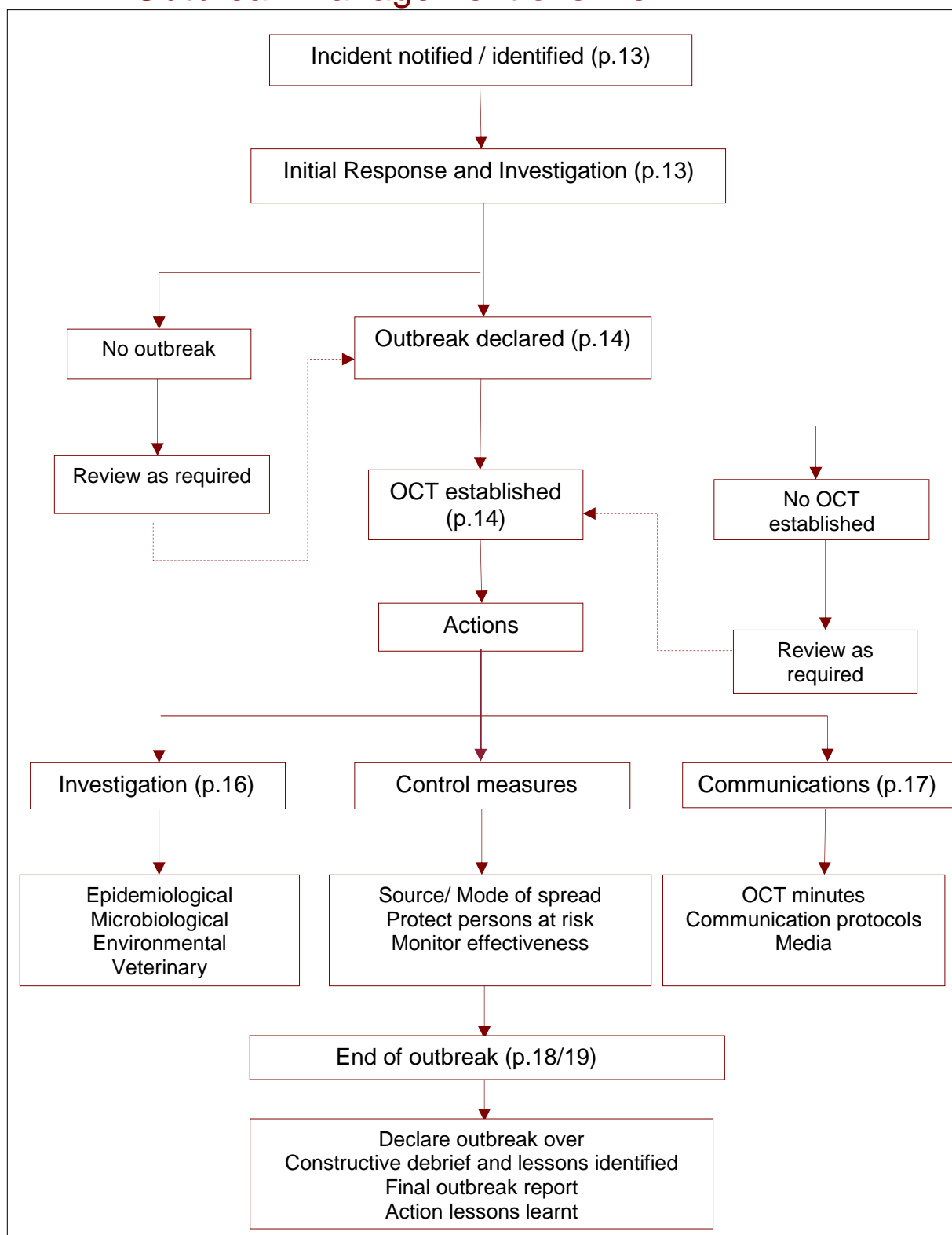
A handwritten signature in blue ink that reads "Paul Cosford". The signature is written in a cursive style and is positioned above a horizontal line. Below the line, there is a blue ink flourish or underline.

Standards for managing outbreaks¹

Outbreak recognition	Initial investigation to clarify the nature of the outbreak begun within 24 hours
	Immediate risk assessment undertaken and recorded following receipt of initial information
Outbreak declaration	Decision made and recorded at the end of the initial investigation regarding outbreak declaration and convening of outbreak control team
Outbreak Control Team	OCT held as soon as possible and within three working days of decision to convene
	All agencies/disciplines involved in investigation and control represented at OCT meeting
	Roles and responsibilities of OCT members agreed and recorded
	Lead organisation with accountability for outbreak management agreed and recorded
Outbreak investigation and control	Control measures documented with clear timescales for implementation and responsibility
	Case definition agreed and recorded
	Descriptive epidemiology undertaken and reviewed at OCT. To include: number of cases in line with case definition; epidemic curve; description of key characteristics including gender, geographic spread, pertinent risk factors; severity; hypothesis generated.
	Review risk assessment in light of evidence gathered
	Analytical study considered and rationale for decision recorded
	Investigation protocol prepared if an analytical study is undertaken
Communications	Communications strategy agreed at first OCT meeting and reviewed throughout the investigation.
	Absolute clarity about the outbreak lead at all times with appropriate handover consistent with handover standards
End of outbreak	Final outbreak report completed within 12 weeks of the formal closure of the outbreak
	Report recommendations and lessons learnt reviewed within 12 months after formal closure of the outbreak

¹ These standards for managing outbreaks were agreed by the original guideline development working group. Appendix 12 provides an audit tool to measure performance against these standards.

Outbreak management overview²



² Legal and enforcement measures to control the outbreak and prevent recurrence should be considered throughout.

1. Introduction

1.1 This document provides operational guidance for the management of outbreaks of communicable disease in England at all levels of Public Health England (PHE) that hold health protection responsibilities.

1.2 This is a PHE document which has been developed in collaboration with partner agencies. It provides a framework for working across new public health structures in local authorities, NHS England and other relevant bodies and is for use in outbreak management both locally and nationally.

1.3 This guidance can also be used to support Clinical Commissioning Groups (CCGs) and NHS England Area Teams in ensuring that commissioned services have robust plans in place to respond to an outbreak. It may also inform Local Health Resilience Partnership (LHRP) Emergency Preparedness Resilience and Response (EPRR) plans.

1.4 Clarity over roles and responsibilities in managing outbreaks is essential. Organisational changes over the past year mean that a flexible approach may be required while new structures and processes become established. This guidance should be reviewed annually until new organisational arrangements are embedded.

1.5 It is expected this guidance will be made operational through local adaptation. The appendices provide a comprehensive set of documents and examples of local plans that can be used to guide this process.

1.6 Where disease or situation specific guidance is separately available this should also be considered. Links to examples of relevant documents are provided in Appendix 13.

2. Policy and legal context

Public Health England

2.1 PHE provides an integrated approach to protecting public health through the provision of support and advice to NHS England, local authorities, emergency services, government agencies and devolved administrations. Specialist advice areas related to outbreaks and incidents include infectious diseases, outbreak surveillance and management, chemical, biological and radiation hazards. A map of PHE structure is provided in Appendix 1.

2.2 Under the Health and Social Care Act 2012 the Secretary of State has a duty to protect the health of the population and carry out activities as described in the Health Protection Agency Act 2004. In practice these functions will be carried out by PHE and include:

- the protection of the community against infectious disease and other dangers to health

- the prevention of the spread of infectious disease
- the provision of assistance to any other person who exercises functions in relation to above

2.3 PHE also has a duty as a category 1 responder (within the scope of the Civil Contingencies Act 2004) to respond to emergencies on behalf of the Secretary of State for Health. The definition of an incident for PHE includes:

“An event or situation which threatens or causes damage to the health of the public and that requires urgent action from PHE at whatever level”

2.4 In fulfilling this PHE will provide public health EPRR leadership and scientific and technical advice, including health protection services and expertise.

2.5 The PHE National Incidence Response Plan (NIRP) provides a strategic framework for EPRR arrangements and details the response to significant public health incidents at national level. The EPRR Concept of Operations (ConOps) details the operational response for the five PHE incident levels, as described in Appendix 2. This guidance is intended to complement and be used in conjunction with these documents.

Local authorities

2.6 Under section 6 of the Health and Social Care Act 2012 Directors of Public Health (DsPH) in upper tier and unitary local authorities have a duty to prepare for and lead the local authority (LA) public health response to incidents that present a threat to the public's health.

2.7 Under the amended Public Health (Control of Disease) Act 1984 and associated regulations, the majority of statutory responsibilities, duties and powers significant in the handling of an outbreak lie with the LA, including appointment of Proper Officer whose powers include the receipt of notifications.

2.8 The specific LA statutory responsibilities, duties and powers which are significant in handling a communicable disease outbreak are described in Appendices 3 and 4.

Coordination

2.9 The roles of LAs and PHE in the new public health system are complementary. In practice these organisations will work closely as part of a single public health system to deliver effective protection for the population from health threats.

2.10 PHEC Directors will agree alerting criteria for incidents with their local DsPH and ensure mechanisms are in place for the timely passage of information. Local

arrangements for mobilising resources to respond to incidents and outbreaks should be agreed.

2.11 More detailed information about roles and responsibilities of all partners can be found in Appendix 3.

3. Aim of this guidance

3.1 This guidance aims to ensure an effective and coordinated approach is taken to outbreak management, from initial detection to formal closure and review of lessons identified. It promotes a consistent approach across all levels of PHE and includes a set of standards for outbreak response.

3.2 The appendices contain additional guidance to support outbreak management and investigation, including:

- roles and responsibilities of key organisations and individuals
- convening an outbreak control team
- communications strategy, including media relations
- examples of disease specific guidance available at the time of publication

4. Definition of an outbreak and Outbreak Control Team

4.1 An outbreak or incident may be defined as:

- an incident in which two or more people experiencing a similar illness are linked in time or place
- a greater than expected rate of infection compared with the usual background rate for the place and time where the outbreak has occurred
- a single case for certain rare diseases such as diphtheria, botulism, rabies, viral haemorrhagic fever or polio
- a suspected, anticipated or actual event involving microbial or chemical contamination of food or water

4.2 It is recognised that many cases and clusters of communicable disease are handled within routine HPT business without the need to formally convene an OCT. It is important that such cases are appropriately recorded and managed for audit purposes and to support surveillance and any future outbreak management.

4.3 An OCT may be a formal meeting of all partners to address the control, investigation and management of an outbreak, or a discussion between two or more stakeholders following the identification of a case or exposure of concern. All such discussions should be appropriately recorded. The principles outlined in this guidance apply at any level.

4.4 NHS funded healthcare providers should involve both the commissioner of the service and the local PHEC to obtain appropriate advice and assure staff and patients of a robust response. As above this advice may take the form of a formal OCT or a one off conference call but should be appropriately recorded so that there is an audit trail of advice sought and control measures taken.

4.5 It should be noted that the terms incident management team and outbreak control team are often used synonymously, however both have very similar aims, membership and procedures to an OCT.

5. Management arrangements for outbreaks

5.1 The protection of the public's health takes priority over all other considerations.

5.2 The primary objective in outbreak management is to protect public health by identifying the source and implementing control measures to prevent further spread or recurrence of the infection.

5.3 The outbreak control team (OCT) must always give due consideration to their responsibilities in supporting investigations which may result in legal proceedings for example under the:

- Corporate Manslaughter and Corporate Homicide Act 2007 (as guided by the Work Related Death Protocol)
- Food Safety Act 1990 and associated regulations
- Health and Safety at Work etc. Act 1974 and associated regulations

5.4 These responsibilities include obtaining and ensuring the continuity, or chain, of evidence for presentation in concurrent or subsequent legal proceedings as well as civil proceedings or a Coroner's Inquest. Evidence may include information relating to patients and contacts obtained in the course of the investigation of an outbreak. The OCT should if required seek guidance regarding the chain of evidence for a potential prosecution.

5.5 Secondary objectives include refining outbreak management, training, adding to the evidence base about sources and transmission of infectious agents and lessons learnt for improving communicable disease control.

5.6 Responsibility for managing outbreaks is shared by all organisations who are members of the OCT. This responsibility includes the provision of sufficient financial and other resources necessary to bring the outbreak to a successful conclusion. NHS commissioned organisations should have a requirement in their contract to provide what is needed to

rapidly respond to outbreaks. The suggested membership of an OCT, key roles and responsibilities are described in Appendix 3.

5.7 Many incidents and outbreaks are dealt with as part of normal acute service provision. Occasionally outbreaks are of such magnitude that there may be significant implications for routine services and additional resources may be required. The surge, escalation and major incident plans of organisations affected will be invoked as appropriate.

