

## MICROBIOLOGY USER MANUAL

### Location of Document

#### CHANGES IN THIS VERSION

The following changes have been implemented:

**Section 6:**

MAC updated to reflect MAC2, communicated to the users in June 2024. Additional information to reflect that each request received by Microbiology is considered an agreement (as per change request CR5221) and consent added (as per change request CR5138).

**Section 9**

Phone calls for positive blood cultures will be made for the gram stain when the blood culture flags positive. Note- the following caveats are in place:

Microbiology will attempt to contact the ward twice with a positive blood culture gram stain. Laboratory staff will not make further phone calls on positive blood cultures. Updates will be made to the LIMS as soon as further information is available, to include preliminary culture and susceptibility results.

**Section 10:**

Sample container for urine for Legionella & pneumococcal antigen testing changed from sterile universal to monovette

**Section 12:**

Information on referring to the printed reference lab report added because not all of the information can be transcribed onto the electronic report, as per change request CR5263.

**Section 16:**

Minor changes to the GEN6 wording

**Section 17:**

New section created to provide information on additional tests, as per change request CR5228

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### LOOKING FOR SPECIFIC INFORMATION?

Type the “test name” or a “keyword” in the text search box on the tool bar and press enter- or use “Ctrl+F” keyboard shortcut if search box not displayed

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## 1. INTRODUCTION

Microbiology is an ISO15189 UKAS accredited laboratory.



Medical Laboratory  
No. 8841

Our accreditation is limited to those activities described on the UKAS schedule of accreditation. This schedule can be accessed from the [UKAS](#) website. Use the term “8841” to search for accredited organisations in the Who’s Accredited tab

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[Western Health and Social Care Trust](#)  
**Medical Laboratories / 8841**  
Microbiology Laboratory, Altnagelvin Hospital, Glenshane Road, Londonderry BT47 6SP, United Kingdom  
**Telephone** (028) 71345171 ext: 213770 **Email** [Martin.Robinson@westerntrust.hscni.net](mailto:Martin.Robinson@westerntrust.hscni.net)  
**Web** <http://www.westerntrust.hscni.net/>

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Microbiology is located within Altnagelvin Hospital, Laboratory/Pharmacy Building, South Block, where it serves the whole of the Western Trust.

Microbiology is directed by a Lead Consultant Clinical Microbiologist and is managed by a Lead Biomedical Scientist. The department processes in excess of 200,000 samples each year.

Microbiology follows the UKHSA Standards for Microbiology Investigations (SMIs) for processing and interpreting of clinical samples. These are a comprehensive and referenced collection of recommended algorithms and procedures for clinical microbiology. Access to the standard methods publications is via the Royal College of Pathologists website [UK Standards for Microbiology Investigations](#)

- Specimens for bacterial culture, wherever possible, should be collected **prior to commencement of antibiotic treatment**
- Actual pus or tissue samples are always preferable to a swab.
- To avoid inadvertent contamination of a specimen during collection, **aseptic non-touch technique** must be used.
- Decontamination of the sampling site or equipment **is** necessary e.g. skin antisepsis before taking blood cultures or cerebrospinal fluids (CSF), or catheter port antisepsis before collecting a specimen of urine via a catheter (CSU).
- Specimens **must** be collected into sterile containers with close fitting lids. **The specimen must be clearly labelled** (see Section 6 for labelling requirements). Once collected, place the specimen into a plastic specimen bag and seal the bag. Wash your hands and dispose of clinical waste into a yellow clinical waste collection bag. Sharps must be disposed of safely.
- Every clinical specimen sent for microbiology examination should be treated as potentially infectious. Standard precautions **must** be observed at all times.
- Swabs for bacterial and fungal culture should be placed in appropriate transport medium.
- Sample a representative part of the lesion. Swabbing dry crusted areas is unlikely to yield the causative pathogen.
- If specimens are taken from ulcers, the debris on the ulcer should be removed and the ulcer should be cleaned with saline. A biopsy or, preferably, a needle aspiration of the edge of the wound should then be taken.

