

Protecting and improving the nation's health

# Public Health England National Infection Service South East public health authority

Public health microbiology services user handbook

# Contents

Role of PHE public health laboratories	2
The laboratory for Surrey, Sussex and Kent, Hampshire, Isle of Wight and Thames Valley	3
Public health microbiology testing in Surrey, Sussex and Kent, Hampshire, Isle of Wight and Thames Valley	4
Definition of a public health microbiology specimen	5
Key contacts	6
Laboratory working hours	7
Laboratory location and access	8
NHS laboratories and access to public health testing in Surrey, Sussex and Kent, IOW/Hampshire and Thames Valley	10
Collection and transport of specimens	10
Methods of specimen submission	13
Investigation of local outbreaks	15
Other communicable diseases	16
Test turnaround times	16
Reporting results	16
Appendix 1: Sample submission safety considerations	17
Health and Safety	17
Packaging of clinical specimens	17
Transport of specimens	17
High risk incidents and safety	17
Appendix 3: Collecting faecal samples	19

# **Role of PHE public health laboratories**

Public health microbiology laboratories (PHLs) provide:

- microbiology support for the investigation, management and control of infection and outbreaks of communicable disease during and out of normal working hours
- expert medical and scientific microbiological advice, including access to PHE experts locally and nationally as necessary
- a wide range of diagnostic, specialist and reference tests
- national standard methods and PHE testing algorithms
- clear guidance for users
- surge capacity in the network to deal with large (up to 150 specimens per day) unanticipated outbreaks at short notice. PHE can also provide additional capacity for larger testing numbers and access to specific typing if required to define the epidemiology of outbreaks. Access to additional testing capacity will usually be made in agreement with the regional microbiologist
- support for both regional and national capacity to respond to specific events of potential public health importance
- testing for look-back exercises for PHE Centres, NHS trusts, clinical commissioning groups (CCGs) and local authorities
- reporting of laboratory results within specified turnaround times for diagnostic specialist and reference tests. Results are transmitted by electronic means wherever possible and may be supported by paper reports as required or appropriate. These services will be provided to all customers (PHE Centres, local authority environmental health teams (EHTs) NHS trusts and CCGs)
- standard interpretive comments as a part of test reports
- senior clinical and scientific staff will add specific interpretation and further advice relevant to individual patient needs or for public health significance
- have mechanisms in place for the proper handling, storage and security of all samples and documentation at all times. This will be carried out in accordance with the PHE guidelines, national guidelines and regulatory/legal requirements
- efficient and timely communications with public health organisations, both within PHE and externally, for example, local authorities and health teams involved in communicable disease control

All PHE public health laboratories are accredited by UK Accreditation Service (UKAS).

## The laboratory for Surrey, Sussex and Kent, Hampshire, Isle of Wight and Thames Valley

The laboratory at Brighton and Sussex University Hospitals (BSUH) NHS Trust is within the PHE network. BSUH NHS Trust Microbiology and Infection Service delivers both diagnostic and specialist microbiology testing to the NHS and to the community at large.

In addition to its clinical diagnostic microbiology role, the laboratory provides a range of public health microbiology services, including:

- a full range of tests to investigate any event or outbreak of possible public health significance in the community
- advice on the best diagnostic strategies to be adopted
- advice on interpretation of test results and additional investigations that may be helpful
- support to incident/outbreak control teams
- prompt communication of results in agreement with published turnaround times
- follow up/clearance testing of patients or contacts of patients in whom organisms of public health importance are detected
- support for other NHS trusts/PHE Centres in the specialist investigation of healthcare associated infection

These public health microbiology services are available to:

staff in PHE Centres and health protection teams local authority staff and directors of public health CCGs/clusters NHS trusts

The laboratory is part of a network of specialised laboratories across England. This network includes laboratories testing food water and environmental samples and the major reference units at PHE Colindale and PHE Porton.

This user manual describes the provision of, and access to, public health microbiology services and gives contact details for the laboratory and its key personnel. It is also available on the PHE website.

A separate handbook documents the clinical diagnostic and research services of the laboratory and can be found here.

Please note that support and access to food, water and environmental microbiology services can be obtained from:

For local authorities in Sussex and Surrey, the IOW and Hampshire:

PHE Food, Water and Environmental Laboratory Porton, Public Health England Porton Down Wiltshire SP4 0JG Tel: 01980 616766

For local authorities in Kent and Thames Valley:

PHE Food, Water and Environmental Laboratory Colindale 61 Colindale Avenue London NW9 5EQ Tel: 0208 327 6550/49

### Public health microbiology testing in Surrey, Sussex and Kent, Hampshire, Isle of Wight and Thames Valley

In Surrey, Sussex and Kent, Hampshire, Isle of Wight and Thames Valley public health microbiology is provided by the BSUH NHS Trust Laboratory based at Brighton and Haywards Heath.

