

Regional Virus Laboratory

The Regional Virus Laboratory is the only CPA accredited provider of virology services in N. Ireland.

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General Information

Normal laboratory opening hours:

Monday-Thursday 0900-1730 hours

Friday 0900-1700 hours

Out of hours emergency service:

Telephone the Royal Hospitals switchboard (028 9024 0503) to contact the Virology Biomedical Scientist on call. The laboratory provides an on-call service principally for testing organ donors. Other out of hours emergency requests should be discussed with the Virology Biomedical Scientist on call in the first instance. If necessary, out of hours requests and requests for medical advice may be referred to a consultant virologist.

General notes about the use of the RVL

Nucleic acid detection using polymerase chain reaction (PCR) for viral nucleic acid (either RNA or DNA) is our front-line assay to detect many viral pathogens. Preferred specimens are generally from the body system where the virus is and should be collected as early as possible in the illness. For example, in suspected respiratory infection please collect respiratory specimens and in patients with a vesicular rash collect vesicle fluid, rather than blood for antibodies. Clotted blood samples for serology remain useful, especially for HIV, hepatitis viruses, erythrovirus B19, measles, rubella and Epstein Barr virus. We do not perform serology testing for respiratory or gastrointestinal viruses.

Tests for immunity

Post-vaccine testing for immunity is available for hepatitis B and rubella. It is NOT recommended for measles, mumps, VZV and HAV as the assays used are not sensitive enough for vaccine induced IgG. We can test for immunity from natural exposure to CMV, EBV, erythrovirus B19, HAV, measles and VZV.

Acute and convalescent samples

For some acute infections, testing both acute and convalescent sera with a time gap of 10 days can be useful. Even in illnesses such as varicella, where an IgM test is available, this can be negative early in infection, so a repeat sample may be needed.

Salivary IgM Antibody

Public Health medicine, through the CCDC, provide a saliva collection kit for patients who may have had recent measles, mumps or rubella.

Why we may ask for a second sample

To confirm certain positive results (e.g. HIV antibody positives)

To investigate an evolving antibody profile or seroconversion

Problems with the samples in the assay performed

Insufficient or incorrect samples or a problem with the quality of the sample e.g. lysed blood.

Urgent specimens

Pregnant, in recent contact with a case of chickenpox. If there is convincing evidence of chickenpox in the past, no testing is necessary. Otherwise, please supply details of date of contact and type of contact (face-to-face / same room for 15 minutes / own child).

For all other urgent testing please phone the laboratory so that we can identify your patient's specimen. Always include a contact number on the request form.

Request forms

Write the following information on a request form and send it with the specimen to the RVL.

- Patient name, sex and date of birth
- Clinical history including date of onset
- Type and date of specimen
- Doctor's name, address, telephone number and cypher number if applicable

Please avoid the terms "viral screening", "routine virology", "viral studies" or "viral titres" as these terms are confusing and unhelpful. Instead, please provide brief patient clinical details and duration of illness, which allows us to choose appropriate tests. Please do not send request forms without the patient's date of birth.

Dedicated forms for specific services are available from the documents section of the laboratory website: <http://www.rvl-belfast.net>

IgM tests

Virus specific IgM tests may be done on a single sample of serum for the diagnosis of acute infections for the viruses indicated in Table 1. IgM is usually positive by day 5 post-onset.

Collection and transport of specimens

Specimens should be clearly labelled and dated. Place all specimens in leak proof containers in sealed plastic bags. Place the request form in the extra pocket of the plastic bag or attach it outside with an elastic band. Do not staple the form to the plastic bag. Specimens suspected of containing a blood borne virus e.g. HIV, HBV or HCV should be labelled with an appropriate hazard warning sticker. Users should comply with current Royal Mail Guidelines when posting samples to the laboratory.

Serology: Send a 5ml sample of **clotted** blood.