5.8 The NIRP should be used to determine the appropriate incident level, response and triggers for escalation within PHE (Appendix 2). If it is anticipated that an incident may compromise PHE services, the relevant Director must be alerted and a contingency plan implemented to ensure a satisfactory service can be maintained, using mutual aid arrangements if necessary. Other organisations may refer to their own escalation plans.

5.9 Outbreaks confined to NHS Trust premises, whether acute, community or mental health, will usually be led by the relevant trust in accordance with their operational plans and with the advice and input of a local Consultant in Communicable Disease Control (CCDC). The local CCG and DPH should also be informed.

5.10 If any party is concerned with another organisation's response to an outbreak the CCDC should initially discuss the issue with the responsible commissioner. If the issue cannot be resolved by discussion between parties, they should seek advice from the PHEC director and local DPH.

Risk assessments

5.11 All activities should be underpinned by a comprehensive risk assessment. Risk assessments should be agreed by the OCT and regularly reviewed throughout the outbreak investigation. An example of the risk assessment framework used by PHE is provided in Appendix 5, however it is acknowledged other organisations may use different frameworks. The OCT should agree a standard format for risk assessment.

Cross boundary outbreaks

5.12 If the outbreak crosses HPT or LA boundaries there will need to be close liaison with neighbouring HPTs and LAs and a decision made as to who will lead the investigation. The PHE Centre Director or HPT Directors together with the respective DsPH (in consultation with Field Epidemiology Services and CIDSC if necessary) should make this decision as soon as possible. The lead area will most likely be where the outbreak is first identified or the majority of cases reside. Where the outbreak crosses LA boundaries the relevant DsPH will need to establish and maintain good communication with the neighboring authority.

Cross border and international outbreaks

5.13 National incidents:

PHE is responsible for providing information and services to support a coordinated and consistent UK public health response to national incidents involving devolved administrations. Liaison will be conducted via daily or weekly teleconferences as agreed by the OCT.

5.14 International incidents:

PHE Health Protection Directorate Centre for Infectious Disease Surveillance and Control (CIDSC) is responsible for reporting incidents of potential international significance to the World Health Organisation under International Health Regulations (IHR 2005). It will also communicate with the European Centre for Disease Prevention and Control (ECDC) in the event of EU level outbreaks that may have impact in the UK.

6. Recognition of an outbreak and initial response

6.1 Outbreaks may be recognised by PHE, Local Authorities or NHS/Public Health Microbiologists. Each organisation has its own procedures for surveillance, detection and control. Immediate contact between these parties is essential as soon as it becomes apparent that an outbreak may exist.

6.2 Immediate control measures should be implemented as per relevant guidance and investigation to clarify the nature of the outbreak should begin within 24 hours of receiving the initial report. The following steps should be undertaken to establish key facts and inform the decision to declare an outbreak:

- confirm the validity of the initial information (eg ascertainment bias, laboratory false positives)
- consider the tentative diagnosis and whether all cases have the same diagnosis
- conduct preliminary interviews with cases to gather basic information including any common factors
- collect relevant clinical and/or environmental specimens
- form preliminary hypotheses
- consider the likelihood of a continuing risk to public health
- carry out an initial risk assessment (see Appendix 5)
- manage initial communication issues

7. Declaration of an outbreak

7.1 Locally confined outbreaks will usually be recognised and declared by the Consultant in Communicable Disease Control / Health Protection (CCDC/CHP) or senior health

practitioner. Where appropriate this will be following consultation with a Consultant Microbiologist or senior Environmental Health Officer.

7.2 For more widespread outbreaks, such as those that are national or sub – national (NIRP levels 3-5), the outbreak may be recognised by Field Epidemiology Services (FES) or a CIDSC consultant or senior epidemiologist. It is possible that a widespread outbreak may be initially recognised as sentinel “local” outbreaks.

7.3 For local incidents the HPT should inform the DPH and, if required, CCGs. For incidents at NIRP level 3 and above NHS England should be notified. NHS England will provide oversight and support to ensure that alerts from PHE are actioned.

8. Convening an Outbreak Control Team

8.1 Following the recognition and declaration of an outbreak, a decision regarding the need and urgency to convene an OCT is required. This decision should be guided by the risk assessment. The rapid establishment of an OCT is appropriate if an outbreak is characterised by:

- immediate or continuing significant risk to the health of the population
- one or more cases of serious communicable disease as described in 4.1, above.
- a large number of cases
- cases identified over a large geographical area suggesting a dispersed source
- significant public, political or reputational interest

8.2 If no formal OCT is convened it is likely it will still be necessary to take public health actions and liaise with microbiology, environmental health or epidemiology colleagues.

8.3 When a decision has been made **not** to declare an outbreak, the responsible consultant should review the situation at appropriate intervals and be prepared to declare an outbreak if required. This may involve consulting with the other parties to assist with on-going surveillance.

9. Role of the Outbreak Control Team

9.1 The purpose of the OCT is to agree and coordinate the activities involved in the management, investigation and control of the outbreak. The OCT will:

- assess the risk to the public’s health
- ensure that the cause, vehicle and source of the outbreak are investigated and control measures implemented as soon as possible
- seek legal advice where required

9.2 Details regarding the organisation and functioning of the OCT are contained in Appendix 3, however key points include:

- the chair of the OCT should be appointed at the first meeting. This will usually be the CCDC/Consultant in Health Protection (CHP) or Consultant Epidemiologist (CE), however it may be another OCT member if appropriate
- membership of the OCT should be in accordance with Appendix 3. The chair and members should ensure that all key individuals are invited
- members must be of sufficient seniority to implement decisions and allocate resources
- at the first meeting terms of reference should be agreed, a preliminary risk assessment conducted and incident level decided (according to NIRP or other organisational incident levels as appropriate)
- A communications strategy should be agreed early and reviewed as necessary

10. Investigation and control of the outbreak

10.1 Outbreak investigations will vary depending on circumstances, however an outline of actions that should be undertaken is provided in Appendix 6. Key points are summarised below.

10.2 A **case definition** including a description of time, place, person and clinical features should be agreed early on in the investigation and reviewed throughout.

10.3 Control measures should be documented with clear responsibilities and timescales for implementation.

Descriptive epidemiology

10.4 Basic descriptive epidemiology is essential and should be reviewed at each OCT meeting. Sometimes descriptive epidemiology might be sufficient to take action, it is also crucial for generating a hypothesis as to the source of the infection. **Box 1** summarises the types of information that should be gathered.

Box 1: Descriptive epidemiology

- Review initial information and establish the number of probable and confirmed cases based on the agreed case definition
- Describe the outbreak in terms of person (eg age, sex, ethnicity or other relevant factors), time (preferably onset date) and place (geographical distribution of cases)
- Conduct in-depth interviews with initial cases to establish any common factors such as places visited or foods consumed
- Form preliminary hypotheses based on descriptive epidemiology and interviews with cases

Analytical studies

10.5 An analytical study should only be undertaken if there is a hypothesis to test. Conducting an analytical study should be considered early in the investigation. Criteria and further information are contained in Appendix 7.

10.6 The purpose of conducting an analytical study is to confirm a hypothesis regarding the source of infection or mechanism of spread in order to confidently take action to protect public health. Robust evidence may be needed to provide support for and to justify interventions and control. In addition it is good practice to conduct an analytical study when possible and practicable.

10.7 A written protocol for any analytical study should be drawn up at the earliest possible point, with level of detail appropriate to the nature of the outbreak. An example template is provided in Appendix 7.

Microbiological investigations

10.8 The role of reference microbiology tests should be considered in helping define the cluster and links to potential sources, as should other sources of evidence such as food chain investigations. PHE is also working to implement whole genome sequencing (WGS) as part of its diagnostic services, see Appendix 3 for further information.

11. Communications

11.1 It is essential that effective communication is established between all members of the OCT, partners, the public and the media and maintained throughout the outbreak.

11.2 A communications lead should be part of the management of an outbreak from the outset and a strategy developed for informing the public and key stakeholders should be discussed and agreed at the OCT. Communications teams of organisations involved should be in contact with each other to ensure that messages are consistent.

11.3 The Chair should ensure that minutes are taken at all OCT meetings and circulated to participating agencies as soon as possible afterwards. All key decisions should be recorded, the minute-taker is accountable to the Chair for this. It is recommended that administrative support be provided to the OCT as standard.

11.4 Standard communications protocols should be followed for dissemination of critical information within PHE, including regular briefing notes (level 2 incidents) or SITREPs (incidents at level 3 and above) as described in the ConOps and NIRP documents respectively.

11.5 Communication between all partners involved in the outbreak investigation will be according to locally agreed arrangements for responding to health protection incidents.

The PHEC will keep the DsPH informed about health protection issues and of the actions being taken to resolve them.

11.6 Use of communication through the media may be a valuable part of the control strategy of an outbreak and the OCT should consider the risks and benefits of proactive versus reactive media engagement in any outbreak. A suggested media strategy is included in Appendix 9.

12. End of outbreak

12.1 The OCT will decide when the outbreak is over and will make a statement to this effect. The decision to declare the outbreak over should be informed by on-going risk assessment and when:

- There is no longer a risk to the public health that requires further investigation or management of control measures by an OCT.
- The number of cases has declined.
- The probable source has been identified and withdrawn.

Constructive debrief and lessons identified

12.2 PHE recommends that level 2 and above incidents should be debriefed using the constructive debrief and lessons identified process no more than 2 weeks after de-escalation and stand down.

12.3 Significant level 1 incidents may also be debriefed at the request of the PHEC Director and OCT chair. Further information is available in Appendix 10.

12.4 The lessons identified (LI) process should be followed in line with both the NIRP and PHE Guidance on EPRR and Lessons Learnt. It combines constructive debrief methodology and a logical framework approach to gather and implement LI.

12.5 A debrief facilitator who was not directly involved with the incident should support this process. This should be someone who was not directly involved with the incident. For incident levels 1 or 2 this could be a local emergency planner. For incident levels 3 and above this should be someone from PHE Emergency Response Department (ERD).

12.6 Following a constructive debrief for level 1 or 2 incidents the OCT Chair and debrief facilitator should meet to determine the key lessons identified. These lessons will then be reported to the appropriate Senior Management Team (SMT) to decide actions to be taken and who will lead on them.

12.7 A Lessons Identified Action Table (Appendix 10) should be completed to report the results of the constructive debrief. This highlights issues that need to be resolved, how this will be achieved, who will take responsibility and timeframe for implementation.

12.8 The results of this process should be presented in the outbreak control report and disseminated locally for incident levels 1 and 2. For incident levels 3 and above reports are sent to the Corporate Resilience Team (CRT) in the PHE Emergency Response Department (ERD)

12.9 Further information, a constructive debrief template and Lessons Identified Action Table are provided in Appendix 10.

Outbreak report

12.10 At the conclusion of the outbreak the OCT will prepare a written report. Final outbreak reports are primarily for dissemination to a distribution list agreed by OCT members and should be completed within 12 weeks of the formal closure of the outbreak. Appendix 11 contains a standard format for the final outbreak report and guidance regarding legal issues that need to be taken into consideration.

12.11 Lessons identified and recommendations from the outbreak report and constructive debrief process should be disseminated as widely as possible to partner agencies and key stakeholders. These should be reviewed within 12 months of the formal closure of the outbreak. Learning should be reviewed against local plans and plans updated in light of this where required.

12.12 FES has developed a library of incident and outbreak investigations to support learning. Further details and a link to the resource can be found in Appendix 11.

13. Audit

13.1 Audit is essential for improving quality. A set of standards for managing outbreaks was identified during the development of these guidelines and an audit tool for measuring them against is provided in Appendix 12.

