



The West of Scotland Specialist Virology Centre User Manual - Version 7

Produced by Dr Eleri Wilson-Davies on behalf of the
West of Scotland Specialist Virology Centre

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The West of Scotland Specialist Virology Centre is located in Glasgow Royal Infirmary and is part of the NHS Greater Glasgow and Clyde Health Board.

We provide a full range of virology tests to our users and our development team are continuously updating and introducing new assays.

In addition to our routine repertoire we are part of The Scottish National Blood Borne Virus Specialist Testing Service which provides specialist testing for blood borne viruses for Scotland. We are also responsible for testing respiratory specimens for national surveillance purposes.

Our user guide is specifically aimed at providing our users with the information they need to use our service most effectively. Our staff are always happy to discuss any problems you may have regarding individual patients or to discuss the quality of the service we provide.

LABORATORY DETAILS

Address West of Scotland Specialist Virology Centre,
Level 5, New Lister Building,
Glasgow Royal Infirmary,
10-16 Alexandra Parade,
Glasgow G31 2ER,
Scotland.

Delivery Address West of Scotland Specialist Virology Centre,
Main Specimen Reception (Level 4),
New Lister Building,
Glasgow Royal Infirmary
10-16 Alexandra Parade,
Glasgow G31 2ER,
Scotland.

DX address 6491304 (Glasgow 94G exchange)

Hours 0845 - 1700 Monday - Friday
0900 - 12.30 Saturday
Results are available over the telephone during these times.

Please note virology results can be checked on clinical portal or SCI Store for patients within NHS GGC.

Telephone Internal: 38722
External: 0141 201 8722
Out of hours clinical advice via switchboard (24 hours): 0141 211 4000
Fax Internal: 38723
Fax External: 0141 201 8723

Email Email enquires maybe directed to the Office Manager:
Miss Christine Ritchie: christine.ritchie@ggc.scot.nhs.uk

Clinical Advice and Enquiries

During working hours, the duty clinician can be contacted for advice on patient management, diagnosis and treatment on 38722 (external: 0141 201 8722). Outwith these times the duty clinical virologist is available *via* the Glasgow Royal Infirmary switchboard (0141 211 4000). There is a consultant available 24 hours a day.

Urgent and on call requests

A limited range of laboratory tests are available outside normal working hours when agreed by the Consultant on-call, with the exception of organ donor screening. Organ donor screening can be arranged directly with the duty Biomedical Scientist, via the Glasgow Royal Infirmary switchboard (0141 211 4000), all other requests should be directed to the clinical on-call clinical staff member first. Available tests include (but are not limited to):

HIV antigen/antibody	Hepatitis C antibody
Hepatitis A IgM	HTLV I/II antibody
Hepatitis B surface antigen	CMV IgG antibody
Hepatitis B core IgG antibody	Varicella zoster IgG
Hepatitis B core IgM antibody	Treponemal antibody

Respiratory virus detection by PCR during the winter period for high risk and ITU patients, on a case by case basis

Middle East Respiratory Syndrome Coronavirus (MERS-CoV) (please see www.hps.scot.nhs.uk/resp/coronavirus.aspx for further information)

Staff

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How to complete a manual request form

We cannot accept specimens or request forms which do not have the following **essential** information:-

	ESSENTIAL	DESIRABLE
Sample	Patient's Full Name or Proper Coded Identifier CHI number and/ or Hospital Unit N^o plus Date of Birth	Date and Time of sample collection Destination of Report
Request Form	Patient's Full Name or Proper Coded Identifier CHI number and/ or Hospital Unit N^o plus Date of Birth Patient's Consultant or GP LOCATION FOR RESULTS Name of requesting Practitioner REQUESTED TEST or sufficient clinical information for the laboratory to identify appropriate tests	Clinical Information Date and Time of sample collection Patient's Address Practitioner's Contact Number (in cases of urgent requests)

- Provide patient details on specimen and form. We cannot test specimens that are unlabelled or illegible.
- Provide clinical details – history, date of onset, travel including precise location, food history (with dates, if relevant)
- If a specimen is urgent please telephone us in advance and arrange what tests are required, where and to whom the results have to be telephoned and to find out when to expect the results.

- Use the correct containers (see below). Specimens may be discarded if the wrong container is used, or if the specimen is leaking.

Please note NHSGGC request forms are now produced by TrakCare.

HOW TO TRANSPORT SAMPLES TO US

1. Specimens taken at weekends should be kept in a refrigerator at +4°C and sent to the laboratory next working day using the van service (NHSGG&C GP collection service or Interlab vans:- Southern General / Gartnavel General / Monklands / Wishaw / Hairmyres / Crosshouse / Royal Alexandra / Inverclyde Royal / Western Infirmary).
2. Send specimens by first class post or by Hays DX (6491304, Glasgow 94G exchange) if within UK, or by courier if abroad. Ensure they are packaged according to national & international regulations.

WHAT SPECIMEN TO COLLECT & WHICH CONTAINER TO USE

When sending blood specimens please send a minimum of 9ml.

We store samples for up to 6 months, so retrospective testing can be arranged after discussion.

EDTA Blood (EB) –plasma required for most PCR and BBV serology tests. Please send at least 9ml.



Clotted blood (CB) –serum for some antibody tests, please check below and send at least 9ml.



Sterile (universal) containers – available in varying sizes, are suitable for urine (U), stool (STO), CSF, respiratory specimens - throat washings (GAR), bronchoalveolar lavages (BAL), sputum (SPU) and also vomit (VOM). Where specimen volume is an issue e.g. CSF, please send a minimum of 0.5 ml.





Viral PCR Sample Solution (VPSS)

Swabs – Flocked swabs should be used wherever possible, in conjunction with the Viral PCR Sample Solution (VPSS) available from procurement. These can be used to take nose, throat, genital (including vulvo-vaginal, cervical), eye, vesicle, ulcer, lesion, mouth, pharyngeal and rectal swabs. After the swab is taken it should be expressed on the side of the vial and discarded. The cap should be replaced tightly prior to being sent to the laboratory.

ONLY if Viral PCR Sample Solution (VPSS) is unavailable



When Viral PCR Sample Solution (VPSS) is not available, swabs can be cut off and sent dry in a sterile container. **This should be avoided whenever possible as the virus remains infectious and sensitivity is reduced.** VPSS

inactivates and preserves the pathogen genome for PCR testing. Viral PCR Sample Solution (VPSS) is available from procurement.