Acceptable blood tubes are:

NsV code (CSA ref)	Vol (on side of tube)	Greiner code	Description
KCM317	6ml	456092	Red top 6ml tube without gel (screw top)
KCM318	6ml	456089	Red top 6ml tube without gel (flip top)
KCR615	5ml	456071	Red top 5ml tube with gel (screw top)
KCR616	5ml	456010	Gold top 5ml tube with gel (screw top)
KCR617	5ml	456018	Gold top 5ml tube with gel (flip top)

Do not send short (4ml) tubes.

Molecular detection: Specimens should reach the RVL with minimum delay. The specimens most frequently required are listed in Table 1, although other specimens may be requested by the RVL for some investigations. Please read the notes below.

Blood: Please read Table 1 - e.g. for CMV viraemia determination send blood in a standard EDTA tube and for HCV PCR send clotted blood.

Chlamydia Specimens: All swab and urine specimens must be sent in Abbott multi-Collect™ specimen Collection Kits which are available from the laboratories where you normally obtain supplies .i.e. Belfast City, Mater, Royal Victoria and Ulster Hospitals. Do not pre-moisten the swab with transport medium, which is a skin and eye irritant.

It is only necessary to send one specimen per patient for chlamydia as follows:

Females: Urine OR endocervical swab OR vulvovaginal swab

Males: Urine

Urine Advise patients not to urinate for one hour before sample collection. Collect the first 20-30ml (not a mid-stream sample) in a suitable foil or plastic container with no preservatives. Use the transfer pipette to transfer enough urine to the transport tube so that the liquid level is in the clear fill window. Cap tightly.

Swabs Remove any mucus before using the swab from the collection kit to collect cells (vaginal, endocervical or urethral). Place the swab, tip down, in the transport tube and break it carefully at the scored line. Cap tightly.

Conjunctival swabs Chlamydial conjunctivitis usually has a later onset than gonococcal conjunctivitis; the incubation period is 5-14 days. Wipe away any muco-purulent material and swab the affected eye(s) with the swab from the collection kit. Place the swab, tip down, in the transport tube and break it carefully at the scored line. Cap tightly.

Place the specimen in a plastic bag and seal. Attach a completed request form [Chlamydia (non GUM clinic) May 06], available to download from the Virology Request Forms section of the laboratory website, to the specimen e.g. with an elastic band (do not staple). After collection and addition to the transport tube, the specimens are stable at ambient temperature (2°C – 30°C) for up to 14 days.

CSF and other fluids such as pleural or pericardial fluid : Send in a sterile bottle. Ideally send at least 1ml of CSF.

Faeces & vomit: Collect specimen in a sterile container. Do not add fixatives or transport medium.

Post-mortem or biopsy specimens: Place each organ specimen in a separate sterile labelled container. Do not add formalin or other fixatives. Take specimens from the main system affected, as well as faeces and a blood clot. Tissue specimens collected at post-mortem should be taken aseptically and in a planned order to avoid contamination from the gastrointestinal tract. Separate sterile instruments should be used for each organ. Where

spongiform encephalopathy is part of the differential diagnosis this should be made clear on the request form.

Respiratory specimens:

Nasopharyngeal secretions: Aspirate secretions into a sterile plastic mucus extractor; transport the mucus extractor with the secretions to the RVL.

Nasal wash, sputum, tracheal secretions, bronchoalveolar lavage (BAL) : send in a sterile container.

Throat and nasal swabs: break the swab into UTM or eNat medium*

Skin and vesicular lesions: gently scrape the base of the vesicle with a disposable scalpel blade, wipe the small amount of fluid and material adhering to the blade on the centre of a clean glass slide and air dry. Alternatively, aspirate large vesicles and send the fluid in a sterile container. For suspected orf infection: scrape the granulation tissue underlying the skin with a disposable scalpel blade, transfer the material to a clean slide and air dry.

Other swabs: swab the affected site and break the swab into UTM or eNat medium *

Urine: send 10-20ml of urine in a sterile container with no preservatives.

* UTM or eNat medium is available from the RVL.