Microbiology and Infection Service Royal Sussex County Hospital Eastern Road Brighton East Sussex BN2 5BE Tel: 01273 664620

Environmental Microbiology Unit Princess Royal Hospital Lewes Road Haywards Heath West Sussex RH16 4EX Tel: 01444 440996

### Definition of a public health microbiology specimen

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

- 1. Specimens may also be submitted to detect spread and contain and/or prevent an outbreak, for example, diphtheria, group A streptococcus.
- 2. Patient specimens may also be submitted for clearance purposes (e.g. faeces for *E. coli* O157) or to detect carriage of pathogens in asymptomatic individuals, ego *Salmonella typhi*.

The following lists some of the circumstances in which public health specimens may be submitted (this list is not exhaustive):

- in the investigation of an outbreak, e.g. diarrhoea and vomiting in a nursing home or other institution
- suspected food poisoning in a group or community
- respiratory symptoms in an institution, e.g. suspected influenza
- to check for clearance of certain pathogens (see above) in individuals working in highrisk situations, e.g. food handlers, those working with children or other vulnerable groups
- screening of contacts of index cases, e.g. diphtheria, poliomyelitis
- look-back exercises, e.g. carriage of blood borne viruses in a healthcare worker
- tuberculosis contact tracing
- investigation of a cluster of cases such as Legionnaires' disease, which could have a common source

Such specimens are usually submitted at the request of:

- a consultant in health protection / consultant in communicable disease control from a PHE Centre
- an environmental health practitioner
- at the request or on behalf of the director of public health or at the instigation of the regional microbiologist, e.g. for specialist typing in the investigation of episodes of healthcare associated infection

# Key contacts

In the event of a suspected outbreak or incident, please contact one of the following so that appropriate arrangements for investigation can be made:

564615 596955 ext 3584 564621 596955 ext 4620				
696955 ext 3584 664621				
696955 ext 3584 664621				
64621				
64621				
696955 ext 4620				
696955 ext 64676				
141881 ext 8228				
25 3861 Opt 3				
0844 967 0069				
25 3861 Opt 1				
37 0085				
25 3861 Opt 2				
67 0082				
25 3861 Opt 4				
96 22				

Dr Eliza Alexander

Consultant in Public Health Infection for South East England

eliza.alexander@phe.gov.uk

## Laboratory working hours

Monday to Friday	8.30am to 7pm		
Saturday	9am to 5pm		
Sunday and Bank Holidays	9am to 1pm		

Please contact the laboratory in advance of submission, with details of the incident/outbreak and investigations required.

Please notify the laboratory of the HPZone identifier if one has been assigned.

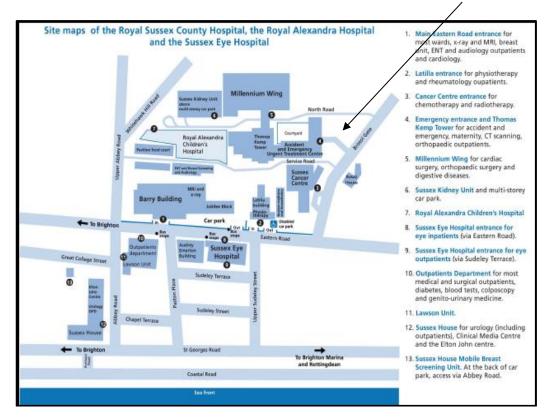
All non-urgent specimens should arrive in the laboratory within the hours specified.

For out-of-hours contact with on-call consultant microbiologist or biomedical scientist, contact Royal Sussex County Hospital switchboard 01273 696955.