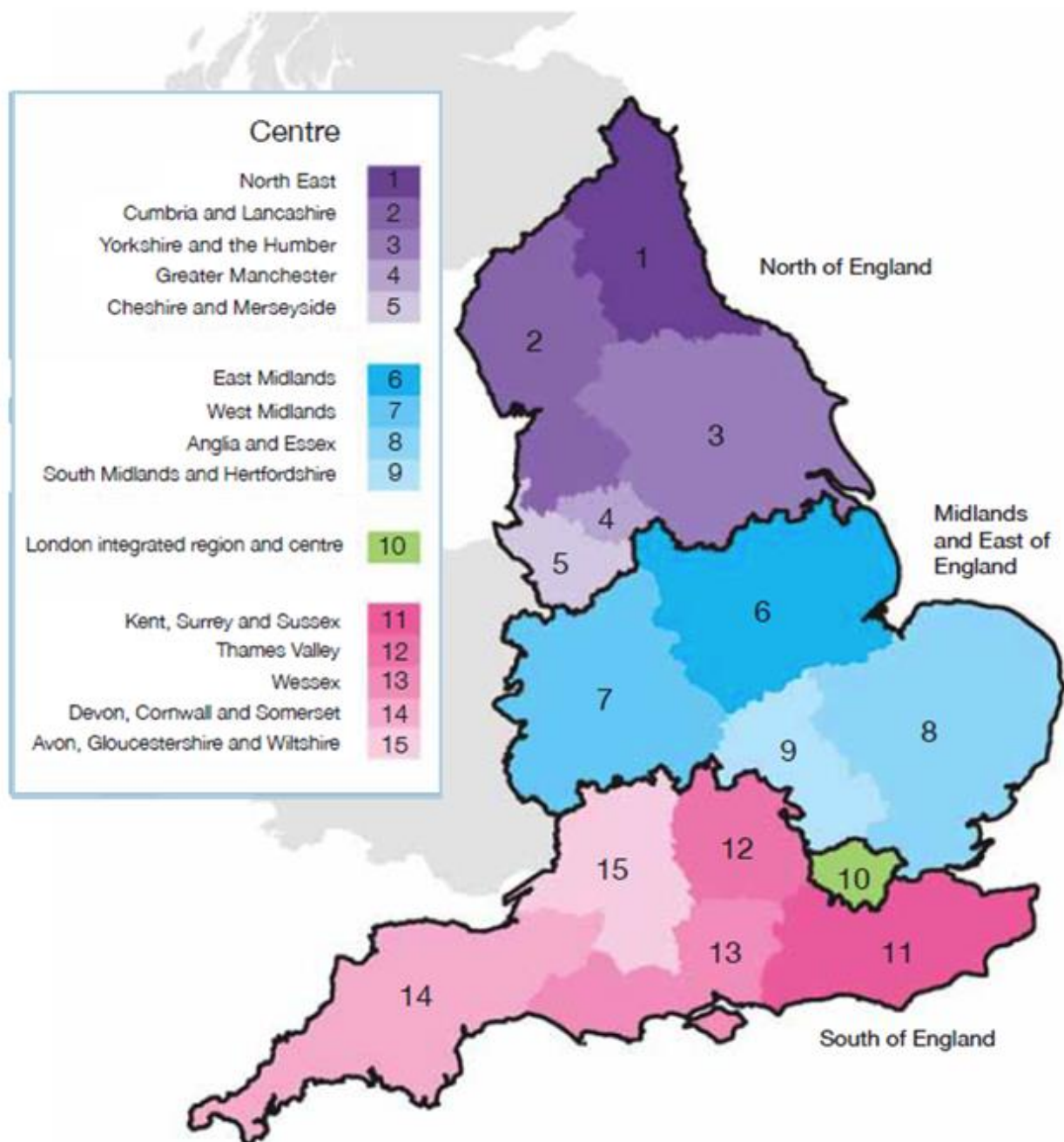
13.2 This guidance should be evaluated at regular intervals and at least annually, preferably through the audit of outbreaks that have occurred at both local and national level. PHE has lead responsibility for ensuring this takes place and will ensure this guidance is tested at every level of the organisation.

13.3 Key organisations and individuals should arrange regular and appropriate training or exercises to ensure that all staff that are likely to be involved in outbreak investigation and control are familiar with this guidance and the management of outbreaks of communicable disease.

Resources Contained in Appendices

Appendix No.	Title	Page No.
Appendix 1	Structure and Organisation of PHE.....	21
Appendix 2	PHE Incident Levels.....	22
	A2.1 Incident levels.....	22
	A2.2 Escalation and de-escalation.....	22
Appendix 3	The Outbreak Control Team.....	25
	A3.1 Membership of the OCT.....	25
	A3.2 OCT Terms of Reference.....	26
	A3.3 Template Agenda of OCT Meeting.....	27
	A3.4 Roles and Responsibilities of usual OCT members..	29
	A3.5 Roles and Responsibilities of Organisations.....	33
Appendix 4	Legal Duties and Powers.....	36
Appendix 5	Risk Assessment.....	38
Appendix 6	Outbreak Investigation and Control.....	41
Appendix 7	Investigation Protocol.....	43
Appendix 8	Conducting an Analytical Study.....	45
Appendix 9	Media Strategy.....	47
Appendix 10	Constructive Debriefing and Lessons Learnt.....	48
	A10.1 Constructive Debriefing.....	48
	A10.2 Lessons Learnt.....	49
Appendix 11	Final Outbreak Investigation Report.....	51
	A11.1 Standard Structure.....	51
	A11.2 Legal and Confidentiality Issues Related to Final Outbreak Reports	54
	A11.3 Disclosure of Outbreak Reports.....	56
Appendix 12	Audit Tool for Outbreak Standards.....	59
Appendix 13	Outbreak Specific Guidance.....	61
	A13.1 Outbreaks in Hospitals and other Health Care Premises.....	61
	A13.2 Outbreaks on LA Premises.....	62
	A13.3 Other useful guidance.....	63
Appendix 14	Examples of Local Outbreak Plans.....	64
Appendix 15	Bibliography.....	65

Appendix 1: Structure and organisation of Public Health England



PHE consists of four regions and 15 centres (PHECs). There are also ten microbiology laboratories dispersed across the regions, including those that offer specialist and reference microbiology services. A specialist field epidemiology service is provided through field epidemiology teams based throughout England.

Local teams can also draw on national scientific expertise based at Colindale, Porton Down and Chilton.

Appendix 2: Public Health England incident levels

A2.1 Incident levels

On receipt of an alert to a public health incident via a Public Health England Centre (PHEC) or specialist service an initial dynamic risk assessment will be undertaken by the appropriate director (Tables 1 and 3) to establish the appropriate level of response.

Table 1: Abbreviated PHE Incident levels

Level	Authority to assign response level
1. Local with limited public health impact	PHEC Director/Leader of Local Health Protection Service
2. Local with limited public health impact but greater than can be managed by one PHEC	PHE Regional Director (in consultation with the Director for Health Protection if appropriate)
3. Public health impact across regional boundaries or national. May require national co-ordination	PHE Director of Health Protection/Duty Director in consultation with the COO
4. Public health impact severe. Requires central direction and formal interaction with Government	PHE Director for Health Protection in consultation with CEO/Duty Director and COO
5. Catastrophic. Central direction and extensive commitment of resource.	PHE CEO/Duty Director

A2.2 Escalation and de – escalation of incident level

Escalation or de-escalation through incident levels need not occur sequentially, but will be driven by the nature, scale and complexity of incidents. Any incident response level can be changed following a review of the strategic direction and operational management of the emergency. Criteria for escalation and de-escalation are described in Table 2.

Any changes to the incident response level will be authorised by the Incident Director following a discussion with the Director of Health Protection.

All response level changes will be communicated internally and externally to those involved in the response.

Table 2: Escalation and de-escalation criteria

Criteria for escalation	Criteria for de-escalation
<ul style="list-style-type: none"> • Need for additional internal resources • Increased severity of the incident • Increased demands from partner agencies or other government departments • Heightened public or media interest • Increase in geographic area or population affected 	<ul style="list-style-type: none"> • Reduction in internal resource requirements • Reduced severity of the incident • Reduced demands from partner agencies or other government departments • Reduced public or media interest • Decrease in geographic area/population affected

Table 3: Detailed PHE incident levels		
Level	Criteria	Management of the response
1	<p>Public health impact including public interest or concern is limited to the local population and the response can be managed by one Public Health Centre (PHC)</p> <p>May require liaison internally and with partner organisations. Risk Assessment will be carried out locally and PHE response level declared by PHC.</p>	<ul style="list-style-type: none"> • Response can be managed within the capacity and resources of a single PHEC specialist service • Directed by senior member of PHEC staff • Local PHE plans to be activated • Threat specific plans may need to be activated • Involvement of Specialists from appropriate PHE Services as appropriate • Command, control and coordination at local centre level. • Communications response can be managed within a single PHEC • Local media handling with partner agencies • Support from Regional Communications Manager and press officer as required • Involvement of specialist communications staff if necessary. The sign off for public advice and/or press releases/statements is the PHEC Director/Designate.
2	<p>Public health impact including public interest or concern is limited to the local population but is greater than can be managed by one PHC. It may require regional support and coordination.</p> <p>May require support from PHE specialist service. Risk Assessment will be carried out locally and PHE response level declared by Regional Director or Head of Service as appropriate. May involve a Strategic Coordination Group (SCG) and Scientific and Technical Advice Cell (STAC). Will involve inter-agency working.</p> <p>Expect regional and local media interest.</p>	<ul style="list-style-type: none"> • Response can be managed within the capacity and resources of the region/PHEC Specialist Service • Directed by Incident Director appointed by PHEC Director • May require activation of an LICC • PHE plans activated as appropriate • Involvement of specialist services as appropriate • Command and control locally, coordination and overview regionally. • Communications response can be managed within the specialist service and dependent on incident, may be handled locally with partner agencies (NHS, EA, etc.) as required or may be managed by the Regional Communications Manager (RCM) • Involvement of specialist communications staff if necessary • The sign off for public advice and/or press releases/statements is the Incident Director as appointed.
3	<p>Public health impact including public interest or concern is significant across regional boundaries or nationally. May require supra regional or central coordination, support and</p>	<ul style="list-style-type: none"> • Managed by PHE Division/PHE specialist service or HPS Region • Led by an appropriate person appointed as Incident Director by the Director of the PHE division or specialist service responsible for managing the incident and may involve

	<p>interaction with government departments. Support will be required from PHE specialist service. Risk Assessment will be carried out regionally or centrally and PHE response level and Incident Director appointed by Head of Service and may involve consultation with the Director of Health Protection/Duty Director/CEO. CCC, an SCG and STAC may sit. Possible higher or raised level of media interest.</p>	<p>discussion with the CEO or Duty Director.</p> <ul style="list-style-type: none"> • One or more Incident Co-coordinating Centres may be established to support the response. This will depend on the nature of the incident • NICC may be activated • The sign off for public advice and/or press releases/statements is the Incident Director as appointed.
4	<p>Public health impact including public interest or concern upon the national population is severe. It will require central direction of the PHE response and significant interaction with government/DH.</p> <p>Requirement for cross-agency working. Will require significant PHE resources. CCC/SAGE will sit. One or more SCGs and STACs. PHE National Command and Coordination through NICC.</p>	<ul style="list-style-type: none"> • May require resources of more than one PHE specialist service • Level and Incident Director appointed by CEO/Director of Health Protection or Duty Executive Director • NICC will be activated • One or more ICCs will be set up to provide support the response • Incident Director to consider implications of escalation in discussion with Director of Health Protection/Duty Executive Director • Communications response may require resources of more than one PHEC specialist service • Director of Communications will lead with support from RCMs and Specialist Service press officer • The sign off for public advice and/or press releases/statements is the Incident Director as appointed. National and international media interest.
5	<p>Public health impact including public interest or concern upon the national population is catastrophic. Central direction of the PHE response will be required involving extensive agency resources and significant interaction with government.</p> <p>PHE National Command and</p>	<ul style="list-style-type: none"> • May require resources of more than one PHE specialist service • Level and Incident Director appointed by CEO. CEO may consult the Duty Executive Director in discharging this action. • NICC will be activated • ICCs will be set up to provide support the response • Communications response may require resources of more than one PHE service

	<p>Coordination through NICC. Significant requirement for cross-agency working.</p> <p>CCC/SAGE will sit and potentially multiple SCG.</p>	<ul style="list-style-type: none">• Director of Communications will lead with support from RCMs and specialist service press offices• Possibility of external staff to supplement if required• The sign off for public advice and/or press releases/statements is the CEO or Incident Director as appointed.
--	--	--

Appendix 3: The Outbreak Control Team

A3.1 Membership of the OCT

Membership of the OCT will vary according to the nature or circumstances of the outbreak and the incident level. A PHE HPT staff member is expected to be involved in all outbreaks. Usually an Environmental Health Officer, a consultant public health microbiologist and a Director of Public Health will also be required. Additional members will be expected to be involved dependent on the nature of the outbreak. In some circumstances it may be appropriate for the OCT to consist only of PHE staff, although these may be from different parts of the organisation or from more than one HPT.