For Chlamydia trachomatis and Neisseria gonorrhoeae PCR ONLY use the Abbott multi-collect specimen collection kit (for all other testing requirements send specimens in VPSS)

Nasopharyngeal aspirates – collected in a trap, the specimen can be used for PCR and immunofluorescence.

Biopsies – In sterile universal containers. Tissue should be submitted fresh in normal saline if possible. We can test formalin fixed tissue, but sensitivity is diminished.

Dried Blood Spots (DBS) for Blood Borne Virus (BBV) testing should be collected on filter paper cards which are provided on application to the virus laboratory.

Guthrie Cards – these should be in a sterile container and are sent to virology from the genetics department after parental consent has been obtained.

If you would like further information on what type of sample is required for a particular clinical condition, please contact the laboratory.



For Chlamydia trachomatis and Neisseria gonorrhoeae PCR ONLY
 use the **Abbott multi-collect specimen collection kit** (for all other testing requirements send specimens in VPSS)

Sample Types

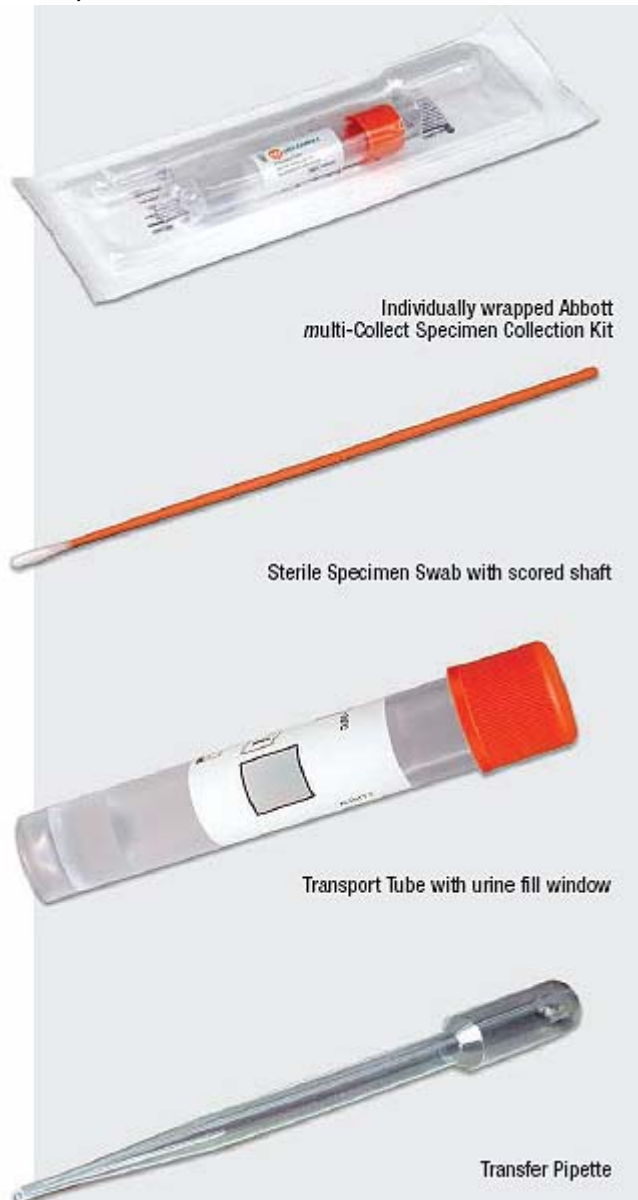
- | | | |
|---------------|--|---|
| <u>Female</u> | Endocervical swab | Vaginal swab (self-collected and clinician-collected) |
| <u>Male</u> | Urine – PLEASE SEND IN THE MULTI-COLLECT TUBE | |
| | Rectal swab | |
| | Pharyngeal swab | |
| | Urethral swab | |

After collection if transport is delayed samples are still viable for testing if stored in the fridge or at room temperature for up to 10 days.

Urine collection

Please note: Urine is ONLY sufficiently sensitive for diagnosis in men.

1. The patient should not have urinated for at least one hour prior to sample collection.
2. Discard specimen collection swab; it is not required for urine specimen collection
3. Using a urine specimen collection cup, the patient should collect the **first 20 to 30 mL** of voided urine (the first part of the stream).
4. Unscrew the transport tube cap, taking care not to spill the transport buffer within.
5. Handle the cap and tube carefully to avoid contamination.
6. Use the plastic transfer pipette to transfer urine from the collection cup into the transport tube until the liquid level in the tube falls within the clear fill window of the transport tube label or else a new tube should be used. Do not overfill. Slightly more than one full squeeze of the transfer pipette bulb may be required to transfer the necessary volume of urine specimen.
7. Recap the transport tube carefully. Ensure the cap seals tightly.
8. Label the transport tube with sample identification information, including date of collection using an adhesive label. Take care not to obscure the fill window on the transport tube.



Vaginal Swab Specimen Collection

CAUTION: Do NOT expose swab to Transport Buffer prior to collection

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Transfer Pipette

1. Discard disposable transfer pipette; it is not required for vaginal swab specimen collection.
2. Remove the sterile swab from the wrapper, taking care not to touch swab tip or lay it down on any surface.
3. Insert the white tip of the specimen collection swab about two inches (5 cm) into the opening of the vagina.
4. Gently rotate the swab for 15 to 30 seconds against the sides of the vagina.
5. Withdraw the swab carefully
6. Handle the cap and tube carefully to avoid contamination.
7. Unscrew the transport tube cap and immediately place the specimen collection swab into the transport tube so that the white tip is down.
8. Carefully break the swab at the scored line on the shaft; use care to avoid splashing of contents.
9. Recap the transport tube. Ensure the cap seals tightly.
10. Label the transport tube with sample identification information, including date of collection using an adhesive label.