## 2. OPENING HOURS

Microbiology offers a 24 hour service, 7 days a week, as detailed below:

- Monday to Friday- full service between 9.00am - 5.15 p.m.
- Saturdays, Sundays and Bank Holidays- a limited service between 09.00am- 5.00 pm

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- All other times (including Bank Holidays) a 24 hour emergency on-call service is available.

Urgent requests for Microbiology **MUST** always be arranged with the Biomedical Scientist. Please contact the department once the sample has been taken at one of the numbers detailed above or via the switchboard for samples taken outside of the normal Laboratory opening hours.

### 3. LABORATORY CONTACT DETAILS

#### LABORATORY ADDRESS

Microbiology  
South Wing  
Altnagelvin Area Hospital  
Western Health & Social Care Trust  
Glenshane Road  
BT47 6SB

#### TELEPHONE DETAILS

**Altnagelvin Hospital Switchboard: (028) 71345171**

Name	Position/Comments	Contact details
Dr. G. Glynn Consultant Microbiologist	Clinical Head of Services	Ext. 213776. If not available on this number, contact via their secretary or through switchboard
Dr. C. Armstrong Consultant Microbiologist	Head of Laboratory	Ext. 213774 If not available on this number, contact via their secretary or through switchboard
Martin Robinson	Lead Biomedical Scientist	Ext. 213770 Direct dial number: (028) 71296131 Mobile: 07717 224973 Martin.robinson@westerntrust.hscni.net
Ann Murray	Secretary to Consultant Microbiologists	Ext. 213775 Ann.murray@westerntrust.hscni.net
Main Microbiology Lab	Results/Queries Serology TB/Respiratory Lab Sterile Fluid Room Enteric Pathogens	Ext. 214017 Ext. 213767 Ext. 213769 Ext. 213764 Ext. 213768
Microbiology on- call bleep	For urgent out of hours requests	Contact the Biomedical Scientist via the switchboard

#### 4. AVAILABILITY OF CLINICAL ADVICE

Microbiology offers a consultant led service. Please ensure you have discussed the case/query with a senior colleague and have all relevant clinical information to hand before contacting the Consultant Microbiologist for advice. For out-of-hours advice, contact the Consultant Microbiologist via the switchboard.

#### 5. URGENT AND “OUT OF HOURS” SAMPLES

**PLEASE NOTE: THIS SERVICE IS FOR PROCESSING SAMPLES. IT IS NOT A RESULTS SERVICE. DO NOT CONTACT MICROBIOLOGY REGARDING SAMPLE CONTAINERS DURING THIS TIME.**

Only certain tests are available as urgent requests, as listed below. The laboratory **MUST** be contacted to arrange all urgent samples before the specimen is sent to the laboratory. Failure to contact the laboratory will result in the sample being processed as a routine sample. The requesting clinician is responsible for arranging transport of urgent samples to the laboratory:

- CSF examination (microscopy & culture)
- Microscopy & culture of pus or body fluid from normally sterile sites
- Urine microscopy
- Corneal scrapings
- Immediate plating and processing of samples where clinical management could be altered by the result.
- Rapid CoVID PCR swabs meeting the criteria set out in Section 10

**PLEASE NOTE: ZEHL-NEELSEN STAINING IS NOT AVAILABLE DURING THE OUT OF HOURS PERIOD. THESE SAMPLES WILL BE PROCESSED THE NEXT ROUTINE WORKING DAY**



## 6. THE REQUEST FORM/MINIMUM ACCEPTANCE CRITERIA (MAC)

In line with all other Trusts, the WHSCT Laboratories have implemented the NI Pathology Network Minimum Acceptance Criteria (MAC) Policy for **all** their laboratory sample requests.

### LABORATORY REQUEST FORM

- H&C Number (1)
- Official First Name and Surname
- Sex
- Date of Birth (DD/MM/YYYY)
- Date and time of sample collection
- Full name of the requesting Consultant or Authorised Health Care Professional AND their HCP code (2) AND WHSCT CONSULTANT CODE OR GP cypher code
- Hospital source OR location code OR GP practice code
- Test(s) requested
- Anatomical site and Specimen type

### SAMPLE LABEL

- H&C Number (1)
- Official First Name and Surname
- Date of Birth (DD/MM/YYYY)

1. H&C Number must be used unless the patient is not registered with a GP in NI/is registered but does not yet have their H&C number (in which case, it must clearly state "No H&C number available" on the request form) or in an emergency situation (in which case, use the local hospital emergency numbering system).
2. HCP code must be registered by Information Standards Group.