TABLE 1 - TESTS AVAILABLE

Agent	Assay method	Sample required	Typical turn around time for non-urgent requests (days)*
Adenovirus (respiratory)	PCR	Respiratory samples, eye swab, urine, EDTA blood	5
Adenovirus (faecal group F)	PCR	Faeces	5
Arboviruses	Serology (SAT)	Clotted blood	21
Astroviruses	PCR	Faeces	5
Bocavirus	PCR	Respiratory secretions	5
<i>Bordetella pertussis</i>	PCR	Respiratory secretions	5
<i>Chlamydia trachomatis</i>	PCR	Urine or genital swab	5
Respiratory Coronaviruses	PCR	Respiratory samples	5
Cytomegalovirus (CMV)	Serology IgM	Clotted blood	8
	Serology IgG immunity	Clotted blood	3
	PCR qualitative / quantitative	EDTA blood, urine & other specimens	5
Enteroviruses (picornaviruses) (inc Coxsackie & ECHO viruses)	PCR	Faeces, clotted blood, CSF & throat swabs	5
Epstein Barr virus (EBV)	Serology	Clotted blood	8
	PCR qualitative / quantitative	EDTA blood	5
Erythrovirus B19 (parvovirus B19)	Serology IgM	Clotted blood	8
	Serology IgG immunity	Clotted blood	8
	PCR	Clotted blood	5
Hantavirus (SAT)	Serology	Clotted blood	21
Hepatitis A virus	Serology IgM	Clotted blood	3
	Serology IgG immunity	Clotted blood	3
Hepatitis B virus	Screening for infection (HBsAg)	Clotted blood	3
	Markers	Clotted blood	3
	Anti-HBsAg immunity	Clotted blood	3
	Molecular quantitative	Clotted blood	5
	Pre-core mutant analysis (SAT)	Clotted blood	30
	Lamivudine resistance analysis (SAT)	Clotted blood	30

Hepatitis C virus	Serology	Clotted blood	3
	PCR qualitative / quantitative / Antigen	Clotted blood	8
	Genotyping	Clotted blood	21
Hepatitis D virus	Serology (SAT)	Clotted blood	21
Hepatitis E virus	Serology (SAT)	Clotted blood	21
Herpes simplex virus (HSV 1 / HSV 2)	Serology IgM	Clotted blood	8
	PCR	CSF, genital, skin & eye swabs	5
Human herpes virus 6 (HHV6)	Serology (SAT)	Clotted blood	21
Human immunodeficiency virus (HIV)	Serology	Clotted blood	3
	Molecular quantitative (viral load)	EDTA blood	14
	Congenital transmission (SAT)	EDTA blood	21
	Genotypic resistance testing	EDTA blood	30
Human T-lymphotropic virus (HTLV)	Serology	Clotted blood	10
Influenza viruses	PCR	Respiratory samples	5
<i>Legionella pneumophila</i>	PCR	Respiratory samples	5
Measles virus	PCR	Respiratory samples	5
	Serology IgG	Clotted blood	5
	Serology IgM (SAT)	PHA, through a CCDC, provide a saliva collection kit	Contact the PHA Tel: 028 9055 3994
Human metapneumovirus (hMPV)	PCR	Respiratory samples	5
Molluscum contagiosum	EM	Skin material	10
Mumps virus	PCR	Saliva / Urine	5
	Serology IgG immunity (SAT)	Clotted blood	21
	Serology IgM (SAT)	PHA, through a CCDC, provide a saliva collection kit	Contact the PHA Tel: 028 9055 3994
<i>Mycoplasma pneumoniae</i>	PCR	Respiratory Secretions	5
Norovirus	PCR	Faeces, vomit	5
Orf virus	EM	Skin material	10
Parainfluenza viruses	PCR	Respiratory samples	5
<i>Pneumocystis jirovecii (carinii)</i>	PCR	Respiratory samples	5
Polyomavirus BK	PCR	EDTA blood, urine	5
Polyomavirus JC	PCR (SAT)	CSF	21
Q fever (<i>Coxiella burnetii</i>)	Serology IgM , Phase I & II immunofluorescence	Clotted blood	10