For further help with sample collection for Chlamydia trachomatis and Neisseria gonorrhoeae PCR testing, please see the link below for the Abbott multi-collect specimen collection kit training module.

www.abbottmolecular.com/multicollect/English/multicollect .htm

Samples which are NOT suitable for testing include:-

- Urine in boric acid
- Heparinised venous blood
- Syringe needles (sheathed or unsheathed)

KEY FACTORS AFFECTING THE PERFORMANCE OF OUR TESTS & INTERPRETATION OF OUR RESULTS

1. Optimal performance of our tests requires appropriate specimen collection, handling and storage.
2. Specimens should arrive with the minimum of delay.
3. The next section of this user manual shows our test repertoire. Please note certain tests are marked for same day delivery (e.g. urgent HBsAg) or for next day delivery (e.g. confirmation of new HIV diagnosis).
4. Conditions during storage or transport prior to analysis can adversely affect sample quality.
5. Factors which are under the control of the laboratory include test method, calibration of equipment, reagents used and staff training.
6. All in-house assays have been validated for the relevant clinical samples only (e.g. respiratory tests are validated for respiratory samples only)
7. A negative result does not exclude the possibility of infection because our results depend upon appropriate specimen collection and the absence of inhibitors.

Samples required for the diagnosis of adults and paediatric patients

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
Aciclovir Therapeutic Drug Monitoring	Clotted blood
Adenovirus	<p>If respiratory symptoms are present the best sample for sensitivity: BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity</p> <p>Diarrhoea Faeces - Sterile (universal) container</p> <p>Please note: Multiplex PCR test for rotavirus, astrovirus, adenovirus and saporovirus is restricted to immunocompromised patients and children under ten years old. Virology testing in all other individuals with diarrhoea is limited to norovirus.</p> <p>EDTA Blood (enables quantitation in immunocompromised patients)</p>
Astrovirus	<p>Diarrhoea Faeces - Sterile (universal) container</p> <p>Please note: Multiplex PCR test for rotavirus, astrovirus, adenovirus and saporovirus is restricted to immunocompromised patients and children under ten years old. Virology testing in all other individuals with diarrhoea is limited to norovirus.</p>
<i>Bacillus anthracis</i> (anthrax)	<p>EDTA Blood AND clotted blood plus tissue biopsy, eschar, lesion washings, post mortem tissue - Sterile (universal) container</p> <p>If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726</p>
BK polyomavirus	EDTA Blood (please do NOT send urine without prior agreement)
Borrelia burgdorferi (Lyme disease/ Lyme borreliosis)	<p>Clotted blood</p> <p>Please note: 'Tick bite' alone is not an indication for Lyme serology testing (BIA position statement: Journal of Infection (2011) 62, 329-338). Please include the clinical symptoms of Lyme borreliosis, date of on-set of symptoms, date of known a tick bite (if applicable) or risk factor are required prior to testing for Lyme borreliosis.</p>
Bronchiolitis	<p>Best sample for sensitivity: BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity</p>
Brucella	<p>Clotted blood, CSF</p> <p>Please complete and send the Brucella Reference Unit request form including details of exposure/risk factor and symptoms including the date of onset (found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317131960000).</p>
Chickenpox	<p>Vesicle/ulcer swab in VPSS (PLEASE NOTE: Varicella zoster virus IgM on blood is no longer available at the WoSSVC).</p> <p>Clotted blood for VZV IgG</p> <p>PLEASE PHONE THE WoSSVC IF TESTING IS DUE TO A VZV EXPOSURE. Immunity to varicella zoster virus (VZV IgG) is only offered in immunocompromised patients and their household contacts (with no past medical history of chickenpox), pregnant patients (with no past medical history of chickenpox) or health care workers (with no past medical history of chickenpox). Please provide the gestation for pregnant women or the diagnosis of immunocompromised patients or their household contact. VZV IgG can be tested on an antenatal or any blood sample taken in the last six months stored at the laboratory.</p>
Chikungunya	<p>EDTA Blood AND clotted blood</p> <p>Please complete the Rare and Imported Pathogens Laboratory (RIPL)</p>

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
	request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Chlamydia trachomatis	Abbott multi-collect specimen collection kit see p7-8 EXCEPT for eye swabs which must be added to VPSS Men: Urine. Female: vulvovaginal swab / endocervical swab. Rectal swab, pharyngeal swab for either sex as required. Urine must be collected in universal container or provided in the Abbott Multi-Collect transport tube. Swabs must also be provided in the orange topped Multi-Collect tube unless an eye swab.
Chlamydia pneumoniae / Chlamydia psittaci serology (Not available/suitable for Chlamydia trachomatis)	Clotted blood Chlamydia serology will only be sent for testing in patients with negative bacteriology, in ICU or are immunocompromised AND have a history of bird contact. Please complete and send the Public Health Laboratory Bristol request form back to us (found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317135020300 on page 20) including details of exposure/risk factor and symptoms (including the dates of onset).
Coronavirus	Best sample for sensitivity: BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity
Coxiella burnetti (Q-fever)	EDTA blood, clotted blood, tissue, heart valve We restrict Q-fever (Coxiella burnetii) testing to specific clinical pictures (please see www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/QFever/Guidelines). IF APPROPRIATE please complete and send the Rare and Imported Pathogens Laboratory to us for testing (found at http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726) including details of exposure/risk factor and symptoms including the date of onset. The expected turnaround time is approximately seven working days.
Coxsackievirus	Faeces - Sterile (universal) container, throat swab in VPSS
Crimean-Congo hemorrhagic fever virus	EDTA blood, clotted blood, urine, tissue Telephone the laboratory ASAP , please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Cytomegalovirus	Congenital <21 days old: Urine - Sterile (universal) container or throat swab in VPSS Congenital >21 days old: EDTA Blood for CMV IgG, Guthrie card for PCR ONLY if CMV IgG positive All other: EDTA Blood Serology (IgM/IgG) and avidity (Confirmation of primary infection during pregnancy only) EDTA Blood Resistance: EDTA Blood Please note: CMV IgM testing is limited to patients less than thirty years old, with lymphadenopathy or those with a lymphocytosis. Please list the patients symptoms and signs or this test will not be performed by the laboratory and further clinical details will be requested. Isolated abnormal LFTs in patients greater than 30 years is NOT an indication for CMV IgM testing.
Dengue virus	EDTA Blood AND clotted blood If testing is required please complete the Rare and Imported Pathogens