Each request accepted by the Microbiology for analysis shall be deemed an agreement by the user for the Western Health & Social Care Trust (WHSCT) Microbiology Laboratory, or their selected referral Laboratories, to carry out the Laboratory services requested. It also implies an acceptance of the conditions of preparation and transport as outlined in this user manual.

Microbiology is required to obtain informed consent of the patient for all tests carried out. Consent is implied by the receipt of the compliant sample and request form from the requesting clinician at source. Reflex testing may be carried out on certain samples, depending on the initial result. It is assumed the original consent is sufficient.

Specimens from patients known or suspected to be infected with a Category 3 Pathogen, for example CoVID-19, *Mycobacterium tuberculosis*, Hepatitis B virus, HIV or the Enteric fevers must have a hazard warning HAZARD GROUP 3 label, affixed to both the specimen container and request form.

**Clinical details make a difference on the types of organisms which are considered significant. For example, coliforms in a wound swab would not be considered significant unless the patient is diabetic or the sample was from a surgical wound. Without this information the final report will be “No significant growth”. A patient with recurring/persistent sore throat may have an infection caused by an anaerobe which would not be looked for without the clinical details.**

## **7. COMMON REASONS FOR SAMPLES NOT BEING PROCESSED**

- Samples not meeting the MAC
- Specimens received in a non-sterile container
- Leaking specimens
- Tissue/specimens received in formalin or any other fixative
- Contaminated specimens or request forms
- Swabs with no site stated
- Insufficient urine in a boric acid container
- Urine received in a non-boric acid container which has been taken >4 hours before receipt in the lab and no evidence of refrigeration
- Blood cultures which have been refrigerated

## **8. SAMPLE DELIVERY**

### **ALTNAGELVIN HOSPITAL**

Specimens are transported by the Portering Service or the Vacuum Transfer System to the Laboratory/ Laboratory Reception. The Laboratory must be contacted regarding all urgent requests.

**The address number for the Vacuum Transfer System (VTS) into Microbiology is 850. It is the responsibility of the sender to ensure samples are forwarded to the correct address. Sending a pod to a different address will result in a delay in the sample getting to Microbiology. Samples of tissue/bone/CSF & other non-repeatable sample should NOT be sent via the pneumatic tube.**

**Several specimens have been sent to the laboratory via the VTS to the laboratories from patients with/suspected HAZARD GROUP 3 pathogens such as HIV, hepatitis B and hepatitis C & CoVID. These samples pose potentially significant risks to the health of the laboratory staff handling the specimens. These samples should NEVER be sent via the VTS. Such samples should always be transported to the laboratories inside sealed, approved transport bags.**

**NOTE: The use of brown envelopes for transporting laboratory samples from ward/outpatients is prohibited and must not be used.**



## **SOUTH WEST ACUTE HOSPITAL**

Each week day (Monday – Friday), a van leaves the SWAH, Enniskillen at 8:50am, calls at OHPCC at 10:00am and arrives at Altnagelvin Area Hospital at approximately 11:30–12 midday. A second transport run is provided leaving SWAH at 2:00pm, calling at OHPCC at 2:45pm to arrive in Altnagelvin Area Hospital between 4-4.30pm. Specimens are collected at these times and brought to Altnagelvin. Laboratory reports are delivered on the return journey.

On Saturday, Sunday and Bank Holidays, specimens are collected from SWAH at 10:00am and delivered to Altnagelvin Area Hospital by approximately 12:00 midday.

Urgent specimens which arrive outside the normal collection times are transported to Altnagelvin Area Hospital via COURIER service. This is organised by the requestor who must also inform the Microbiology Laboratory in Altnagelvin that an urgent specimen has been sent.

## **SAMPLES FROM OUTPATIENTS AND GP SURGERIES**

Pickup and delivery times are detailed in [\[SPECREC/47\]](#). This policy is available on request. Please contact the department to request a copy of this policy.