Rabies virus	Serology IgG immunity (SAT)	Clotted blood	30
Respiratory syncytial virus (RSV)	PCR	Respiratory samples	5
Rhinovirus	PCR	Respiratory samples	5
Rotavirus	PCR	Faeces	5
Rubella virus	Serology IgM	Clotted blood	8
	Serology IgG immunity	Clotted blood	3
Varicella zoster virus (VZV)	Serology IgM	Clotted blood	8
	Serology IgG immunity	Clotted blood	5
	PCR	CSF, genital & skin swabs	5

* N.B. urgent requests will, by arrangement, be completed in a faster timeframe appropriate to the clinical indication.

KEY

CCDC Consultant in Communicable Disease Control
CSF Cerebrospinal fluid
EM Electron microscopy
PCR Polymerase chain reaction
PHA Public Health Agency Tel: 028 9055 3994
SAT Send away test

TABLE 2 - CLINICAL INDICATIONS FOR TESTING

Provisional Diagnosis/ Clinical Situation/Symptoms	Agents	Specimens
Respiratory infection (URTI & LRTI)	Influenza A & B, RSV, rhinovirus, adenovirus, parainfluenza 1, 2 & 3, coronavirus, metapneumovirus, bocavirus	Respiratory specimen
	Q-fever, Chlamydia group, <i>Mycoplasma pneumoniae</i>	Respiratory specimen
Pneumonitis – immunocompromised patients	<i>Pneumocystis jiroveci(carinii)</i>	Respiratory specimen
Hepatitis	Hepatitis A, B & C, Epstein Barr virus, CMV	Clotted blood
Gastrointestinal	Rotavirus, adenovirus, norovirus, astrovirus	Faeces, vomit
Central nervous system (meningitis & encephalitis)	Herpes simplex , varicella zoster, measles, mumps, enteroviruses, HTLV-1, JC virus	Faeces, CSF, throat swab in UTM or eNat medium *, clotted blood
Arthralgia	Erythrovirus B19	Clotted blood
Skin rashes	Rubella, measles, erythrovirus B19, herpes simplex, varicella zoster, molluscum contagiosum	Clotted blood and vesical or skin material if appropriate
Conjunctivitis	Adenovirus, herpes simplex, enterovirus	Eye swab
Stomatitis	Herpes simplex	Swab in UTM or eNat medium * clotted blood
Lymphadenopathy & glandular fever	Epstein Barr virus, CMV	Clotted blood
Pleurodynia	Enterovirus	Faeces, clotted blood
Hand, foot & mouth disease	Enterovirus	Faeces, vesicle fluid
Myocarditis	Enterovirus	Faeces, clotted blood
Endocarditis	Q fever	Clotted blood
Immunity testing (post-vaccine)	Hepatitis B, rubella, measles (SAT)	Clotted blood
Immunity testing (natural exposure)	CMV, EBV, erythrovirus B19, hepatitis A, varicella zoster, measles (SAT)	Clotted blood
Genital infection	Herpes simplex, T pallidum	Swab in UTM or eNat medium *
	Chlamydia trachomatis	First catch urine, swab in Abbott collection kit
AIDS & HIV	HIV Loads, Mutational Analysis, Genotyping	Clotted blood EDTA Blood
Embryopathy	Erythrovirus B19, CMV, rubella	Clotted blood & fetal tissue
Head & neck tumours	Epstein Barr virus	Clotted blood

Renal / dialysis	Hepatitis B & C, HIV, CMV	Clotted blood
Organ donors	Hepatitis B & C, HIV, HTLV, CMV, Syphilis	Clotted blood

*** UTM or eNat medium (available from RVL)**

The above table indicates the most likely infecting agents, but is not intended to be an exhaustive list.

Other investigations will be carried out by arrangement