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
	Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Eastern equine encephalitis virus (EEEV), Western equine encephalitis virus (WEEV), Venezuelan equine encephalitis virus (VEEV)	EDTA blood, Clotted blood, CSF If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Ebola virus	EDTA blood, Clotted blood, tissue Telephone the laboratory ASAP , please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Echovirus	Faeces - Sterile (universal) container, throat swab in VPSS
Enterovirus	Faeces - Sterile (universal) container, throat swab in VPSS
Epstein–Barr virus	EDTA Blood Please note: EBV IgM testing is limited to patients less than thirty years old, with lymphadenopathy or those with a lymphocytosis. Please list the patients symptoms and signs or this test will not be performed by the laboratory and further clinical details will be requested. Isolated abnormal LFTs in patients greater than 30 years is NOT an indication for EBV IgM testing.
Francisella tularensis	EDTA blood, clotted blood, tissue, wound swab If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Ganciclovir Therapeutic Drug Monitoring	Clotted blood
Gastroenteritis	Diarrhoea Faeces - Sterile (universal) container Vomit- Sterile (universal) container
Hantavirus	EDTA Blood AND clotted blood, urine - Sterile (universal) container If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Hendra virus	EDTA blood AND clotted blood, CSF If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Henipavirus	EDTA Blood AND clotted blood, CSF - Sterile (universal) container If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Hepatitis A virus	EDTA Blood Please note: HAV is now very rare in Scotland. Please include the details of the hepatitis (inc maximum ALT), travel history (with dates), food risk history and clinical features if HAV testing is required or the request will be rejected. HAV IgM is only offered in jaundiced patients or those with an ALT greater than 300 U/L. Please note if HAV IgM is appropriate then HEV IgM and HEV IgG should also be requested along with HBsAg and HCV

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
	antibody and HCV antigen. Post HAV vaccine antibody (IgG) checks are not recommended. Test is for natural immunity (very high levels) and not normally sensitive enough for vaccine induced immunity. Suggest that you follow manufacturer's guidelines for duration of immunity and timing of booster doses.
Hepatitis B virus & hepatitis delta virus	EDTA Blood for HBsAg or anti-HBc for initial screening purposes.
Hepatitis C virus	EDTA Blood
Hepatitis E virus	EDTA Blood Please include the details of the hepatitis (inc maximum ALT), travel history (with dates), food risk history and clinical features if HEV testing is required or the request will be rejected. HEV testing is only offered in jaundiced patients or those with an ALT greater than 300 U/L. Please note if HEV IgM is appropriate then HAV IgM should also be requested along with HBsAg and HCV antibody.
Herpes simplex virus (PCR tests are HSV combined with either Treponema pallidum (Syphilis) or varicella zoster virus)	Vesicle/ulcer swab in VPSS CSF Neonates: Skin, vesicle/ulcer, nose and throat, rectal and eye swab, EDTA Blood +/- CSF Resistance: Swab in Viral Transport Medium – please contact the laboratory for VTM HSV IgG: EDTA Blood
Human herpesvirus 6	EDTA Blood in immunocompromised Throat swab in VPSS for acute rash diagnosis in children under 5 years
Human herpesvirus 7	EDTA Blood in immunocompromised Throat swab in VPSS for acute rash diagnosis in children under 5 years
Human herpesvirus 8	EDTA Blood If required please complete the request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1203348025630 for the Seromolecular Services Unit (SSU), Virus Reference Department, PHE Microbiology Services Colindale
Human immunodeficiency virus (HIV)	EDTA Blood for screening (HIV Antibody/Antigen on the Abbott Architect), confirmation (HIV Antibody/Antigen by Vidas and 3 rd generation antibody only with HIV-1/-2 discrimination by ImmunoComb [®] HIV 1&2 Bispot), HIV viral load by Abbott RealTime HIV-1 assay. HIV Therapeutic Drug Monitoring: EDTA Blood PI: Amprenavir, Atazanavir, Darunavir, Indinavir, Lopinavir, Nelfinavir, Ritonavir, Saquinavir, Tipranavir NNRTIs: Efavirenz, Etravirine, Nevirapine NtRTI: Tenofovir Integrase Inhibitor: Raltegravir Fusion Inhibitor: Enfuvirtide (T-20) CCR5 Antagonist: Maraviroc
Human papillomavirus	Please see the Scottish Human Papilloma Virus Reference Laboratory (SHPVRL) user manual found at: www.hps.scot.nhs.uk/reflab/VirLabDetail.aspx?id=26
Human T-lymphotropic virus	EDTA Blood Please specify the reason for this test or the request will be rejected.

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
Type I and II (HTLV-1/2)	Please provide the indication for the test (e.g. suspected Adult T-cell leukaemia/lymphoma or HTLV-I-associated myelopathy, also known as tropical spastic paraparesis) along with ethnicity, risk factors and clinical signs or symptoms. If the test is for organ donation or is required prior to a specific therapy please specify. Please provide the full clinical details or this test will not be performed by the laboratory and further clinical details will be requested.
Influenza A virus	<u>Best sample for sensitivity:</u> BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity
Influenza B virus	<u>Best sample for sensitivity:</u> BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity
Japanese encephalitis virus	EDTA blood AND clotted blood, CSF If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
JC polyomavirus	CSF, EDTA Blood
Junin virus - Argentine hemorrhagic fever (AHF)	EDTA blood AND clotted blood If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Kunjín virus	EDTA blood AND clotted blood, CSF If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Lassa fever virus	EDTA blood AND clotted blood, urine, throat swab, tissue Telephone the laboratory ASAP , please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Leptospira interrogans (Leptospirosis)	Clotted blood Please complete and send the Leptospira Reference Unit request form (found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947316778) including details of exposure/risk factor and symptoms including the date of onset.
Lymphocytic choriomeningitis virus (LCMV)	Clotted blood, urine Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Lymphogranuloma venereum (LGV) PCR	Rectal swab in Abbott multi-collect specimen transport tube previously diagnosed as Chlamydia trachomatis positive
Marburg virus	EDTA blood AND clotted blood, CSF Telephone the laboratory ASAP , please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Mayaro virus	EDTA blood AND clotted blood, CSF If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Measles virus	Throat swab in VPSS (Measles IgM on blood is no longer available at the WoSSVC)