## **9. ELECTRONIC & TELEPHONED REPORT**

Microbiology endeavours to report results electronically as soon as the results are available. In order to facilitate the department in producing prompt electronic reports, it is requested that phone calls made to the department are for urgent results only. Please check for the electronic result prior to any phone call.

**Microbiology reports cell counts for urine directs, fluids & CSF samples electronically. These will be available within 1 hour of the sample being received within the department. The Gram stain following a positive blood culture is also reported electronically.**

Listed below are the situations which the department will phone out to the requestor:

- Gram stain on positive blood cultures.

**Note: Microbiology will attempt to contact the ward twice with a positive blood culture gram stain. Laboratory staff will not make further phone calls on positive blood cultures. Updates will be made to the LIMS as soon as further information is available, to include preliminary culture and susceptibility results.**


- Urgent CSF samples- microscopy result will only be phoned if there is an elevated white cell count or organisms present in the Gram stain. There will only be another phone call if there is a positive growth.

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- MRSA- 1<sup>st</sup> isolate from all sites, for hospital inpatients.
- ESβL's- 1<sup>st</sup> isolate from all sites, except urine, for hospital inpatients.
- VRE/GRE- 1<sup>st</sup> isolate from all sites, for hospital inpatients.
- CPE- 1<sup>st</sup> isolate from all sites, for hospital and community patients.
- Group A Streptococci- from wound swabs, ulcers, soft tissue sites, for hospital and community patients.
- Group B Streptococci- Neonatal patients and vaginal swabs from patients with ruptured membranes, in labour ward/delivery suite
- Group B Streptococci from a Group B Carriage Screen
- Chlamydia/gonorrhoeae PCR- positive samples only
- TB- ZN stain, PCR and/or culture positive samples only
- Positive *Legionella* urinary antigen
- Faecal isolates from hospital inpatients. Positive *C. difficile* toxins results will be phoned to a GP (Monday-Friday) or to the nursing home (weekend/Bank Holiday) (if clearly identified on the request form).
- Positive growth from Urgent urine samples from ASW (ward 50). This only applies to those samples received with a "Please phone to" sticker on the request form
- Positive culture result from a sterile fluid




Please note: Microbiology receives around 700 samples per day. If you require a result urgently, it is important to contact the laboratory prior to sending the sample. Contact the lab if you require a result to be phoned back on a sample which is not listed above.


**10. SAMPLE CONTAINERS, TEST REPERTOIRE & TURNAROUND TIMES**

Sterile universal containers	TAT										
 <ul style="list-style-type: none"> <li> <b>CSF examination</b>  <i>Note: Glucose, protein and xanthochromia are tested in Biochemistry.</i>   <i>Normal CSF values.</i> <table border="1" data-bbox="531 568 1225 864"> <tr> <td rowspan="3">Leucocytes</td> <td>Neonates &lt;28 days</td> <td>0-30 cells X 10<sup>6</sup>/L</td> </tr> <tr> <td>Infants 1-12 months</td> <td>0-15 cells X 10<sup>6</sup>/L</td> </tr> <tr> <td>Children/Adults 1year+</td> <td>0-5 cells X 10<sup>6</sup>/L</td> </tr> <tr> <td>Erythrocytes</td> <td colspan="2">No RBCs should be present in normal CSF</td> </tr> </table> </li> </ul> <p><b>Please note: These values represent the approximate upper and lower limits of normality and are for guidance only.</b></p> <ul style="list-style-type: none"> <li> <b>Other sterile fluids, for example joint fluid, pleural fluid, ascetic fluid, peritoneal fluid</b>  <i>Any sample received for O&amp;S will be cultured and have a gram stain performed. If you require a cell count, please state "cell count &amp; O+S" on the request form. Any request which states cell count only will not be cultured. Cell counts for sterile fluids are reported as number of cells X 10<sup>6</sup>/L (displayed as 10<sup>6</sup>/L)</i> </li> </ul> <p><i>Corneal scrapes received as a blade in Brain Heart Infusion broth.</i>  <i>Very small volumes of aqueous and vitreous taps, where the volume is too low to be received in a Universal container, may be sent in a syringe. Note: the needle should not be sent Microbiology with the syringe</i></p> <ul style="list-style-type: none"> <li> <b>Pus</b>  <i>Pus is preferable to a swab if available. Microscopy and culture carried out routinely. Extended incubation may be required for some samples</i> </li> <li> <b>BAL samples</b>  <i>Microscopy and culture performed on all samples. TB microscopy and culture performed on request only. Indicate the region of the lung the sample has been</i> </li> </ul>	Leucocytes	Neonates <28 days	0-30 cells X 10 <sup>6</sup> /L	Infants 1-12 months	0-15 cells X 10 <sup>6</sup> /L	Children/Adults 1year+	0-5 cells X 10 <sup>6</sup> /L	Erythrocytes	No RBCs should be present in normal CSF		<p><b>Urgent cell count telephoned once available. Culture negative results ≤ 3 days Positive results- preliminary result telephoned to the ward. Electronic report ≤5 days</b></p> <p><b>Microscopy/cell count phoned on the same day if the sample is urgent. Culture negative results ≤ 5days. Positive culture results: ward contacted</b></p> <p><b>12 days</b></p> <p><b>Culture results ≤ 5days</b></p> <p><b>O&amp;S- ≤ 4 days TB- Positive ZN stains will be</b></p>
Leucocytes		Neonates <28 days	0-30 cells X 10 <sup>6</sup> /L								
		Infants 1-12 months	0-15 cells X 10 <sup>6</sup> /L								
	Children/Adults 1year+	0-5 cells X 10 <sup>6</sup> /L									
Erythrocytes	No RBCs should be present in normal CSF										