Usual members

- Consultant in Communicable Disease Control/Health Protection or Consultant Epidemiologist
- Consultant PHE Microbiologist
- Communications officer
- Director of Public Health (or nominated deputy)
- FES Consultant Epidemiologist
- Environmental Health Officer (EHO)
- Administrative support

Suggested additional members as determined by nature of outbreak³

- Bioinformatician
- Care Quality Commission (CQC)
- Community Infection Control Nurse
- Consultant Physician
- Department for Environment, Food & Rural Affairs (Defra)
- Department of Health
- Animal Health and Veterinary Laboratories Agency
- Environment Agency (EA)
- Food chemist and/ or microbiologist
- Food Standards Agency (FSA)
- Food, Water and Environment (FWE) microbiologist
- General Practitioner (GP)
- Health and Safety Executive (HSE)
- Health Protection Surveillance/Information Officer
- Legal adviser (PHE or LA as appropriate)
- Local authority education department
- NHS England Area Team
- Pharmaceutical Advisors
- NHS Microbiologist
- Police
- Quality director from local CCG
- Reference microbiology services
- Screening and Immunisation Lead (SIL)
- Water Company

³ This is not an exhaustive list.

A3.2 OCT terms of reference

The terms of reference should be agreed upon at the first meeting and recorded accordingly. Suggested terms of reference are:

- to review the epidemiological, microbiological and environmental evidence and verify an outbreak is occurring
- to regularly conduct a full risk assessment whilst the outbreak is on-going
- to develop a strategy to deal with the outbreak and allocate responsibilities based on the risk assessment
- to determine the level of the outbreak according to the PHE National Incident Response Plan and Concept of Operations documents (NIRP and CONOPs)
- to ensure that appropriate control measures are implemented to prevent further primary and secondary cases
- to agree appropriate further epidemiological, microbiological, environmental and food chain investigations
- to communicate with other professionals, the media and the public as required providing accurate and timely information
- to determine when the outbreak can be considered over based on on-going risk assessment and taking account of risk management actions
- to make recommendations regarding the development of systems and procedures to prevent a future occurrence of similar incidents and where feasible enact these
- to produce reports at least one of which will be the final report containing lessons learnt and recommendations

A3.3 Template agenda for OCT meeting

Outbreak Control Team Meeting Agenda

(Title)

(Date, time and venue)

1. Introductions
2. Apologies
3. Minutes of previous meeting (for subsequent meetings)
4. Purpose of meeting
 - At first meeting agree chair and terms of reference
5. Review of evidence
 - Epidemiological
 - Microbiological
 - Environmental and food chain
6. Current risk assessment
7. Control measures
8. Further investigations
 - Epidemiological
 - Microbiological
 - Environmental and food chain
9. Communications
 - Public
 - Media
 - Healthcare providers (eg GPs, A&E etc...)
 - Others
10. Agreed actions
11. Any other business
12. Date of next meeting

A3.4 Roles and responsibilities of usual members of the OCT⁴

Consultant in Communicable Disease Control/Health Protection / Epidemiologist

- declare an outbreak following appropriate consultation
- convene the OCT and ensure appropriate membership
- chair the OCT unless a different chair has been agreed
- ensure initial response and investigation begins within 24 hours of outbreak reported
- ensure an incident room is set up at an appropriate venue, if required
- identify resources that might be needed to manage the situation
- liaise with clinicians over need for testing and management of cases
- agree with OCT who will lead the media response
- ensure communications such as letters/bulletins/press statements and so on are agreed and disseminated
- arrange for appropriate identification and follow up of contacts
- provide advice on and arrange with partner organisations the provision of prophylaxis or immunisation as necessary
- provide epidemiological advice and support analysis and interpretation of data
- ensure appropriate stakeholders are informed and updated, including LA, NHS England, CCGs, acute trusts, microbiologists, FES and CIDSC Colindale
- liaise with colleagues in adjacent HPTs and PHECs as necessary
- inform relevant Public Health England Centre (PHEC) director as necessary
- ensure all documentation relating to the outbreak is correctly managed and disseminated, incorporating information governance and data protection requirements
- ensure the constructive debrief is held and lessons learnt disseminated and acted on
- coordinate production of outbreak report and ensure recommendations are acted on

Environmental Health Officer (representative of Chief Environmental Health Officer)

- investigate potential sources of outbreak and secure improvements where the LA is the enforcing authority or where it is the home authority for companies that operate across LA boundaries
- advise the OCT where enforcement falls to another body, for example the HSE
- provide help and advice including the investigation of cases or contacts
- provide mechanisms for out of hours communications with the OCT and stakeholders
- arrange collection of samples from cases and contacts and undertake appropriate sampling of food, water and environmental samples
- arrange delivery of all samples to appropriate laboratories
- liaise with the office of the public analyst and PHE laboratories for analysis of samples if chemical contamination is suspected
- provide reports to the LA and undertake necessary enforcement actions

⁴ Tasks may vary according to the nature or circumstances of the outbreak

- inform relevant food and non-food businesses of hazards as appropriate
- arrange for the identification, seizure, removal and safe disposal of contaminated food within their LA area
- ensure infection control advice is implemented, using relevant legal powers as necessary and working with PHE staff, NHS Infection Control Nurse or others
- ensure arrangements for collection and disposal of clinical waste remain appropriate. discuss with OCT and contractors any changes required
- identify resources so that tasks can be undertaken efficiently
- monitor the progress of the investigation and provide updates to the OCT
- report to colleagues in the Environmental Health Department and liaise with those in neighbouring districts
- be jointly responsible for communicating the cessation of the outbreak to the stakeholders and the general public, in collaboration with the CCDC
- ensure continuity of evidence in case results are needed for subsequent criminal prosecution

Director of Public Health

Under the Health and Social Care Act (2012) the Director of Public Health (DPH) is responsible for the LA contribution to health protection, including planning for and responding to incidents that present a threat to the public's health. They are also responsible for:

- overall executive responsibility for reviewing the health of the population including surveillance, prevention and control of communicable diseases
- ensuring, in liaison with NHS England and CCGs, that appropriate resources are available to support the investigation and control of outbreaks
- ensuring 24-hour LA emergency management availability
- ensuring that hospital trusts are alerted and able to cope with a potential influx of patients
- informing LA Chief Executive and Chairman, as appropriate
- liaison with other LAs as appropriate
- agree who will lead the media response

PHE Field Epidemiology Service (FES) Consultant

- provide advice to the OCT on epidemiological aspects of the outbreak
- provide advice and support for local descriptive epidemiological summaries and analytical epidemiological investigations
- run an epidemiological investigation on behalf of the OCT
- organise a dedicated Epidemiology Cell
- co-ordinate cross-boundary or widespread regional/national investigations

Lead Public Health/PHE Microbiologist or NHS Consultant Microbiologist

- present relevant microbiological information to the OCT

- provide guidance on the microbiological aspects of investigation and control
- identify resources to enable rapid microbiological testing
- arrange testing of relevant samples and arrange further investigations by other laboratories as agreed by the OCT eg typing or whole genome sequencing (WGS)
- liaise with microbiologists in other laboratories (PHE & NHS), including reference laboratories, involved in the investigation
- advise on communications needed with microbiological colleagues and assist in briefings where necessary
- provide the results of testing to the source of the request
- participate, as necessary, in the inspection of premises and procurement of samples
- assist clinical and health protection colleagues with treatment and prophylaxis protocols

In addition the Lead Public Health Microbiologist will:

- deliver public health microbiology for the regions in which they are based
- provide microbiological expertise for HPTs and LAs
- support trusts and HPTs in the investigation and control of community outbreaks and HCAI in acute trusts
- liaise with Consultant Microbiologists, laboratory, CCDC, EHOs, senior trust managers and DPH as appropriate

PHE communications lead

- liaise with incident lead to establish an incident spokesperson
- coordinate media handling for local HPTs in close liaison with partners
- ensure appropriate health protection advice is made available to the public and media throughout, including appropriate messages articulating HPT advice locally
- provide a regional lead for communications relating to high impact outbreaks
- manage the reputation of the PHE in the region, specifically horizon scanning for issues that might damage that reputation and as appropriate provide high level advice to the Incident Director and other colleagues on any action required
- monitor press and social media coverage of the outbreak

Administrator

Administrative support should be provided to each outbreak control team. Responsibilities include:

- taking accurate and detailed minutes of OCT meetings including a record of actions and the individual or organisation responsible
- timely circulation of minutes to members of the OCT
- organisation and circulation of dates for OCT meetings or associated activities
- act as task manager for incidents where this is required
- other administrative support as required

A3.5 Roles and responsibilities of organisations

The roles of PHE and LAs in the new public health system are complementary. These organisations will work together as part of a single public health system to deliver effective protection from health threats for the population. Commissioning responsibilities are now split between NHS England Area Teams, CCGs and LAs.

Measures taken to control an outbreak can require a need to urgently mobilise resources. This might include the provision of vaccines or antibiotic prophylaxis for contacts or the collection of samples for screening or diagnostic purposes. In a large outbreak this will often include the provision of suitable clinical staff to deliver an intervention.

To prevent any delays in mobilising resources there should be a local agreement in place regarding the commissioning and provision of any extra resources required. This should include a clear statement of how these will be funded, delivered and accessed during an incident.

Public Health England

The Health Protection Agency was moved into the newly formed Public Health England (PHE), an executive agency of the Department of Health in April 2013. Under the Health and Social Care Act 2012 the Secretary of State has a duty to protect the health of the population and carry out activities as described in the Health Protection Agency Act 2004. In practice these duties will be carried out by PHE.

PHE will deliver a specialist health protection service, including the response to incidents and outbreaks through Health Protection Teams (HPTs), which take on functions of former Health Protection Units and sit within Public Health England Centres (PHECs)

Local HPTs investigate and manage outbreaks of communicable disease, provide surveillance of communicable diseases and infections and support LAs (including port health authorities) in their responsibilities under the Public Health (Control of Disease) Act 1984 and associated regulations, as well as new duties described under the Health and Social Care Act. Local HPTs are staffed by CsCDC/CsHP, health protection nurses and practitioners and other staff with specialist health protection skills.

The PHE Centre Director may also coordinate the work of HPTs in providing support to major incidents which cross two or more PHECs in the region.

The Screening and Immunisation Team are public health specialists employed by PHE and embedded in NHS England Area Teams. They are led by a Consultant in Screening and Immunisation, supported by Screening and Immunisation Managers and Coordinators.

PHE Centre for Infectious Disease Surveillance and Control

The Centre for Infectious Disease Surveillance and Control (CIDSC) Colindale is responsible for the collection and collation of data on outbreaks of communicable disease and is involved in prevention and control at a national level in England. Where appropriate, CIDSC Colindale can provide experts to assist in local outbreak investigations or, in the case of outbreaks with a national distribution, its experts may themselves design and carry out outbreak investigations.

PHE Microbiology Services

Microbiology Services comprise the reference laboratories at Colindale which assist in the identification and investigation of outbreaks by subtyping isolates and the Specialist Microbiology Network (SMN). The SMN includes the Food, Water and Environment (FWE) laboratories and also has Lead Public Health Microbiologists who manage or commission regional public health microbiology services (including food, water and environmental microbiology). PHE's regional laboratories undertake specialist tests and provide support for NHS microbiology laboratories. In addition the reference laboratory at Porton deal with special pathogens.

Whole Genome Sequencing (WGS) capability has been developed in PHE and has been through a validation process so that it is now available to support outbreak investigations.

Advice and support for outbreak control teams are available through:

genomicsupport@phe.gov.uk

Lead Public Health Laboratories

Specimens are submitted to public health microbiology laboratories to determine the cause and extent of an outbreak in a community (institution, family group or the wider community) or determine whether an observed cluster of cases is related and constitutes an outbreak.

Specimens may also be submitted to detect spread and contain and/or prevent an outbreak (eg Diphtheria, Group A streptococcus or other pathogens).

PHE Field Epidemiology Services

The Field Epidemiology Service (FES) was created to improve the consistency of high quality epidemiological investigations including those in response to outbreaks and incidents. FES is a nationally co-ordinated but geographically dispersed service with Consultant Epidemiologists specialising in the epidemiology of communicable disease and in the application of epidemiological methods supported by scientists and analysts. Each PHE Centre has a nominated link FES consultant. FES supports the investigation of outbreaks/incidents, including providing on-site support where needed and should be contacted in all significant incidents or as agreed with their local HPT.