### Laboratory location and access

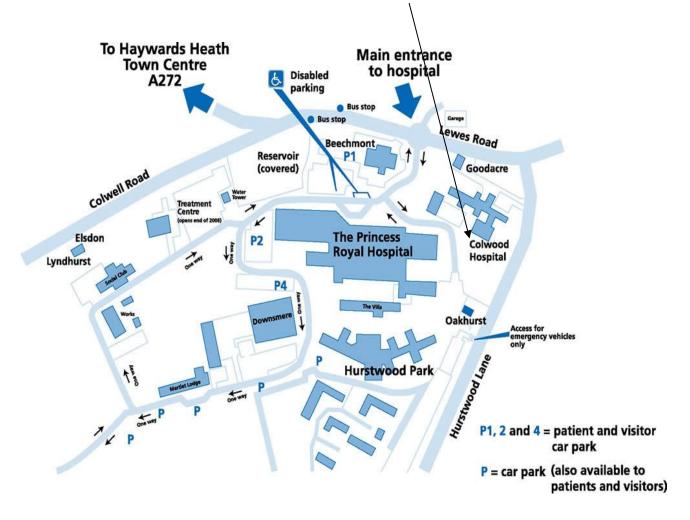
This link shows the location of Royal Sussex County Hospital.

The microbiology laboratory is located in Brighton Pathology, B Block, Level 7.



This link shows the location the Princess Royal Hospital.

The microbiology laboratory is located in the Pathology Department, first floor.



### NHS laboratories and access to public health testing in Surrey, Sussex and Kent, IOW/Hampshire and Thames Valley

NHS laboratories which have provided local public health outbreak support as part of their NHS functions should continue to do so.

All NHS laboratories have responsibilities for health protection, which include providing support for the investigation of local outbreaks in their catchment area through:

- contributing to the formulation of local contingency plans and participation in exercises
- detection of local outbreaks through monitoring laboratory findings
- detection and prompt reporting of unusual occurrences of public health significance
- providing initial laboratory support for outbreaks, incidents and look-back exercises, as appropriate
- attendance of appropriate staff at local community control of infection meetings and incident/outbreak control team meetings
- advice on appropriate investigations, interpretation of results etc.
- forwarding of appropriate specimens to reference laboratories

Initially, diagnostic patient specimens are likely to be examined at the local NHS laboratory. However, once an outbreak has been recognised and declared by the PHE Centre or other appropriate authority, all specimens should be sent to the Brighton laboratory using either preexisting arrangements or other methods transport determined as part of the outbreak management.

If any difficulties with existing or new arrangements are encountered, contact the PHE Lead Public Health Microbiologist, South East region who will make sure that arrangements are securely in place.

# **Collection and transport of specimens**

In order to provide the best quality results, it is essential that good specimens are collected properly and at the appropriate time. It is also important that they are transported to the laboratory safely and without undue delay. (See Appendix 1 for safety considerations).

Inappropriate specimens or those that are inadequately labelled (see request form), damaged or leaking will be discarded. Should this occur, every attempt will be made to inform the sender so that a second specimen may be collected.

The request form must be completed fully (see Appendix 2, for request form). The specimen container must be labelled with:

- patient's full name (first and surname)
- patient's NHS number or other unique numerical identifier
- the date the sample was taken
- patient's date of birth

The details above will assist us in the surveillance of communicable diseases.

Please provide full details of where to send the result and who to contact if we need to report an urgent, significant result. Please provide an outbreak HPZone number if available.

#### Sample collection and submission:

Please ensure that all details are completed on the request form before it is given to the patient. Ask the patient to complete all details on the specimen container <u>before collecting the</u> <u>specimen</u>.

These details **must** include:

- full name (first and surname)
- NHS number or other unique identifier
- date sample was taken
- date of birth

#### **Faeces samples:**

See Appendix 3 for methods of collection and Appendix 4 for postal instructions.

# Please ensure that all details on both the specimen and accompanying request form are completed and match. Failure to do so may lead to rejection of the specimen.

Please give full clinical details and brief details of the outbreak on the request form. For investigation of unusual pathogens, it is essential to discuss the request with one of our consultant microbiologists before submission of specimens

Faecal samples will be examined for the presence of:

- Salmonella
- Shigella
- E. coli O157
- Campylobacter
- Cryptosporidium and giardia species as a routine

• *Clostridium difficile* in all patients with diarrhoea over the age of 65 years and where clinically indicated (e.g. in nursing home or care home outbreaks)

Please discuss with the consultant microbiologist or senior biomedical scientist if you suspect any of the following pathogens:

- Vibrio cholerae
- Diarrhoeagenic E. coli (other than E. coli O157)
- Yersinia enterocolitica
- Enteric parasites
- food poisoning due to *Staphylococcus aureus*, *Clostridium perfringens* or *Bacillus cereus*

Should the clinical history suggest infection with viral pathogens, this too should be clearly indicated on the request form.