	<p>taken from if more than 1 sample is being sent. For multiple samples, if there is no indication of region of the lung, only 1 sample will be processed.</p>	<p>phoned to the ward. AAFB culture results can take up to 7 weeks. Positive results will be phoned when available</p>
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Monovette Urine Containers		TAT
 	<ul style="list-style-type: none"> <li>• <b>Green top Monovette container for urine samples</b> <i>Boric acid is added to these containers as a preservative. Boric acid has been shown to kill any bacteria present in the urine if the concentration is too high. This is the preferred sample container (green monovette)</i> <i>Please fill to the indicated line.</i></li> <li>• <b>Containers with insufficient urine added will not be processed</b></li> <li>• <b>If the patient can only produce a small volume of urine, please use the yellow topped container.</b> <i>Please note: these <b>MUST</b> reach the lab within 4 hours of production to ensure there is no overgrowth of skin flora. The sample can be refrigerated prior to sending to the lab. Please indicate this on the request form.</i></li> </ul> <p><b>Urinary catheters will not be processed.</b></p> <ul style="list-style-type: none"> <li>• <b>Legionella and Pneumococcal urinary antigens</b> <i>Acceptance criteria are in place for Legionella urinary antigen testing. This test will only be performed when specific clinical details are included on the request form</i> <i>For pneumococcal urinary antigen, a CURB-65 score of <math>\geq 2</math> must be clearly stated on the request form</i></li> </ul>	<p><math>\leq 3</math> days</p> <p>1 day. Please note: these tests are not available at the weekend</p>


Early morning urine container		TAT
	<ul style="list-style-type: none"> <li>• <b>Urine- for TB culture only.</b> <i>PHE standards indicate that microscopy for AAFB in this sample can be misleading due to the presence of non-tuberculous mycobacteria. Microscopy is not performed on these samples. Samples should be sent on 3 consecutive days. Please ensure the full early morning urine sample is sent. Samples received in a sterile universal container will NOT be processed</i></li> </ul>	<p><b>AAFB culture results can take up to 7 weeks. Positive results will be phoned when available</b></p>
MRSA PCR testing		TAT
	<p><b>Copan swabs for MRSA PCR testing</b> <i>MRSA PCR is only offered to a limited number of users and only available for nasal swabs. In the vast majority of cases, screening by culture is recommended. See WHSCT screening MRSA policy for full details (this can be found on the Trust intranet site, under "Infection Prevention and Control Guidelines").</i></p>	<p><b>≤ 1 day</b> <b>For urgent tests, the result is available within 90 minutes of receipt of the sample</b></p>
Serological Testing		TAT
	<ul style="list-style-type: none"> <li>• <b>ASOT</b> <i>Titres of &lt;200 IU are considered to be in the normal range ASOT testing is not recommended for the diagnosis of acute pharyngitis. ASOT testing will not be carried out within Microbiology unless the clinical details clearly indicate that a non-suppurative post streptococcal complication is present.</i></li> </ul>	<p><b>2 days</b></p>