Local authorities

Local authorities and port health authorities have a key role in investigating and managing outbreaks of communicable disease. The specific statutory responsibilities, duties and powers available to them during the handling of an outbreak are set out in the following legislation:

- Public Health (Control of Disease) Act 1984 and associated regulations
- Health Protection (Notification) Regulations 2010
- Health Protection (Local Authority Powers) Regulations 2010
- Health Protection (Part 2A Orders) Regulations 2010
- Health and Safety at Work etc. Act 1974 and associated regulations
- Food Safety Act 1990 and associated regulations
- Food Safety and Hygiene Regulations 2013 (in place December 2013)
- Food Law Code Of Practice (England)
- International Health Regulations 2005
- Public Health (Ships) Regulations 1979
- Public Health (Aircraft) Regulations 1979

In cross LA boundary outbreaks a lead authority should be appointed at the first meeting of the OCT. The following factors should be taken into account:

- the LA where any function, event or institution associated with the incident is located
- the LA where the premises associated with the outbreak is located (eg wholesaler/retailer)
- the LA where most of the cases have occurred

Each authority will make available the necessary resources to investigate and control the outbreak at the request of the OCT. It is inevitable in a cross boundary outbreak that relevant information may need to be released to a neighbouring authority or agency. Information will be released on a 'need to know' basis. All authorities and agencies will ensure confidentiality of information obtained during cross boundary outbreaks. A common dataset and database, password protected as necessary, should be established as soon as possible. Lines of communication should be established and clarity of roles and responsibilities is vital to prevent duplication of effort.

NHS England and Clinical Commissioning Groups

The Health and Social Care Act 2012 states that both NHS England and CCGs are under a duty to obtain appropriate advice on 'the protection or improvement of public health', which may come directly from PHE or via the DPH. NHS England and CCGs also have a duty to cooperate with local authorities on health and wellbeing under the NHS Act 2006, including cooperation on health protection.

NHS England are responsible for ensuring an effective local response including the mobilisation of local resources through the appropriate commissioner. DsPH will hold NHS England to account for delivering that response

CCGs are the local commissioners of NHS funded community and secondary care services. They sit on local Health and Wellbeing Boards where all partners come together to consider health and social care issues, including health protection. CCGs also sit on their Local Health Resilience Partnership (LHRP) as part of the NHS system to prepare and plan for EPRR. Commissioned healthcare services should include the necessary surge capacity that may be needed for outbreaks. Many CCGs are also employing their own infection control nurses.

Food Standards Agency

The Food Standards Agency (FSA) is a UK-wide non-ministerial Government department, established under the Food Standards Act 1999 with responsibility for the protection of public health in relation to food.

LAs have a responsibility under Codes of Practice (Food Law Code of Practice 2014 section 2.4.2) to inform the FSA of all national or serious localised outbreaks. The FSA Incidents Branch is the point of contact for LAs in relation to outbreaks and incidents. The FSA will normally participate in national OCTs, assist in the investigation of a foodborne outbreaks and will lead on any food chain analysis and action that may be required.

Where investigations implicate a food distributed in the UK the FSA will carry out a risk assessment and work with LAs to advise the food business operator (FBO) on steps that ought to be taken in relation to the affected product(s). Those steps may include the withdrawal or recall of food pursuant to EC General Food Law Regulation 178/2002, which prohibits food being placed on the market if it is unsafe. Under this EC regulation FBOs are also required to notify the competent authorities (ie both the FSA and relevant LA) where they consider or have reason to believe that food is not in compliance with food safety requirements.

The FSA is the national contact point for the European Commission's Rapid Alert System for Food and Feed (RASFF) and use this system to inform the EU and member states if foods implicated in outbreaks of foodborne disease have been distributed outside the UK. This system is also used to inform the Commission and originating third countries of serious incidents or outbreaks caused by a food whose origin is beyond the UK's national borders. The FSA is also the national focal point for INFOSAN (International Food Safety Authorities Network) for communication between national food safety authorities regarding urgent events.

Animal Health and Veterinary Laboratories Agency

In April 2011, the Veterinary Laboratories Agency merged with Animal Health to form the Animal Health and Veterinary Laboratories Agency (AHVLA). AHVLA is funded by Defra to give assistance to outbreak control teams as appropriate where a direct or indirect animal source is implicated in outbreaks of enteric (or other zoonotic) illness and where veterinary investigation (including collection of appropriate animal samples) or intervention could help reduce risks to the public. Veterinary involvement may be initiated centrally by Defra or locally following contact between the CCDC or the LA and the local AHVLA regional laboratory.

Local Resilience Forums (LRF) and Local Health Resilience Partnerships (LHRP)

Local Resilience Forums (LRF) are existing multi-agency partnerships which bring together senior representatives of emergency services, LA partners, NHS bodies and other responders. The purpose of the LRF is to prepare for and support member organisations to respond to emergencies as part of national coordination arrangements and enable and build local resilience capability through planning and testing. There are currently 39 LRFs that map directly on to police areas; LRFs typically have 3 seats for health representatives from NHS, LA public health and PHE.

The LHRP is a strategic forum for organisations in the local health sector which facilitates health sector preparedness and planning for emergencies at LRF level. It supports the NHS, PHE and LA representatives on the LRF in their role to represent health sector EPRR matters.

Health and Safety Executive (HSE)

The HSE is an Executive non-departmental public body established under the Health and Safety at Work etc. (HSW) Act 1974 and is the enforcing authority responsible for health and safety regulation for certain premises and activities in the UK. The HSE's primary function is to secure the health, safety and welfare of people at work and protects the public from risks to health and safety from work activity.

HSE works in many areas including mines, factories, farms, hospitals and schools, offshore gas and oil installations, the gas grid and the movement of dangerous goods and substances,. Companies have a legal requirement to control the risks from hazards such as biological agents. HSE publishes guidance on control measures necessary to minimise risks and comply with legislation and routinely carries out inspections to ensure controls are adequate.

The Office for Nuclear Regulation (ONR) is responsible for all nuclear sector regulation across the UK. ONR was established in April 2011 as an agency of HSE but is working towards becoming an independent statutory corporation.

HSE and the former Health Protection Agency signed a Memorandum of Understanding in February 2011 which can be found here:

<http://www.hse.gov.uk/aboutus/howwework/framework/mou/hpa-mou-2011.pdf>

Appendix 4: Legal Duties and Powers

Health and Safety at Work etc. Act 1974 and associated regulations

The Health and Safety at Work (HSW) etc. Act 1974 and associated regulations and codes of practice provide the legal powers for the investigation of non-food related outbreaks in workplaces. For example where outbreaks are associated with water systems such as cooling towers, swimming pools, spas; or with animals such as at visitor attractions where contact with animals is permitted.

Depending on the type of activity carried on the HSE or the LA will undertake appropriate regulatory action under the HSW Act and associated legislation for premises and processes for which they are responsible. Section 3 of HSW Act relates to the protection of people, other than those employed by the undertaking concerned, from risks to their health and safety arising out of or in connection with the activities of persons at work. Guidance on the application of Section 3 can be found here;

<http://www.hse.gov.uk/enforce/hswact/>

Corporate Manslaughter and Corporate Homicide Act 2007.

The Corporate Manslaughter and Corporate Homicide Act 2007 has been implemented and a multi-agency Work-Related Death Protocol has been agreed:

A work-related death is a fatality resulting from an incident arising out of, or in connection with, work. The principles within the protocol also apply to cases where the victim suffers injuries that are life-threatening. There will be instances in which it is difficult to determine whether a death is work-related and each fatality must be considered individually. The relevant enforcing authorities should make this conclusion at the earliest opportunity. A police officer of supervisory rank should assume responsibility for the investigation, which in practice may run in parallel to investigations by the OCT.

<http://www.legislation.gov.uk/ukpga/2007/19/contents>

<http://www.hse.gov.uk/enforce/wrdp/>.

Food Safety Act 1990 and associated regulations

The Food Safety Act 1990 and associated regulations and codes of practice provide the legal powers for investigation of food borne outbreaks, implementation of necessary control measures to prevent spread of infection, and where appropriate legal sanctions.

The Food Standards Agency has produced a range of guidance that may be of help to LAs that are required to carry out formal sampling as a result of a foodborne outbreak, which can be accessed here:

<http://food.gov.uk/enforcement/monitoring/samplingresources>

Public health protection powers

The most important measures are contained within the Public Health (Control of Disease) Act 1984 (as amended) together with the Health Protection (Local Authority Powers) Regulations 2010 and the Health Protection (Part 2A Orders) Regulations 2010. These provide for an “all hazards” approach, which is consistent with the International Health Regulations 2005, encompassing infection and contamination of any kind.

Generally, there is no need to compel people to take action to protect other people’s health. The health protection powers are for use where voluntary measures are insufficient and legal powers are needed to deal with infections or contamination that present a significant risk to human health. The powers now available to local authorities include powers that can be exercised by the local authority without judicial oversight and other powers that involve an application to a Justice of the Peace (JP).

A JP can make a Part 2A Order requiring a **person(s)** to:

- undergo medical examination (NOT treatment or vaccination)
- be taken to hospital or other suitable establishment
- be detained in hospital or other suitable establishment
- be kept in isolation or quarantine
- be disinfected or decontaminated
- wear protective clothing
- provide information or answer questions about their health or other circumstances
- have their health monitored and the results reported
- attend training or advice sessions on how to reduce the risk of infecting or contaminating others
- be subject to restrictions on where they go or who they have contact with
- abstain from working or trading

In addition, a JP can make a Part 2A Order requiring that:

- **a thing(s)** is seized or retained; kept in isolation or quarantine; disinfected or decontaminated; or destroyed or disposed of
- **a body or human remains** be buried or cremated, or that human remains are otherwise disposed of
- **premises** are closed; premises are disinfected or decontaminated; a conveyance or movable structure is detained, or a building, conveyance or structure is destroyed

Appendix 5: Risk assessment

Risk assessments should be conducted at the beginning of an outbreak, reviewed regularly and used to inform control strategies. Different organisations use different risk assessment frameworks; the choice of framework should depend on the circumstances and be agreed at the OCT.

The Risk Management Model for Communicable Disease Control is embedded in HPZONE and is the model commonly used by HPTs. It considers five separate elements: *severity, confidence, spread, intervention and context* and is described below.

Risk management model for communicable disease control

Severity

The seriousness of the incident in terms of the potential to cause harm to individuals or to the population

Grade	Qualifier	Description	Examples
0	Very low	Seldom causing severe illness	<ul style="list-style-type: none"> •MRSA in a domestic setting •Head Lice
1	Low	Occasional serious illness, rarely with long term effects or death	<ul style="list-style-type: none"> •Hepatitis A in a primary school
2	Moderate	Often severe illness occasionally with long term effects or death	<ul style="list-style-type: none"> •Toxigenic E.Coli O157 •Pulmonary tuberculosis •MRSA in a high dependency unit •Legionnaires' disease
3	High	Usually severe illness often with long term effects or death	<ul style="list-style-type: none"> •Meningococcal disease •Diphtheria
4	Very high	Severe illness almost invariably fatal	<ul style="list-style-type: none"> •Rabies •Ebola •vCJD

Uncertainty

The level of uncertainty that the diagnosis is correct, based on epidemiological, clinical, statistical and laboratory evidence,

Grade	Qualifier	Description	Examples
0	Very low	Available evidence suggests hypothesis is correct. Empirical probability > 85%	<ul style="list-style-type: none"> •Typical incident picture with increasing confirmation
1	Low	Available evidence suggests hypothesis is correct. Empirical probability: 50% to 85%	<ul style="list-style-type: none"> •Typical incident picture without conflicting information
2	Moderate	Available evidence suggests hypothesis is correct. empirical probability: 25%-50%	<ul style="list-style-type: none"> •Alternative hypothesis equally likely
3	High	Available evidence suggests hypothesis is correct. Empirical probability 10% to 25%	<ul style="list-style-type: none"> •Alternative hypothesis more likely but cannot exclude the working hypothesis
4	Very high	Available evidence suggests hypothesis is correct. Empirical probability <10%	<ul style="list-style-type: none"> •Hunch

Spread

The likelihood of the infection spreading. This includes an assessment of the infective dose, virulence of the organism, modes and routes of transmission, the observed spread and the susceptibility of the population (eg lack of immunity).

Grade	Qualifier	Description	Examples
0	Very low	Very low likelihood of spread with very few new cases	<ul style="list-style-type: none"> •A single case of campylobacter
1	Low	Low likelihood of spread with few new cases	<ul style="list-style-type: none"> •A single case of meningococcal disease •A smear negative culture positive case of Tuberculosis
2	Moderate	Moderate likelihood of spread with new cases. May develop into a limited outbreak	<ul style="list-style-type: none"> •Viral gastro-enteritis in a nursing home •A handful of cases of hepatitis A occurring over a prolonged period of time in a large community •A smear positive case of Tuberculosis
3	High	High likelihood of spread with many new cases. May develop into a large outbreak	<ul style="list-style-type: none"> •Multiple cases of dysentery in a deprived population of children under 8 years old •Epidemic of influenza in an army camp
4	Very high	Spread is almost inevitable	<ul style="list-style-type: none"> •Measles in a non-immune sub-population

Intervention

The feasibility to intervene to alter the course and influence the outcome of the event and contain, reduce or eliminate the transmission of the organism. This includes feasibility of delivering appropriate interventions, taking into consideration how simple, effective, available, affordable, acceptable and accessible they are.