When a viral aetiology is suspected, faeces for virology will be routinely investigated for norovirus and rotavirus. Additional viral pathogens can be sought (adenovirus, astrovirus, Sapovirus). Please discuss with the consultant virologist.

#### Throat/pharyngeal swabs:

For detection of carriage of *Neisseria meningitidis* — the swab should be taken through the mouth, (sweeping the posterior pharynx, behind the uvula).

For detection of group A streptococcus — swab the tonsillar area.

For detection of *Corynebacterium diphtheriae* — nose and throat swabs should be submitted.

For detection of *Bordetella pertussis* – a per nasal swab should be submitted.

For detection of Measles – mouth swabs are often easier than throat swabs to obtain from young children. Saliva and crevicular secretions are collected by swabbing the inside cheek near the gum line.

Please note: If infection with *Corynebacterium diphtheriae* is suspected on clinical grounds a microbiologist should be contacted without delay (i.e. without waiting for confirmation by culture). **One suspected case of diphtheria constitutes a public health emergency.** 

#### Viral respiratory specimens:

Occasionally, outbreaks of Influenza occur in institutions. The incident management team will advise on when specimens from these outbreaks need to be submitted. Please seek the advice of the consultant virologist on what specimens are required and how these should be submitted.

Flu kits can be obtained from the laboratory (these include instructions for collection).

#### Sputum:

Please contact the laboratory to discuss the submission of specimens. Should you need to submit sputum specimens for examination for the presence of mycobacteria, for example in cases of suspected tuberculosis, please contact laboratory consultant medical staff for advice and discussion before submitting any specimens.

#### Urine:

Fresh urine specimens (in a clean universal container) may be required for the diagnosis of Legionnaires' disease.

#### Serum:

Specimens of clotted blood for:

- investigation of clusters of atypical pneumonia
- look-back exercises to detect the transmission of blood borne viruses

by arrangement with laboratory/incident or outbreak management team.

### Methods of specimen submission

#### Direct submission to the laboratory

This method of submission is available to all local authorities submitting samples to the laboratory.

#### Submission to the laboratory via other hospital pathology departments

Many hospitals have daily transport to the Brighton/Haywards Heath laboratories. Specimens for forwarding can be submitted to the following hospitals' pathology reception for onward transport:

Local NHS Hospital with microbiology services	Transport to	Drop off days / time for	Notify
	Brighton lab	EHP	Brighton lab
Worthing, Worthing	Yes	In time for the 2pm run, Monday to Friday	Yes

Conquest, Hastings	-	By Prior arrangement	Yes
Eastbourne District General, Eastbourne	-	By Prior arrangement	Yes
Princess Royal, Haywards Heath (Micro based at Brighton)	Yes	Monday to Friday, 8.30am to 5pm Saturday, 9am to 11.30am	Yes
Royal Sussex County, Brighton	N/A	Monday to Friday, 8.30am to 5pm Saturday, 9am to 5pm Sunday, 9am to 12.30pm	Yes
Queen Victoria Hospital	-	By prior arrangement	Yes
St Mary's Hospital, IoW	-	By prior arrangement	Yes

This must be discussed with a member of staff from the BSUH laboratory in order that the necessary courier arrangements be made. Please also advise the receiving hospital that you will be submitting samples.

NB: All specimens must be in postal packs appropriately labelled for Brighton Lab so they are clearly identifiable for onward transport to South East Public Health Laboratory, RSCH, Eastern Road, Brighton BN2 5BE.

### Submissions to the laboratory via post

Specimens can be submitted to the laboratory by post provided they are packaged according to current postal regulations. Details of postal packs are given in Appendix 3.

#### Obtaining more postal packs

EHDs will be provided with a supply of postal transport packs for these purposes. These packs contain the appropriate packaging materials, instructions for use and a request form to accompany the specimen (see example in Appendix 3). Any specimens sent by post must comply with infectious substances transport regulations.

Further supplies of sample packs, request forms, Tracked Return labels and specimen containers are available from the BSUH laboratory on 01444 448728.

A separate pack should be used for each specimen.

The laboratory will supply 'Tracked Return' labels. Specimens must be sent using the Tracked Return labels supplied by the laboratory.

### Submission to the laboratory using an agreed PHE courier

In special circumstances, perhaps relating to the nature or scale of the outbreak, the Laboratory Manager at the BSUH Laboratory may, by agreement, organise courier transport, additional specimen containers and any other materials.