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
	Please note: Immunity to measles (IgG) is only offered in immunocompromised or pregnant patients who have been exposed/possibly exposed to a case and would be eligible for administration of human normal immunoglobulin, all other individuals should be offered two doses of MMR if they do not have documented evidence of two previous doses. Please provide the full clinical details or this test will not be performed by the laboratory and further clinical details will be requested.
MERS-coronavirus	Sputum AND Nose and throat swab (expressed in same VPSS bottle) AND EDTA Blood AND clotted blood
Mumps virus	Mouth swab in VPSS (Mumps IgM on blood is no longer available at the WoSSVC)
Murray Valley encephalitis virus	Clotted blood, CSF Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Mycoplasma pneumoniae	Best sample for sensitivity: BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity
Neisseria gonorrhoeae	Abbott multi-collect specimen collection kit see p7-8 EXCEPT for eye swabs which must be added to VPSS Men: Urine. Female: vulvovaginal swab / endocervical swab. Rectal swab, pharyngeal swab for either sex as required. Urine must be collected in universal container or provided in the Abbott Multi-Collect transpost tube. Swabs must also be provided in the orange topped Multi-Collect tube unless an eye swab.
Nipah virus	EDTA blood AND clotted blood, CSF Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Norovirus	Diarrhoea Faeces - Sterile (universal) container Vomit - Sterile (universal) container
Orientia tsutsugamushi (Scrub typhus)	EDTA blood, Clotted blood, eschar biopsy, CSF Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Parainfluenza 1-4	Best sample for sensitivity: BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity
Parvovirus B19	EDTA Blood Please Note: Parvovirus B19 IgM testing is limited to symptomatic patients with a maculopapular rash, acute onset arthralgia or acute anaemia and asymptomatic pregnant patients three weeks after exposure to a rash illness. Please state the rash onset date or the date of rash contact in pregnant women along with the current gestation. Please provide the full clinical details or this test will not be performed by the laboratory and further clinical details will be requested. Parvovirus B19 IgG testing is limited to pregnant patients who are exposed to a maculopapular rash illness, when the blood sample is taken less than five days after the rash exposure. Parvovirus B19 IgG is a test for immunity to parvovirus B19. If the patient has had an antenatal blood sample taken please call the

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
	WoSSVC to request testing on that specimen. Please state the date of rash contact and current gestation. Please provide the full clinical details or this test will not be performed by the laboratory and further clinical details will be requested.
Pneumocystis jirovecii	Best sample for sensitivity: BAL (immunofluorescence possible) > induced sputum (IF possible) > sputum (IF possible) > gargle (immunofluorescence NOT available) worst sample for sensitivity
Rabies virus serology	Clotted blood Please consult UK immunisation guidance (the 'Green Book' www.gov.uk/government/publications/rabies-the-green-book-chapter-27) for the requirements of post-rabies vaccination testing. IF INDICATED please complete and send the VLARAB1 request form 'Request for determination of antibodies against rabies' to us (found at: www.defra.gov.uk/ahvla-en/files/form-vlarab1.pdf) including the indication for testing.
Respiratory screen	<u>Best sample for sensitivity:</u> BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity Respiratory screen includes Influenza A and B, respiratory syncytial virus (RSV), rhinovirus/enteroviruses, adenovirus, coronaviruses, human metapneumovirus, parainfluenza 1/2/3/4 and <i>Mycoplasma pneumoniae</i> .
Respiratory syncytial virus (RSV)	Best sample for sensitivity: BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity
Rhinovirus	Best sample for sensitivity: BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity
Rabies	Serology post vaccination: Clotted blood Current infection: EDTA blood AND clotted blood, skin biopsy - Sterile (universal) container, CSF, mouth swab in VPSS
Rash screen	As appropriate based on symptoms, history and rash morphology: EDTA Blood for parvovirus B19 IgM, HIV, Treponema pallidum (Syphilis) serology Throat swab in VPSS for measles, enterovirus, adenovirus, influenza, human herpesvirus 6 (exanthema subitum/roseola infantum in children under 5 years), human herpesvirus 7 (exanthema subitum/roseola infantum in children under 5 years) Please note rubella is very rare in Scotland (2009 zero laboratory confirmed cases, 2010 one, 2011 zero, 2012 five confirmed cases). Clinical diagnosis requires acute onset of generalised maculopapular rash AND fever (>37.2 °C) AND cervical, suboccipital or postauricular adenopathy or arthralgia/arthritis. Cases in Scotland are imported and testing is limited to those agreed with a Consultant Virologist. Please have the patient rubella/MMR vaccination history, recent international travel and contact with similar illness. Throat swab in VPSS, please note that rubella IgM is no longer available. Please see www.hps.scot.nhs.uk/immvax/rubella.aspx
Rash contact - immunocompromised	As appropriate: EDTA Blood for parvovirus B19 IgG

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
	Clotted Blood for varicella zoster virus IgG PLEASE PHONE THE WoSSVC IF TESTING IS DUE TO A VZV EXPOSURE Please see rubella below
Rash contact - pregnant	As appropriate: EDTA Blood for parvovirus B19 IgG Clotted Blood for varicella zoster virus IgG PLEASE PHONE THE WoSSVC IF TESTING IS DUE TO A VZV EXPOSURE Please see rubella below
Rickettsia	EDTA Blood AND clotted blood, eschar biopsy, CSF Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Rift Valley fever virus	EDTA blood AND clotted blood, CSF Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Ross river virus	EDTA blood AND clotted blood Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Rotavirus	Diarrhoea Faeces - Sterile (universal) container Please note: Multiplex PCR test for rotavirus, astrovirus, adenovirus and saporovirus is restricted to immunocompromised patients and children under ten years old. Virology testing in all other individuals with diarrhoea is limited to norovirus.
Rubella	Please note rubella is very rare in Scotland (2009 zero laboratory confirmed cases, 2010 one, 2011 zero, 2012 five confirmed cases). A single dose of the MMR vaccine induces long-lasting immunity in more than 95% of recipients. The childhood vaccination programme MMR uptake rates in Scotland, are currently 97.1 per cent in children reaching the age of five. Clinical diagnosis requires acute onset of generalised maculopapular rash AND fever (>37.2 °C) AND cervical, suboccipital or postauricular adenopathy or arthralgia/arthritis. Cases in Scotland are imported and testing is limited to those agreed with a Consultant Virologist. Please have the patient rubella/MMR vaccination history, recent international travel and any contact history with a similar illness. Throat swab in VPSS, please note that rubella IgM is no longer available. Please see www.hps.scot.nhs.uk/immvax/rubella.aspx EDTA blood for Rubella IgG
Saint Louis encephalitis virus (SLEV)	Clotted blood, CSF Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Sandfly fever virus	EDTA blood AND clotted blood, CSF Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Sapovirus	Diarrhoea Faeces - Sterile (universal) container Please note: Multiplex PCR test for rotavirus, astrovirus, adenovirus and