Grade	Qualifier	Description	Examples
0	Very easy	Intervention well established with clear benefits and no anticipated difficulties	<ul style="list-style-type: none"> •Hand washing advice
1	Easy	Intervention with clear beneficial effects and few difficulties to implement	<ul style="list-style-type: none"> •Withdrawal of a contaminated food in a closed institution •Hepatitis A immunisation to a small group of vulnerable contacts of a case •A case of meningococcal infection with contacts confined to the household
2	Passable	Intervention with some beneficial effects but some difficulties to implement	<ul style="list-style-type: none"> •Prophylaxis to immediate family and close contacts in a meningococcal case where they are dispersed
3	Difficult	Some remedial intervention possible but either difficult to implement, relatively ineffectual or other significant problems	<ul style="list-style-type: none"> •National food withdrawal •Urgent mass immunisation campaign •Response to rabid dog in the loose
4	Very difficult	Remedial intervention very difficult	<ul style="list-style-type: none"> •Response to a cluster of vCJD •MRSA on a busy high dependency unit

Context

The broader environment in which events are occurring, including public concern, attitudes, expectations, pressures, strength of professional knowledge and politics, which may influence decisions about the response.

Consideration should be given to:

- media, parents, local concern and politics and the degree to which these factors aggravate and raise the profile of the event
- historical problems: influence of local experience of similar incidents and previous events, the way they were handled, associated consequences and expectations
- peer group practice: extent to which an established approach or recommended best practice is tested and documented (national guidelines)
- extent to which other similar incidents are being managed and publicised and the impact this may have on public attitudes and expectations

Grade	Qualifier	Description	Examples
0	Very easy	No raised level of interest	<ul style="list-style-type: none"> •Apathy. •Common adverse problems are fairly well understood
1	Easy	A small degree of increased interest with a low level of conflicting factors. Little public concern	<ul style="list-style-type: none"> •Misunderstanding corrected by routine information •Head-lice control campaign •Few cases of diarrhoea in a nursery school
2	Passable (Manageable)	A degree of unease and anxiety on the part of the public and the media. The context could deteriorate if the incident is mishandled	<ul style="list-style-type: none"> •A series of gastro-enteritis cases associated with an outdoor centre to which children are sent •TB in a school in a low incidence area
3	Difficult	Context is sensitive with significant difficulties, press interested and local people (unaffected) involved. The incident could go very wrong unless carefully handled. The event could have re-occurred in spite of preventative actions	<ul style="list-style-type: none"> •Surgeon is found to have HIV •Widespread food poisoning affecting several schools •Allegation about the safety of childhood vaccines with media coverage
4	Very difficult	Significantly raised public concern and political and emotional pressure with the public and the media declaring antagonistic and unhelpful views	<ul style="list-style-type: none"> •BSE-like illness linked to a new source eg pork •A childhood immunisation found to have serious unsuspected side effects

Appendix 6: Outbreak investigation and control

The approach to the investigation and control of an outbreak is likely to vary dependent on the circumstances. The following is designed to assist in systematically addressing key points for consideration.

Each action does not automatically follow the one preceding it and not all steps are needed on every occasion. Some actions will be carried out simultaneously whilst others, such as communication and collation of data, will be required throughout the whole process.

A written plan of investigation should be drawn up at the earliest possible point, usually after confirmation of the outbreak (Appendix 7). The Incident Director/OCT should consider whether an Epidemiology Cell is required to support this investigation.

Initial response

- confirm the validity of the initial information on which the potential outbreak is based
- establish a diagnosis and collect relevant clinical and demographic information including onset date, severity etc.
- conduct preliminary interviews with cases to gather information including common exposures eg food consumption, attendance at an event, premises visited
- identify the population at risk
- agree a case definition
- agree arrangements for proactive and early case finding
- in the case of significant outbreaks inform the CIDSC Colindale and if a food source is suspected, the FSA Incidents Branch

Other actions

- consider the likelihood of a continuing public health risk
- carry out an initial risk assessment to guide decision-making and implement any immediate control measures
- agree any immediate additional investigations required such as microbiological, environmental or food testing
- notify laboratory staff of the investigation and agree a locally agreed identifier to be assigned to specimens
- conduct investigations at implicated premises
- identify the need to convene an OCT and activation of the outbreak control plan
- consider whether an Epidemiology Cell should be formed to support the OCT
- review the information gathered, assess the need for further investigation and identify the roles and responsibilities of the relevant partners

Descriptive epidemiology

- review initial information and establish the number of confirmed and probable cases based on the case definition

- describe the outbreak in terms of person (age, sex or other factors), time (symptom onset or date of diagnosis) and place (geographical distribution of cases)
- conduct in-depth interviews with cases to identify risk factors
- form preliminary hypotheses based on information gathered

Communication

- agree who will have lead media responsibility and ensure the relevant communications officer is involved at the earliest possible stage.
- agree a communication strategy including the most effective routes of communication.
- identify all parties that need to receive information.
- ensure accuracy and timeliness of communication, while complying with relevant legislation eg Data Protection Act.
- prepare both proactive and reactive media statements for release as appropriate.
- ensure PHE alerting occurs as outlined in the NIRP.
- ensure relevant material is collected to inform a final report for distribution.

Analytical epidemiology and further investigation

- confirm factors common to all or most cases and calculate attack rates.
- review preliminary hypotheses and consider whether further epidemiological or microbiological investigations are required.
- collect any further clinical and environmental specimens for testing.
- conduct further analytical epidemiological studies (See Appendix 8)
- conduct further microbiological studies (eg specialised typing or WGS).
- ascertain source and mode of spread.

Control measures

- control the source (animal, human or environmental) and mode of spread.
- protect persons at risk.
- monitor effectiveness of control measures / maintain disease surveillance.

Final phase

- identify the end of the outbreak.
- produce outbreak report and lessons learnt.

Appendix 7: Investigation protocol

The following are guidelines for the structure of an outbreak investigation protocol. The level of detail should be appropriate to the nature of the outbreak, and will reflect the resources available to the OCT. The preparation of a detailed investigation protocol should not detract from management of the outbreak.

Title

The title should contain, at a minimum, the type of outbreak, suspected pathogen, location and date.

Background

This section should include, for example:

- information on the organism
- outbreak details (eg number affected, date first cases reported, date and time of onset of first cases and any laboratory confirmation, symptoms, severity, geographical distribution, gender distribution)
- setting details and implicated premises (if known)
- how the outbreak was identified
- the initial response to the outbreak

Aim and objectives of investigation

Epidemiological investigations

This section should describe the methods and timescales for the:

- descriptive epidemiological study (eg case definition, case finding, questionnaires)
- analytical epidemiological study, if necessary

Microbiological investigations

This section should describe the laboratory methods for clinical diagnosis and the characterisation of isolates (clinical, environmental, veterinary) to distinguish the outbreak strain.

Environmental investigations

This section should describe the methods for the microbiological sampling and analysis of food, water and environmental samples taken from implicated premises as part of the investigation. If the outbreak is foodborne, this section would also describe methods for source tracing of food products.

Veterinary investigations

This section would describe the methods for the microbiological sampling and analysis of animal samples taken as part of the outbreak investigation.

Management and communications

This section will set out how the requirements of the protocol are met through the provision of adequate coordination, resources and through the timely communication of information.

It will also outline **roles and responsibilities** for local / regional / national authorities or agencies (depending on the nature of the outbreak) in responding to gastrointestinal outbreaks.

Appendix

This section may include, for example:

- questionnaires used as part of the outbreak investigation
- schematic overview of protocol

Appendix 8: Conducting an analytical study

Analytical studies are conducted to test hypotheses generated by descriptive epidemiology regarding the cause of an outbreak. Analytical studies are resource intensive but necessary as they enable the investigator to generate convincing evidence of the suspected source of infection. This may be important to support and justify interventions implemented to protect public health.

Before starting an analytical study a descriptive analysis should have been conducted, a specific hypothesis identified. A written protocol for the study must be drawn up prior to commencing the analytical study.

Reasons for conducting an analytical study include:

- a disease with unknown source, or unknown mode of transmission
- where new risk factors for a disease may have been recognised
- a new or unknown pathogen or hazard
- the need for new knowledge to inform future public health action
- an outbreak of a rare disease not normally occurring in the UK
- an outbreak of disease with significant morbidity or mortality
- an outbreak of national interest where evidence to support interventions is required
- an outbreak linked to a nationally distributed product
- a high level of public or media concern
- an absence of known effective control measures
- an outbreak potentially related to poor standards of institutional care
- training experience to be gained

Cohort and case control studies are the traditional study designs which provide a scientific framework to assess the relationship between exposure to a risk factor and the incidence of illness. The appropriate study design will depend on the nature of the outbreak. Other novel methods have been described and may be appropriate, FES or CIDSC Colindale are able to provide expert advice and support on study design.

Cohort studies

Cohort studies are the gold standard for outbreak investigation because they enable an estimation of the relative risk of becoming unwell after being exposed to a potential source of infection. The cohort method has the advantage over case-control studies that there is no need to identify and select controls, so the possibility of bias is reduced.

A cohort is a complete group of people who attended an event or who were exposed to a potential source of infection (eg food, surgical intervention, environmental hazard). In a cohort study the following is measured:

- The level of exposure by each member of the group in terms of amount of food eaten or time spent exposed to an environmental source.

- The outcome in terms of illness or adverse health effects.

A comparison is then made between those exposed and those not exposed, or among those exposed to high versus low 'doses'.

Case-control studies

A case-control study is used when it is not possible to identify a defined population at risk, or when the source population is so large in proportion to the numbers who are ill that it is not cost effective to include them all in the study.

Cases are those who have had the illness of interest. Controls should be people who have had similar opportunities to be exposed and to be diagnosed as cases. The purpose of the study is to determine whether the exposure of interest occurred more or less frequently in cases than controls. Analysis produces an odds ratio that describes the ratio of the odds of exposure in the cases to the odds of exposure in the controls.

Controls can be chosen from neighbours and friends of the cases or from various registers and lists, such as people who are registered with the same general practitioner. Each case will usually have one, or preferably more, controls.

Matching controls to cases on the basis of demographic or other factors should be considered as this can control for confounding. Care should be taken not to overmatch, as this is likely to make cases and controls more similar with respect to exposure history. For example if the suspect food is a confectionery bar and most cases are children, matched controls would be children of similar age, living in the same area. If controls are too similar to cases then no association with the suspected exposure might be found.

Data quality

The transfer of data from questionnaire to an appropriate electronic format for analysis requires care so not to inadvertently introduce errors. Ideally, two staff would independently enter data onto an electronic database. Databases should then be compared to identify and correct any differences. This corrected database should then be used for the statistical analysis.

Tests for statistical significance

Data showing the differences in illness between those who were exposed and unexposed to a suspected source should be tested for statistical significance. If the calculation shows a statistically significant difference between exposed and unexposed this supports the hypothesis that the source was the cause. Chi-square (χ^2) and Fisher's Exact tests are most commonly used in this calculation. The level of significance required to demonstrate that a difference is not merely a result of chance is specified beforehand. The commonest significance level used is 5%; ie there is a one in 20 (5%) likelihood that chance alone would account for the statistical difference between the two groups.

Appendix 9: Media strategy

A key member of the OCT is the communications officer. The role of the communications officer in the OCT is to ensure that any media implications are considered among all the members of the OCT and planned for in the shape of either a reactive holding statement or a proactive media release.

Depending on the incident it may be necessary to keep the public fully informed via the media, especially if there is a wider public health risk. The approach taken to risk communication will be informed by the risk assessment. The risk assessment will be agreed between all OCT members, and will incorporate epidemiological evidence, microbiological evidence, forensic infection control knowledge and, where appropriate foodchain investigations.

Any media activity would need to be considered with the following considerations: that it would not prejudice the investigation; compromise any statutory responsibilities or legal requirements and not reveal the identity of any cases or premises under investigation, unless there is a material risk to the public, in which case public protection will be the paramount consideration.

Following the first meeting of the OCT, a reactive media statement will be prepared which will detail the number of people affected by the outbreak which will be broken down by region where appropriate. This information will be cascaded to other communications colleagues in the regions. Details of the infection (eg Measles, *E.coli* etc.) will be given together with any details of hospitalisations and deaths, as is normal practice. The head of the relevant department or other suitable senior member of the team will be quoted and a spokesperson nominated for any media enquiries.