### Investigation of local outbreaks

If an outbreak control is declared by the PHE Centre, all specimens should be referred to the BSUH centre, Brighton. Mechanisms for the continued investigation of the outbreak will then be agreed by the outbreak control team.

As soon as an outbreak is recognised (of whatever size) the PHE Centre or BSUH laboratory will assign an outbreak number/identifier and this should be used to identify specimens associated with the outbreak or incident.

If an outbreak is identified initially by an environmental health department (EHD) or PHE Centre, the outbreak specimens should be referred to the Brighton laboratory under an outbreak HPZone number if one has been allocated by the EHD or PHEC.

Note: food, water or environmental samples should be sent to the PHE FW&E Laboratory, Porton or Colindale, and you should continue to follow current protocols, to maintain the integrity of the samples during transport unless notified otherwise.

PHE Food, Water and Environmental Laboratory Porton, Public Health England Porton Down Wiltshire SP4 0JG Tel: 01980 616766 fweporton@phe.gov.uk mailto: fweporton@phe.gov.uk

PHE Food, Water and Environmental Laboratory, Colindale 61 Colindale Avenue London NW9 5EQ Tel: 0208 327 6550/49 Email: fwecolindale@phe.gov.uk

For specimens other than faeces, please contact the laboratory manager to arrange the provision of appropriate collection kits.

## **Other communicable diseases**

Less common infections may require different specimen types or have less distinct storage and transport needs. In such circumstances, please consult with senior clinical or laboratory staff before taking and submitting specimens.

## **Test turnaround times**

Information on tests done and approximate turnaround times (TATs) can be found within the appropriate page of our laboratory handbook, which is available as follows:

Virology tests

#### Bacteriology tests

Alternatively, information can be obtained direct from the laboratory. Please call 01273 664620.

For communication on high priority specimens or any concerns during regular working hours, please call the number above and ask to speak to a senior member of staff.

# **Reporting results**

Results will be reported as hard copy printouts and distributed via established routes. Electronic reporting facilities are also available depending on the compatibility of computer systems. Urgent results will be telephoned.

# Appendix 1: Sample submission safety considerations

### Health and Safety

The specimen containers and mail transport systems provided by the laboratory should be used. The individual requesting or taking specimens from patients known to be infectious must ensure that both the form and specimen bag are appropriately labelled.

It is essential, where the requester knows or strongly suspects that the patient is infected with a dangerous pathogen that this specific information is provided with every specimen or request form.

### Packaging of clinical specimens

Specimens should be placed in the appropriate specimen container, which must be securely fastened and any accidental spillage cleaned immediately, with an appropriate chlorine containing disinfectant (see details below).

Each specimen should be placed in a clear plastic double ('marsupial') self-sealing bag with one compartment containing the request form and the other the specimen. See 'Transport of Infectious Substances'.

Where a needle has been used to obtain the specimen, the needle should be disposed of safely into an approved sharps container at the point of use, and **not** included in the packet transported to the laboratory.

### Transport of specimens

Specimens packaged as above must be transported to the laboratory in a robust, lidded, washable transport box. Do not use ordinary envelopes or padded bags for transportation. Do not staple or puncture polythene bags.

### High risk incidents and safety

Universal precautions should be observed and appropriate personal protective equipment worn when specimens are collected. Any inoculation incidents (needlesticks or contamination of conjunctiva, mucous membranes or broken skin, with blood or body fluids) must be reported as soon as possible – within two hours - to your occupational health service so that any required action can be instituted promptly.

THIS PROCEDURE MUST BE FOLLOWED WHETHER OR NOT THE PATIENT IS PERCEIVED TO BE HIGH RISK

South-east public health laboratory: Public health microbiology services user handbook

### **Appendix 2: Request Form**

#### Request Form for Clinical Public Health Samples only

#### Deliver sample to:

DEPARTMENT OF MICROBIOLOGY AND INFECTION ROYAL SUSSEX COUNTY HOSPITAL EASTERN ROAD, BRIGHTON, BN2 5BE Brighton and Sussex NHS University Hospitals NHS Trust