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
	saporovirus is restricted to immunocompromised patients and children under ten years old. Virology testing in all other individuals with diarrhoea is limited to norovirus.
Sexual Health Screen	EDTA blood for HIV, Treponema pallidum (Syphilis) serology and hepatitis B virus (HBsAg or anti-HBc if requiring vaccination). Abbott multi-collect specimen collection kit (see p7-8) for Chlamydia trachomatis and Neisseria gonorrhoeae EXCEPT for eye swabs which must be added to VPSS Men: Urine. Female: vulvovaginal swab / endocervical swab. Rectal swab, pharyngeal swab for either sex as required. Urine must be collected in universal container or provided in the Abbott Multi-Collect transport tube. Swabs must also be provided in the orange topped Multi-Collect tube unless an eye swab.
Sinbis virus	EDTA blood AND clotted blood Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Shingles	Vesicle/ulcer or skin swab in VPSS
Tickborne encephalitis virus (TBEV)	EDTA blood AND clotted blood, CSF Including European/Western tick-borne encephalitis virus, Siberian tick-borne encephalitis virus, Far eastern Tick-borne encephalitis virus (formerly known as Russian Spring Summer encephalitis virus) Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Therapeutic Drug Monitoring TDM	Clotted blood for aciclovir and ganciclovir. Please see http://bcare.mrsdemo.co.uk/wp-content/uploads/Assay-Guide-20111.pdf EDTA blood for HIV Therapeutic Drug Monitoring including: PI: Amprenavir, Atazanavir, Darunavir, Indinavir, Lopinavir, Nelfinavir, Ritonavir, Saquinavir, Tipranavir NNRTIs: Efavirenz, Etravirine, Nevirapine NtRTI: Tenofovir Integrase Inhibitor: Raltegravir Fusion Inhibitor: Enfuvirtide (T-20) CCR5 Antagonist: Maraviroc Please see www.lab21.com/ClinicalLab/Services/CambridgeUK/DRUGMANAGEMENT/Lab21TherapeuticDrugMonitoringTests.aspx
Toxoplasma gondii	Serology: Clotted blood PCR: EDTA whole blood (please phone the lab to inform this is coming being the blood must not be centrifuged and split) Toxoplasma IgG testing for acute infection is only offered in immunocompromised, pregnant patients or those with lymphadenopathy who are EBV and CMV IgM negative. Please specify the reason for this test along with the patient's symptoms, signs and imaging results or the request will be rejected.
Treponema pallidum (Syphilis)	EDTA Blood for serology Vesicle/ulcer swab in VPSS for PCR
Ulcer	Vesicle/ulcer swab in VPSS (consider Treponema pallidum (Syphilis), herpes simplex, varicella zoster virus and enterovirus (hand, foot and

Suspected diagnosis/screen /sign	Samples required (VPSS=Virus PCR Sample Solution)
	mouth disease).
Varicella-zoster virus	Vesicle/ulcer swab in VPSS (Varicella zoster virus IgM on blood is no longer available at the WoSSVC). Clotted blood for VZV IgG PLEASE PHONE THE WoSSVC IF TESTING IS DUE TO A VZV EXPOSURE. Immunity to varicella zoster virus (VZV IgG) is only offered in immunocompromised patients and their household contacts (with no past medical history of chickenpox), pregnant patients (with no past medical history of chickenpox) or health care workers (with no past medical history of chickenpox). Please provide the gestation for pregnant women or the diagnosis of immunocompromised patients or their household contact.
Venezuelan equine encephalitis virus (VEEV), WEEV, EEEV	EDTA blood, Clotted blood, CSF If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Vesicle	Vesicle/ulcer swab in VPSS (consider herpes simplex, varicella zoster virus and enterovirus (hand, foot and mouth disease)).
Viral haemorrhagic fever	Telephone the laboratory ASAP EDTA Blood AND clotted blood, if suspected Lassa: Urine and Marburg CSF in addition. Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Viral respiratory screen	Best sample for sensitivity: BAL > Sputum > NPA > Gargle > Nose and throat swab (expressed in same VPSS bottle) > Throat swab > Nose swab Worst sample for sensitivity Respiratory screen includes Influenza A and B, respiratory syncytial virus (RSV), rhinovirus/enteroviruses, adenovirus, coronaviruses, human metapneumovirus, parainfluenza 1/2/3/4 and <i>Mycoplasma pneumoniae</i> .
Western equine encephalitis virus (WEEV), EEEV, VEEV	EDTA blood, Clotted blood, CSF If testing is required please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
West Nile virus	EDTA blood AND clotted blood, CSF Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Yellow fever virus	EDTA blood AND clotted blood Please complete the Rare and Imported Pathogens Laboratory (RIPL) request form found at www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947413726
Yersinia pestis	Clotted blood Please complete the L2 'E. coli, Shigella, Yersinia, Vibrio' Referral Form found at http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListDate/Page/1200471661947

TEST REPERTOIRE

Below is a list of our current tests. Turn around times (TRT) represent the number of working days from the time that we receive the sample until the result is authorised.