All media material prepared by the OCT communications officer will be signed off by relevant OCT members. This is usually the epidemiologist as well as the OCT chair. In incidents where it is appropriate for there to be a joint media response, media material would then also need to be shared and agreed with lead members of the OCT from associated organisations. A single point of contact for media enquiries should be decided.

Once all the media materials have been signed off by all relevant OCT members the communications officer will be responsible for all the external communication, except with professional stakeholders.

Where the media statement is being made public (a proactive release) this will be published on the PHE website. Other media activities may include uploading a Tweet and updating the PHE Facebook page

The communications officer will also be responsible for sharing information with other press officers both within PHE and other organisations such as DH, Defra, and FSA etc. No other member of the OCT or the participating agencies will release information to the press or arrange press conferences - this will be solely the role of the communications officer.

Appendix 10: Constructive debriefing and lessons identified

The PHE lessons identified (LI) methodology involves complementary approaches drawn from constructive debrief methodology and from a logical framework approach to capture the learning from each incident/emergency or exercise and ensure that LI are acted upon and implemented. It is important that any LI system enables the views of all participants to be gathered at the individual and group level whilst keeping the process simple. Participants must be given every opportunity to contribute their observations freely and honestly.

The lessons identified process follows the PHE National Incident Response Plan (NIRP) and this guidance at whatever the level of response. In the NIRP, the Incident Director by default is responsible for ensuring that the lessons identified process takes place. The Incident Director will decide who is to manage the debriefing process and agree with them the terms of reference for the debriefing.

The process takes an integrated approach in order to provide a forum for those involved in the real incident or exercise to express their observations and allow the identification of;

- The principle issues
- The root causes of these issues
- Produce recommendations to address the issues and an action plan with clearly identified responsibilities and time

A facilitated or virtual constructive debrief brings together staff involved to draw out learning, both positive and negative encountered as part of the response to the outbreak. The template below can be used to guide this process.

The following categories are provided as examples of the issues that will need to be covered as part of the constructive debrief (this list is not exhaustive and can be added to as required):

A) Coordination

- Internal
- Multiagency

B) Preparation

- Internal
- Multiagency

C) Communications

- Internal
- Multiagency

- Media
- Public

D) Resources

- Staff
- Organisation
- Direct
- Indirect

For NIRP levels 1 and 2 a local reporting process will be used to ensure recommendations from lessons are implemented. Following a NIRP level 1 or 2 incident or exercise, the Incident Director and Debrief Facilitator meet to determine the key lessons identified from the debrief. These lessons will then be reported to the appropriate Senior Management Team (SMT) for their input on decisions regarding actions that need to be taken and who will be tasked with leading on them.

Once this is completed an administrator is identified to ensure all SMT decisions have been recorded and staff involved (Lesson Leads) are aware of their responsibilities in the delivery of actions/recommendations. These leads must then provide regular updates on the delivery of the action to the administrator and appropriate SMT to ensure that staff are aware of progress.

For NIRP levels 3 and above, the reporting process will be through the PHE EPRR Oversight Group via the CRT team in ERD. Outputs from the lessons identified facilitated debriefing process are used to populate a lessons identified report table which clearly identifies lead, responsibilities and target dates for completion. This will also detail who in PHE is responsible for following up whether all lessons identified have been addressed and how and when they will be reported to the PHE EPRR Oversight Group.

Appendix 11: Final outbreak investigation report

A11.1 Standard structure

A written final report should be ideally be prepared within 6 weeks of the end of the outbreak investigation, and definitely within 12 weeks. This report should ideally be agreed by all members of the OCT.

The report should follow the usual scientific format of an outbreak investigation report and include a statement about the effectiveness of the investigation, the control measures taken and recommendations for the future. The final report should be comprehensive, protect confidentiality and be circulated to appropriate individuals and authorities.

Publication in a peer-reviewed journal should be considered, once any legal action by the local authority and other enforcement agencies has been completed. The Strengthening the Reporting of Observational studies in Epidemiology ([STROBE](#)) Statement provides guidance on what should be included reports of observational studies submitted to peer-reviewed journals.

FES has developed a Library of Incident and Outbreak Investigations to assist in sharing knowledge and experiences and support ongoing outbreak investigations. The Library is fully searchable and has been developed in line with the structure set out in this guidance. The Library is accessible to PHE staff via the PHE network.

Structure of report:

Title page

The title should contain the type of outbreak, pathogen, location and date. Name of author(s) and investigators with affiliations, including members of the OCT should be listed.

Executive summary

This section should be concise and contain all key facts that describe what happened. The summary should provide an overview of the background (eg how many people were affected, severity of disease, what pathogen caused the outbreak, setting, etc.), investigation methods, results, how the outbreak was controlled, and any recommendations for preventing future outbreaks.

Introduction

This should contain a brief introduction to the outbreak, including details of outbreak recognition, initial investigations, immediate control measures, timeline and objectives of the investigation.

Background

This should include a brief description of clinical features, incubation period, infectious dose, recognised sources and modes of spread, and diagnosis etc. Also provide the background prevalence of the disease locally, nationally and globally if relevant.

Incident co-ordination

This should include a statement about PHE incident response level and command structure, PHE incident commander and lead organisation. If relevant, multi-agency or NHS incident response level should be stated.

Outbreak investigation methods

This section should provide an overview of investigation methods used, including:

- Epidemiological
 - Descriptive: including description of initial cases and case definition, data collection methods, epidemic curve and hypothesis generation
 - Analytical: case control or cohort, selection of cases/ controls, data collection methods, outline of statistical analysis
- Microbiological
 - samples taken, laboratories used, characterisation of isolates
- Environmental
 - samples taken, risk assessments of production and distribution, including food chain
- Veterinary
 - samples taken, risk assessments and inspection of local farms

Results

The results section should present all of the results from all of the methods used, with analysis and interpretation of the data, eg:

- epidemiological – essential time, place, person
- microbiological
- environmental
- veterinary

Control measures

This section should describe measures taken to control the outbreak, and how effective they were, for example:

- overall co-ordination and management of the outbreak
- care of cases
- prevention of further cases (primary and secondary spread)
- public information
- information to professionals/businesses, etc.
- outline of food safety, infection control, health and safety, enforcement action
- media response

Discussion and conclusions

This section should describe:

- the summary of the main findings
- the validity of the data and possible sources of bias
- interpretation of epidemiological and microbiological findings
- justification for conclusions drawn and actions taken
- assessment of the control measures implemented
- explanation of action to protect public health
- problems encountered

Constructive debrief and lessons identified templates

Recommendations

The outbreak report should include a summary of the lessons learnt and recommendations for any changes in policies, procedures or guidance. The purpose of this is to:

- prevent future outbreaks
- improve surveillance and detection of outbreaks
- improve the process of outbreak investigation and control

References

Appendices

Appendices might include:

- chronology of events
- details of risk assessments undertaken including date and time
- OCT (members, terms of reference, roles and responsibilities, meeting dates)
- detailed results
- epidemiological or environmental questionnaires
- letters to patients/physicians
- press releases
- costs of the outbreak, eg extra resources used or commissioned
- acknowledgements

Circulation list

A11.2 Legal and confidentiality issues related to final outbreak reports

In recent years there has been an increase in the number of requests from solicitors for outbreak reports. In these instances, there is a possibility that the reports will be used in litigation or information contained therein requested as part of a FOI request, therefore it is important that they are written with this in mind.

Traditionally outbreak reports have been written for the use of OCTs and may explore hypotheses and learning points. These may contain elements that are fundamental to the outbreak but inappropriate to make publicly available for individual litigation cases such as the inclusion of named premises (and the potential for defamation if critical); case histories that may be deductively identifiable (even if anonymised); or lessons learned that may be inappropriately interpreted as admissions of errors by external parties. In light of this the OCT and authors should consider the following when preparing the report.

To be considered by authors:

- Proof read the document, use a date and version number and remember to take the word “draft” off the final document
- Is further assurance through independent professional/expert scrutiny or peer review needed? Are the conclusions supported by evidence and would the conclusions and opinions stand up to independent scrutiny
- State who contributed what to the report and who signed the report off.
- Clarify where the evidence came from and who acted on this evidence. Organisations sometimes have overlapping roles and responsibilities. A report, mainly written by one author on behalf of a multi-agency group, may confuse the reader regarding the legal and professional responsibilities of individual incident responders. To promote a consistent understanding and avoid PHE being unnecessarily associated with an inappropriate or inadequate response, it is therefore important to document this.

To be considered by OCT:

- Purpose of report and who it is for. If there are lessons identified relating to the response of individual organisations to the outbreak, consideration should be given to including these in a separate report to be used internally and complying with information governance requirements.
- Ownership of the report. If multi-agency sign-off procedure, ownership of copyright and responsibility for formal disclosures needs to be agreed.
- Disclosure and publication. Clear arrangements for formal and informal disclosure are needed. Agreement is required regarding where the report will be published and whether this will be in full. It is good practice to allow those affected by the report see it in advance of publication
- Whether the publication of the report could prejudice any on-going or intended legal proceedings or other enforcement action being undertaken or considered by the LA or

other enforcement agency. Publication may need to be delayed until legal proceedings have been concluded.

- The identification of individuals, organisations and business. If to be identified, consideration should be given to whether they are content for disclosure.
- Legal and reputational risks around the report. If these are high, consideration should be given to increasing the scrutiny of the report and getting a legal opinion before publication.

Legal considerations:

- Is legal advice required prior to signing off? This may be appropriate if it is known or suspected that the outbreak may be the subject of a civil or criminal prosecution, or if it is a high profile or high impact outbreak
- Does the report include: any material gained during the investigation which was NOT intended for disclosure/inclusion in a report (eg information from emails); which should be withheld or redacted (eg because it is personal, confidential or commercially sensitive) whether statements of fact or opinion; or that is defamatory?
- Has any material relevant to the subject of the document been omitted?
- Are there any active legal proceedings which could be affected by publication or disclosure of the report?
- Are there other government bodies or departmental reports that conflict with the content of the PHE's report and therefore wider reputational and legal issues to be considered?
- Have all local authority actions been completed?
- Is there clarity about what can be disclosed, when and under what systems (eg, request from individual/solicitor; FOI or other statutory request)? Does any legislation preclude disclosure of any of the information in the report?

Notifying the Care Quality Commission (CQC) of concerns.

- PHE has a Memorandum of Understanding (MoU) with the CQC on sharing of information relevant to the work of the CQC
- where PHE has concerns about relevant incidents and outbreaks, including in relation to how a service (both NHS and non-NHS) has managed them, they will notify the CQC under this MoU

The MoU can be found here:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181162/PHE-CQC_MoU.pdf

A11.3 Disclosure of Outbreak Reports

Removing 'deductively identifiable' patient information

It is generally accepted that information provided by patients to the health service is provided in confidence and must be treated as such so long as it remains capable of identifying the individual it relates to. This is an important point, as once information is effectively anonymised it is no longer confidential.

Effective anonymisation generally requires more than just the removal of name and address. Full postcode can identify individuals, NHS Number can be a strong identifier and other information, eg date of birth, can also serve as an identifier, particularly if looked at in combination with other data items.

Preparing report for insurers/ claimants:

If PHE would not otherwise write an OCT report, then PHE is under no obligation to do so simply because an insurer or claimant requests one. If the insurer or claimant wishes to instruct PHE to prepare an independent expert report (and potentially give such evidence at trial) and pay PHE an appropriate fee, then subject to any policy PHE may have in respect of such expert witness work, it is a matter for PHE whether it accepts or declines such instructions.

Similarly if the insurer or claimant wants PHE to undertake further diagnostic tests or additional analyses which were not necessary for outbreak management purposes, PHE is under no obligation to do so. Subject to any policy PHE may have in relation to such tests/analyses, it is a matter for PHE whether it undertakes them and if so, on what basis eg payment of an appropriate fee.

Public requests for outbreak reports under the Freedom of Information Act (FOIA):

The FOI Act gives the public the right to request any information held by any type of public authority or by persons/organisations providing services for them. The public can request information held within things like minutes of meetings, work emails, work diaries, corporate reports and other work documents. The information must be released unless an exemption applies and, where an exemption requires a public interest test to be carried out, the public interest favours withholding the information rather than in disclosing it.

The exemptions may include:

- the applicant could easily obtain the requested information from elsewhere
- the organisation already has published or has firm plans to publish the information
- the information relates to confidential business information
- the information relates to on-going legal or regulatory action

Or where the information:

- is personal information about the applicant

- is personal information about someone other than the applicant and disclosure of it would breach either the Principles or section 10 of the Data Protection Act 1998, eg it is confidential to a third party

Any request made under the Freedom of information Act should be handled in accordance with established procedures, including consulting members of the OCT on the release of information if appropriate.