LABORATORY USE ONLY

LABORATORY NUMBER

Patien	nt Deta	ails								
SURN	AME <sup>;</sup>	*					Add	lress		
FIRST	NAME	= *								
Date c	of Birth	ו*								
(dd/mr	n/yyyy	/)					_			
Gende	er			Male	Fe	emale				
NHS N	lumbe	er /					Pos	tcode		
* Uniq	ue Ide	entifier								
* Field	ls ma	rked with a	an a	asterisk are ma	andator	y. Failure to complete	may	lead to re	ejectio	n of the specimen
Date o	of sam	ple collec	tio	n (dd/mm/yy)	Samp	le type (faeces/swab/s	erum	n/etc)	Sample site (throat/skin/etc)	
Sende	er Deta	ails			Local	Authority			PHEC or Other (please specify)	
						······································				
Investi	gating	gofficer				Address				
Teleph	none r	number								
Email						Postcode				
		Clinical D		ils	Other Details		Investigations Required			
ENTERIC Investigation		Diarrhoea Fever Vomiting Blood in s Recent tra	tool	– place & dates:		Sporadic case Follow-up case Household contact Food handler Possible outbreak Antibiotics – name & dat	case contact er utbreak			Enteric outbreak – please give suspected pathogen Single organism investigation – please state (e.g. salmonella etc) Other – state below:
				Details		Other Details				Investigations Required
NON-ENTERIC		Please sta		–place & dates:	Sporadic case   Follow-up case   Household contact   & dates:   Possible outbreak   Antibiotics – state name & dates		95:	Suspected pathogen (e.g. influenza, meningococcus, etc)		
Comments and/or further information										

South-east public health laboratory: Public health microbiology services user handbook

## **Appendix 3: Collecting faecal samples**

#### Please use the following method to collect the sample and send it to the laboratory.

### LABELLING THE FAECAL POT AND COMPLETING THE FORM

Put your details on the clear plastic faecal pot label brown/blue lid (see Figure 1).

#### Please ensure you put:

- your first name and surname AND
- date of birth AND
- date you produced the sample AND
- NHS number / unique identifier

#### Next:

- Place the rigid white transport container close to the toilet pan where you can easily reach it.
- The container should be placed vertically with the lid off.



Figure 1. Faecal sample



**Next:** Fill out the laboratory request form.

It is vital that the following details on the form match exactly the details on the faecal pot:

- your first name and surname AND
- date of birth AND
- date you produced the sample AND
- NHS number / unique identifier

#### Any differences will mean the sample will not be processed.

You do not have to complete the outbreak reference number unless you are given this by the Environmental Health Officer.

You are now ready to provide the faecal sample.

#### **PROVIDING THE FAECAL SAMPLE**

#### For a child in nappies:

Please simply use the spoon in the lid of the specimen tube to take a sample from the nappy and place the spoon with sample in the faecal pot. Then go to Step 4.

#### For all other cases:

Step 1	Use a toilet that has been rinsed with hot water (not so hot that you risk cracking the pan)
Step 2	Place several pieces of toilet paper on top of the water at the bottom of the toilet.
Step 3	After going to the toilet on the paper use the spoon provided in the lid of the pot to put one spoonful into the pot.

#### Note:

- one good spoonful is sufficient do not overfill the bottle
- if samples are being collected from different members of the family, wash the toilet pan between each one with hot water – this will prevent each sample being contaminated by the others
- do not allow the sample to come into contact with toilet cleaners, bleach or toilet blocks etc.

Step 4	Screw on the top of the specimen pot tightly. Place the pot into the rigid white transport container with the small pad of absorbent material (SUPASORB) wrapped around the pot and screw on the top of the transport container tightly.	
Step 5	All waste materials should be flushed down the toilet or placed in a plastic bag which is sealed before disposal in the refuse bin. Wash your hands thoroughly – preferably using an anti-bacterial handwash if available.	
Step 6	Place the transport container in the cardboard box.	

South-east public health laboratory: Public health microbiology services user handbook

# Appendix 4: Postal packaging for faecal samples







#### Instructions to environmental health officers and patients for sending enteric specimens:

- 1. Place sample inside the sterile universal faeces container, making sure you do not overfill the container. Please ensure that you fill in the label on the sample container clearly and that there are a minimum of four patient identifiers on the faecal pot and date of sample collection.
- 2. Place the faecal pot inside the plastic transport container with the pad of absorbent material (SUPASORB) and ensure that the lids on both the faeces pot and transport container are securely closed.
- 3. Place the transport container inside the cardboard box. Please complete the request form clearly and as fully as possible, ensuring there is a minimum of four patient identifiers that match exactly those on the faecal pot and the date of sample collection.
- 4. Place the cardboard box, together with the completed request form, into the addressed opaque plastic envelope (UN3373), attach the 'Tracked Return label (ensuring you DO NOT cover the UN3373 diamond) and post. Please ensure that you put the address of the referring EHO on the rear of the envelope.

## About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-leading science, research, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

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