Tests	Sample type	TRTs	Volume of specimens used in test (µl)***
1. Blood borne virus (BBV)			
HBsAg *	EDTA	3	125
HBsAg Confirmation* (HBsAg neutralisation)	EDTA	3	275
Anti-HBc IgG*	EDTA	3	75
Anti-HBc IgM*	EDTA	3	64
HBeAg/anti-HBe*	EDTA	3	80
Anti-HBs*	EDTA	3	125
HEV IgG/IgM	EDTA	9	60
HCV Ab*	EDTA	3	60
HCV confirmatory Ab	EDTA	9	20
HAV IgM /confirmation*	EDTA	3	70 / 100
HAV total/ IgM Ab*	EDTA	3	75 / 70
HIV screen*(Screen/2 nd EIA)	EDTA	3	150 / 200
HIV confirmation** (Immunocomb)	EDTA	5	80
HTLV 1/2*	EDTA	3	183
BBV screen (HBsAg,HIV Ab, HCV Ab) *	EDTA	3	245
2. Blood borne virus molecular			
HBV PCR (Viral load)	EDTA	14	1000
HCV PCR (Viral load)	EDTA	10	1000
HAV PCR	EDTA	10	1000
HIV PCR (Viral load)	EDTA	10	1000
HEP E PCR	EDTA	10	1000
3. Blood borne virus and other typing			
HBV resistance and typing	EDTA	14	200
HCV genotyping and IL28B	EDTA	10	1000
HIV resistance (including typing)	EDTA	10	1000
Influenza sequencing (SEQFLU)	RESP	10	1000
HBV / hepatitis delta virus PCR	EDTA	14	1000
4. Immunity screens and other serology			
HAV total Ab (screen)	EDTA	3	75
Rubella Ab (Architect/Vidas)	EDTA	5	70/100
Antenatal screen (Rubella Ab/HBsAg/HIV Ab/syphilis)	EDTA	5	275
CMV IgG (Architect)	EDTA	3	100
CMV Avidity (Architect)	EDTA	3	100
EBV VCA IgG	EDTA	3	170
Herpes simplex IgG (Liaison)	EDTA	3	170
Measles IgG (Vidas)	EDTA	3	100
Mumps IgG (Vidas)	EDTA	3	100
Erythrovirus B19 IgG (Liaison)	EDTA	3	170
Toxoplasma IgG (Liaison)	CB	3	170
Varicella zoster IgG* (Vidas /Liaison)	EDTA	3	100/170
Tests	Sample type	TRTs	Volume of specimens used in test (µl)***

5. Rash, Fever, Lymphadenopathy			
CMV IgM (Liaison)	EDTA	3	170
EBNA IgG (Liaison)	EDTA	3	170
EBV VCA IgM (Liaison)	EDTA	3	170
Erythrovirus B19 IgM (Liaison)	EDTA	3	170
Rubella IgM (Liaison)	EDTA	3	170
CMV/EBV/ADENO DNA PCR (qualitative)	EDTA/UR/TH S/BAL/CSF	3	500
Enterovirus/Parechovirus PCR	EDTA/THS/S TO/CSF/UR	3	500
Measles PCR	THS	3	
Mumps PCR	THS/CSF	3	N/A
HSV1+2/VZV PCR	GEN/LS/VF/ SCR/MOU/ CSF	3	500
Erythrovirus B19 PCR	EDTA	3	500
6. Sexually transmitted infections			
<i>C.trachomatis</i> / <i>N.gonorrhoeae</i>	GEN/UR/ EYES	7	N/A
HSV/Syphilis	GEN/MOU/ LS	3	N/A
7. Transplant Screen (PCR Tx)			
CMV/EBV/Adenovirus triplex (quantitative)	EDTA /UR	3	500
8. Respiratory virus testing			
Pneumocystis PCR	SPU/BAL		500
PCRRUT (Universal Respiratory Screen****)	Any respiratory sample	3 3	500
BAL*****	BAL		500
MERS-CoV	NS+THS+ SPU	3	500
9. CSF testing (PCR CSF)			
HSV/VZV/ Enterovirus/Parechovirus	CSF	3	500
HHV-6	CSF	3	500
HHV-7	CSF	3	500
CMV	CSF	3	500
10. Gastroenteritis viruses			
Norovirus PCR	STO/VOM	3	500
PCR GAS (Rotavirus / sapovirus / astrovirus / adenovirus)	STO/VOM	5	500
11. Eye swab testing (PCR Eye)			
HSV/VZV/Adenovirus/ <i>Chlamydia</i>	EYES	3	500
<i>Neisseria gonorrhoeae</i>	EYES	3	500
Tests	Sample type	TRTs	Volume of specimens used in test (µl)***

12. Post-mortem tests*****			
PM Faeces	Any gastrointestinal sample	5	500
PM Heart	Cardiac tissue	5	500
PM Respiratory	Lung tissue	5	500
13. Referred samples			
Varicella avidity, post vaccination titres	CB	RL	600
Exotic viruses, e.g. dengue, yellow fever, rickettsiae etc.	CB+EDTA	RL	400
<i>Borrelia burgdorferi</i>	CB/CSF	RL	200
<i>Toxoplasma</i> Dye tests	CB	RL	200
<i>Toxoplasma</i> PCR	EDTA	RL	200
<i>Chlamydia</i> serology (MIF)	CB	RL	400
Polyomavirus	CSF/UR	RL	200
Antiviral levels e.g. Ganciclovir	EDTA	RL	200
Spongiform encephalopathies	CSF	RL	1000
LGV	RECTAL SWAB	RL	N/A
<i>Neisseria gonorrhoeae</i>	GEN/THS/U/EYE	RL	N/A
HIV drug level testing	EDTA	RL	1000
<p>Key</p> <ul style="list-style-type: none"> • EDTA EDTA blood • CB Clotted blood • *Same day if urgent • ** New diagnosis next day • *** Volume of specimen refers to amount required to perform assay. Please send minimum of 10ml of blood for serology tests. Most tests require EDTA plasma but some require ONLY serum (clotted blood) as marked in table. • **** Universal respiratory screen = Influenza A/B; RSV/Rhinovirus/Adenovirus; Coronavirus 229E/NL63/OC43; Human metapneumovirus; <i>Mycoplasma pneumoniae</i> ; Parainfluenza 1/2/3/4 • ***** BAL = Respiratory screen, PCP, CMV • ***** PM samples: Faeces = Norovirus/GAS screen/Enterovirus Heart = CMV/EBV/ADENO; Enterovirus Respiratory = Respiratory Screen • RL – Reference Laboratory 			