FOI requests for clarifications relating to reports

Requests for clarification should be responded to, either pursuant to S.1 (1) FOIA (complex clarification) or S.16 (1) FOIA (straightforward clarification).

If PHE's involvement in the management of the outbreak is over and a report has already been prepared by PHE, then generally no additional work will be required beyond disclosing the report and any documents referred to in the report. FOI does not require PHE to generate new information in response to requests.

If PHE receives requests for copies of questionnaires for example, then provided the patients have consented these are disclosed in accordance with the Data Protection Act 1998.

If PHE does not respond to the request for clarification, then the requester can initially appeal against the refusal internally and subsequently to the Information Commissioner.

Once a report has been shared with a member of the public or premises owner any requests should be passed to the PHE communications information access team via foi@phe.gov.uk

Copyright law

- UK copyright law is set out in the Copyright, Designs and Patents Act 1988 (CDPA).
- copyright extends to literary works which will include reports
- the first owner of copyright will be the author (*section 11(1), CDPA*)
- where a work is made by an employee in the course of his employment, the employer will be the first owner of copyright in the work, subject to any agreement to the contrary (*section 11(2), CDPA*). The critical elements here are "employee" and work made "in the course of his employment"
- where more than one person has created a work, the work may be classed as a work of joint authorship if the contribution of each author is not distinct from that of the other authors (*section 10(1), CDPA*). If it is distinct, two or more separate works will exist
- each person claiming authorship must have expended sufficient skill and labour to be classed as an author under the CDPA. In general, each joint author has the same rights as a sole author (except that licensing or assignment requires the consent of all joint authors)

- in the case of a normal report, the copyright will belong to the organisation(s) who employ(s) the author(s)
- if it is important for PHE to exercise sole rights (ie to the exclusion of others) it needs to be the sole author or the copyright of the other authors should be assigned or exclusively licensed to PHE
- if it is sufficient for PHE to be able to publish the report (alongside other organisations), it is sufficient for PHE to be a joint author to the entire report or to have a non-exclusive license to such parts of the report which are distinct from those written by PHE

Appendix 12: Audit tool for outbreak standards

	Standard	Data Source	Suggested compliance
Outbreak recognition	Initial investigation to clarify the nature of the outbreak begun within 24 hours	HPZone or log	100% Level 2 and above 90% level 1
	Immediate risk assessment undertaken and recorded following receipt of initial information	HPZone or log	100% Level 2 and above 75% level 1
Outbreak declaration	Decision made and recorded at the end of the initial investigation regarding outbreak declaration and convening of outbreak control team	HPZone or log	100%
Outbreak Control Team	OCT held within three working days of decision to convene**	Minutes* and report	95%
	All agencies/disciplines involved in investigation and control represented at OCT meetings	Minutes* and report	95%
	Roles and responsibilities of OCT members agreed and recorded	Minutes* and report	95%
	Lead organisation with accountability for outbreak management agreed and recorded	Minutes* and report	100%
Outbreak investigation and control	Control measures documented with clear timescales for implementation and responsibility	Minutes* and report	100%
	Case definition agreed and recorded	Minutes* and report	95%
	Descriptive epidemiology undertaken and reviewed at OCT. To include: number of cases	Minutes* and report	95%

	in line with case definition; epidemic curve; description of key characteristics including gender, geographic spread, pertinent risk factors; hypothesis generated.		
	Review risk assessment in light of evidence gathered	Minutes* and report	95%
	Analytical study considered and rationale for decision recorded	Minutes* and report	95%
	Investigation protocol prepared if an analytical study is undertaken	Minutes* and report	100%
Communications	Communications strategy agreed at first OCT meeting and reviewed throughout investigation	Minutes	100%
	Absolute clarity about PHE lead at all times with appropriate handover consistent with handover standards	HPZONE or log	100%
End of outbreak	Final outbreak report completed within 12 weeks of the formal closure of the outbreak	Report	100% level 2 and above
	Report recommendations and lessons learnt reviewed within 12 months of formal closure of the outbreak	Currently dependent on local arrangements for reviewing recommendations and lessons learnt.	100% level 2 and above

*If a report has not been written (eg for level 1 incidents) minutes should be used to assess compliance

** Dependent on the immediate risk assessment, and that this will determine the appropriate urgency according to the severity and potential risks of the illness concerned. Specific infection protocols should be followed

Appendix 13: Outbreak specific guidance

A13.1 Outbreaks in hospitals and other health care premises

In premises such as hospitals and other health care institutions, the staff responsible for routine infection control will usually be the first people to be aware of the problem. Most hospital outbreaks have minimal or no public health implications and will be dealt with using the hospital's own internal outbreak plan. It is expected that all hospital outbreak policies will stipulate that the local CCDC will be informed whenever a hospital OCT is convened regardless of the circumstances. However, if the outbreak has any potentially serious public health implications, then this guidance takes precedence in control of the outbreak. Whilst it is difficult to be prescriptive as to what constitutes a potentially serious public health implication, the following are suggestive features:

- the outbreak has significant implications for the community
- involves many cases of notifiable disease
- small numbers of a disease which constitutes a serious public health hazard
- involves suspected food or water borne transmission of infection

The role of the local HPT with respect to HCAI outbreaks is mostly supportive, advisory and facilitative, as the trusts will predominantly lead on them. The role of the HPU with respect to HCAI and outbreaks includes:

- discussion of emerging problems with the Trust Infection Control Team. This will include supporting investigation and control through active membership of Trust Outbreak Control Teams. Where this is the case the precise role of the HPT should be defined at the first incident meeting eg who is responsible for following up community contacts or data collection from patients
- co-ordinating investigations of outbreaks involving more than one NHS organisation. In these cases the PHE may be the appropriate organisation to lead following agreement by the NHS Trusts
- provide specialist epidemiological and infection control support and leadership in the event of a serious outbreak/infectious disease incident eg involve the trusts when things are not going well, ensure that the trust follow their own outbreak control plan, ensure the PHE *C. difficile* audit tool is used early in any *C. difficile* outbreak, ensure early involvement of the PHE collaborating microbiologist

A12.2 Outbreaks on LA premises

A conflict of interest may occur where a LA is the relevant enforcing authority in relation to premises in which it also has an ownership or management interest. This situation could arise where LAs are called upon to exercise their responsibilities as a health and safety regulator in leisure centres that are wholly-owned, but not managed, by themselves.

A conflict of interest can either be an actual or a perceived conflict of interest. If this conflict is not dealt with appropriately it can cause unnecessary difficulties in the regulatory activities that may follow a work-related death or other serious incident.

Where the LA has a management or ownership interest in premises for which it is the enforcing authority, it should consider whether that interest is so great that it should no longer act in a regulatory capacity.

In some situations, transfer of enforcement authority to HSE may be appropriate.

HSE have produced some guidance and good practice on their website in relation to this; <http://www.hse.gov.uk/lau/lacs/22-10.htm#appendix-1>

A12.3 Other useful guidance

PHE has produced a wide range of outbreak specific guidance which can be accessed from <http://www.hpa.org.uk/>. Examples from PHE and partner organisations are provided below.

Water specific outbreaks:

Guidance produced by the UK Cryptosporidium Reference Unit related to swimming pools: <http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Cryptosporidium/Guidelines/>

Drinking Water Safely: Guidance to health and water professionals is available at: <http://www.hpa.org.uk/Publications/InfectiousDiseases/InfectionControl/0910DrinkingWaterSafety/>

Food specific outbreaks:

The guidance listed below will assist in the management and control of a food poisoning outbreak.

Preventing person-to-person spread following gastrointestinal infections: Communicable Disease and Public Health Vol. 7, No 4 December 2004. Available at <http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/GastrointestinalDisease/Guidelines/>

Management of outbreaks of foodborne illness in England and Wales: Food Standards Agency, 2008. Available at:

<http://www.food.gov.uk/foodindustry/guidancenotes/hygguid/outbreakmanagement>

Food Handlers: Fitness to Work. A Practical Guide for Food Business Operators 2009: Food Standards Agency. Available at:

<http://www.food.gov.uk/foodindustry/guidancenotes/hygguid/foodhandlersguide>

Infected food handlers – occupational aspects of management:

Evidence based guidelines on the management of infected food handlers

<http://www.rcplondon.ac.uk/sites/default/files/infected-food-handlers-occupational-aspects-of-food-management-full-text.pdf>

Legionnaires' disease

Various guidelines are available to support the management and investigation of legionnaire's disease:

- [Guidelines for investigating single cases of Legionnaires' disease](#) (June 2002)
- [Sampling of households for *Legionella* species](#) (July 2002)
- [Management of Spa Pools - Controlling the Risks of Infection](#) (March 2006)
- [Legionnaires' disease. The control of legionella bacteria in water systems: Approved Code of Practice and guidance](#) (2013)

Vero cytotoxin-producing *Escherichia coli*, including farm – associated outbreaks

Responsibility for the management of farm outbreaks falls jointly to LAs and PHE

HSE has also produced a resource for inspection and enforcement action to be taken by HSE inspectors and environmental health officers (EHOs) visiting 'petting' farms:

<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/EscherichiaColiO157/VTECOperationalManual/>

http://www.hse.gov.uk/foi/internalops/sims/ag_food/011102/index.htm

Bioterrorism and other particular infectious disease threats

<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/DeliberateReleases/>

Appendix 14: Examples of local outbreak plans

There should be clear local operational plans in place to ensure that a timely response can be mounted. It is anticipated that this guidance will be used to inform such plans. Plans will vary from area to area depending on the resources and expertise available. Below are examples of two local outbreak plans that were in place at the time of writing.

Avon and Somerset PHE Centre has developed a local framework document for communicable disease incident and outbreak management in collaboration with the LRF and LHRP. This includes detailed examples of dynamic risk assessment and incident escalation, and provides an example of how this guidance fits with local structures. To request a copy please e-mail swt-northhpu@phe.gov.uk.

Greater Manchester PHE Centre has produced a brief local plan, known as the Greater Manchester Multi-Agency Outbreak Plan, which provides a summary of this guidance for use across different agencies. To request a copy, please write to the Greater Manchester PHE Centre, 5th Floor, 3 Piccadilly Place, London Road, Manchester, M1 3BN or telephone 0344 225 0562.

Appendix 15: Bibliography

Department of Health. Directors of Public Health in Local Government. Roles, Responsibilities and Context. October 2013.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/249810/DPH_Guidance_Final_v6.pdf

Foodborne disease outbreaks: guidelines for investigation and control, World Health Organisation, 2008

http://www.who.int/foodsafety/publications/foodborne_disease/outbreak_guidelines.pdf

Field Epidemiology Toolkit. Health Protection Agency, Local and Regional Services, July 2010

<http://www.hpa.org.uk/Publications/InfectiousDiseases/InfectionControl/1008Fieldepidemiologykit/>

Field Epidemiology Manual.

<https://wiki.ecdc.europa.eu/Default.aspx>

Health Protection Regulations 2010 Toolkit, Health Protection Agency, Chartered Institute of Environmental Health and Lewes District Council, 2011

<http://www.cieh.org/policy/health-protection-regulations-toolkit.html>

Appendix 16: Abbreviations list

ADPH	Association of Directors of Public Health
AHVLA	Animal Health and Veterinary Laboratory Agency
CCDC	Consultant in Communicable Disease Control
CCG	Clinical Commissioning Group
CDPA	Copyright, Designs and Patents Act
CONOPs	Concept of Operations
CE	Consultant Epidemiologist
CHP	Consultant in Health Protection
CIEH	Chartered Institute of Environmental Health
CIDSC	Centre for infectious Disease Surveillance and Control
CRT	Corporate Resilience Team
DEFRA	Department for Environment Food and Rural Affairs
DIPC	Director of Infection Prevention and Control
DPH	Director of Public Health
EA	Environment Agency
ECDC	European Centre for Disease Prevention and Control
ED	Emergency Department
EPRR	Emergency Preparedness Resilience and Response
EHD	Environmental Health Department
EHO	Environmental Health Officer
ERD	Emergency Response Department
FBO	Food Business Operator
FES	Field Epidemiology Services
FSA	Food Standards Agency
FOIA	Freedom of Information Act
GP	General Practitioner
HSE	Health and Safety Executive
HPT	Health Protection Teams
IT	Information Technology
LA	Local Authority
LHRP	Local Health Resilience Partnership
LI	Lessons Identified
LRF	Local Resilience Forum
NHS	National Health Service
NHSE	NHS England
NIRP	National Incident Response Plan
OCT	Outbreak Control Team
PHE	Public Health England
PHEC	Public Health England Centre
SCG	Strategic Coordination Group
STAC	Scientific and Technical Advice Cell
WGS	Whole Genome Sequencing