Referral Laboratories

VIRUS / AGENT / TESTS	SPECIMEN	REFERENCE LABORATORY
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Aciclovir levels	Clotted blood	Regional Antimicrobial Reference Laboratory, Bristol
Anthrax – Bacillus anthracis	EDTA blood AND clotted blood, tissue biopsy/ PM tissue, eschar, lesion washings	PHE, Porton Down
Bartonella serology	Clotted blood	Atypical Pneumonia Unit, PHE, Colindale
BK virus	EDTA Blood	Virology Department, Ninewells, Dundee or at WoSSVC at Consultant request
Borrelia burgdorferi	Clotted blood	National Lyme Borreliosis Testing Laboratory, Raigmore
Brucella (B. melitensis - goats, sheep, camels, B. suis – pigs, B. abortus - cattle, camels, B. canis – dogs, B. ovis - goats, sheep, B. neotomae - desert wood rat)	Clotted blood, CSF	Brucella Reference Unit, Aintree
Chikungunya virus	EDTA blood AND clotted blood	PHE, Porton Down
Chlamydia serology	Clotted blood	Public Health Laboratory, Bristol
Coxiella burnetti (Q-fever)	EDTA blood, clotted blood, tissue, heart valve	PHE, Porton Down
Crimean-Congo hemorrhagic fever virus	EDTA blood, clotted blood, urine, tissue	PHE, Porton Down
Cytomegalovirus dried blood spot	Guthrie card	Virology Department, Royal Free Hospital
Cytomegalovirus resistance		West Midlands Public Health Laboratory, Birmingham
Dengue virus (PCR/serology)	EDTA blood, Clotted blood	PHE, Porton Down
Eastern equine encephalitis virus (EEEV), Western equine encephalitis virus (WEEV), Venezuelan equine encephalitis virus (VEEV)	EDTA blood, Clotted blood, CSF	PHE, Porton Down
Ebola virus	EDTA blood, clotted blood, tissue	PHE, Porton Down
Francisella tularensis	EDTA blood, clotted blood, tissue, wound swab	PHE, Colindale
Gancyclovir levels	Clotted blood	Regional Antimicrobial Reference Laboratory, Bristol
Hantavirus	EDTA blood, Clotted blood, urine	PHE, Porton Down
Hendra virus	EDTA blood AND clotted blood, CSF	PHE, Porton Down
Hepatitis B DNA	EDTA blood, Clotted blood	West Midlands Public Health Laboratory, Birmingham
Herpes simplex virus resistance	Tissue culture, swab in Viral Transport Medium	PHE, Colindale
HIV TDM PI: Amprenavir, Atazanavir, Darunavir, Indinavir, Lopinavir, Nelfinavir, Ritonavir, Saquinavir, Tipranavir NNRTIs: Efavirenz, Etravirine, Nevirapine NtRTI: Tenofovir Integrase Inhibitor: Raltegravir Fusion Inhibitor: Enfuvirtide (T-20) CCR5 Antagonist: Maraviroc	EDTA Blood	Lab21 Ltd, Cambridge
Human herpesvirus-8	EDTA Blood	PHE, Colindale
Japanese encephalitis virus	EDTA blood AND clotted blood,	PHE, Porton Down

	CSF	
JC virus antibody	Clotted blood	PHE, Colindale
Junin virus - Argentine hemorrhagic fever (AHF)	EDTA blood AND clotted blood	PHE, Porton Down
Lymphocytic choriomeningitis virus (LCMV)	Clotted blood, urine	PHE, Porton Down
Kunjin virus	EDTA blood AND clotted blood, CSF	PHE, Porton Down
Lassa fever virus	EDTA blood AND clotted blood, urine, throat swab, tissue	PHE, Porton Down
Leptospira	Clotted blood / serum	Leptospira Reference Unit, Hereford
Lymphogranuloma venereum (LGV) PCR	Rectal swab	Scottish Bacterial Sexually Transmitted Infections Reference Laboratory (SBSTIRL), Edinburgh
Marburg virus	EDTA blood AND clotted blood, CSF	PHE, Porton Down
Mayaro virus	EDTA blood AND clotted blood, CSF	PHE, Porton Down
MMR PCR	Saliva	PHE, Colindale
Murray Valley virus	Clotted blood, CSF	PHE, Porton Down
Nipah virus	EDTA blood AND clotted blood, CSF	PHE, Porton Down
Orientia tsutsugamushi	EDTA whole blood, Clotted blood, eschar biopsy, CSF	PHE, Porton Down
Orthopoxviruses: Vaccinia virus, Variola virus, Cowpox virus, horsepox virus, monkeypox virus	EDTA whole blood, vesicle fluid / crust	PHE, Porton Down
Parapoxviruses: orf virus, pseudocowpox virus, bovine papular stomatitis virus	EDTA whole blood, vesicle fluid / crust	PHE, Porton Down
Rabies serology	Clotted blood	Animal Health & Vet Labs Agency, Weybridge
Rickettsial serology	EDTA blood AND clotted blood, eschar biopsy, CSF	PHE, Porton Down
Rift Valley fever virus	EDTA blood AND clotted blood, CSF	PHE, Porton Down
Ross river virus	EDTA blood AND clotted blood	PHE, Porton Down
Rubella IgG avidity testing	Clotted blood	Microbiology Laboratory, Royal Preston Hospital
Sandfly fever virus	EDTA blood AND clotted blood, CSF	PHE, Porton Down
Sinbis virus	EDTA blood AND clotted blood	PHE, Porton Down
Saint Louis encephalitis virus (SLEV)	Clotted blood, CSF	PHE, Porton Down
Tickborne encephalitis virus (TBEV) European/Western tick-borne encephalitis virus, Siberian tick-borne encephalitis virus, Far eastern Tick-borne encephalitis virus (formerly known as Russian Spring Summer encephalitis virus)	EDTA blood AND clotted blood, CSF	PHE, Porton Down
Toxoplasma serology	Clotted blood	Scottish Toxoplasma Reference Laboratory, Raigmore
Toxoplasma PCR	EDTA whole blood	Scottish Toxoplasma Reference Laboratory, Raigmore
Varicella zoster IgM	Clotted blood	Microbiology Department, Raigmore

West Nile virus	EDTA blood AND clotted blood, CSF	PHE, Porton Down
Yellow fever virus	EDTA blood AND clotted blood	PHE, Porton Down
Yersinia pestis	Clotted blood	PHE, Porton Down