Universal container with spoon		TAT
	<p><b>Container to be used for faecal samples only.</b></p> <ul style="list-style-type: none"> <li> <b>Molecular testing for Enteric Pathogens</b>  <i>The lab routinely tests for the following pathogens: Salmonella enetrica spp., Shigella spp./Enteroinvasive E.coli, Campylobacter jejuni/coli/lari, Verotoxin E.coli, Cryptosporidium parvum/hominis and Giardia lamblia. Only liquid samples will be tested (5, 6 or 7 on the Bristol Stool Chart.</i> </li> </ul> <p><i>Targets detected by PCR may require further work. A preliminary report will be available for these samples within the stated TAT.</i></p>	<p><b>48 hours</b></p>
	<ul style="list-style-type: none"> <li> <b>C. diff toxin testing</b>  <i>Microbiology has a two- step testing algorithm for C difficile toxin detection. This involves the molecular detection of C. diffiicle toxin B gene by nucleic acid extraction/purification. For any sample testing positive for the toxin B gene, confirmation of presence or absence of the toxin is undertaken by immunoassay.</i> </li> </ul> <p><i>Minimum of 5mL of sample required. Only liquid samples will be tested (5, 6 or 7 on the Bristol Stool Chart) on the following patients:</i></p> <ul style="list-style-type: none"> <li>- Patients ≥ 65 years</li> <li>- Patients on stated antibiotics</li> <li>- On request</li> </ul> <p><i>Patients &lt;2 years will not be tested.</i></p> <p><b>Send separate samples if requesting C. diff &amp; Molecular Testing.</b></p> <ul style="list-style-type: none"> <li> <b>Parasitology</b>  <i>Samples with relevant clinical details are forwarded to a UKHSA reference lab in Liverpool having first tested negative for Cryptosporidium parvum/hominis and Giardia lamblia</i> </li> </ul> <p><i>For investigation of thread worms, a dry cotton swab is required. Samples are best obtained in the morning before bathing. Rub a moistened swab over the area around the anus, but do not insert into the anus. Place the swab in a sterile in a universal container and send to the lab (do not place the swab in transport media).</i></p>	<p><b>30 hours</b></p>




Wide mouthed universal container		TAT
	<ul style="list-style-type: none"> <li> <p>• <b>Sputum</b>  <i>Salivary samples have been shown to be of little value in the diagnosis of URTI. These samples will not be processed.</i>  <i>AAFB microscopy and culture will only performed on request if sufficient clinical details are provided on the request form. Samples received with no clinical will not be tested</i></p> </li>   <li> <p>• <b>Tissue/bone</b>  <i>Please note: consider blood cultures as an aid in the diagnosis of osteomyelitis</i>  <i>Extended incubation is required for these samples</i></p> </li>   <li> <p><b>IUCD</b>  <i>These should only be sent for culture if there are clinical indications of PID or other inflammatory conditions.</i>  <i>Culture for Actinomyces spp. takes a minimum of 10 days</i></p> </li>   <li> <p>• <b>Intravascular cannulae</b>  <i>Definitive diagnosis of CR-BSI can only be achieved by culturing the cannulae. Only send the terminal 4 cm of the cannulae.</i>  <i>Alternatives to the catheter tip are blood cultures or swabs of the insertion site.</i>  <i>DO NOT send urinary catheters- these will not be processed.</i></p> </li> </ul>	<p><b>O&amp;S ≤ 3 days</b></p> <p><b>TB- Positive ZN stains will be phoned to the ward.</b>  <b>AAFB culture results can take up to 7 weeks.</b>  <b>Positive results will be phoned when available</b></p> <p><b>Electronic report 5-10 days</b></p> <p><b>≤ 10 days</b></p> <p><b>≤ 3 days</b></p>



Blood culture bottles for O&S	TAT
<div style="display: flex;"> <div style="flex: 1;">  </div> <div style="flex: 2; padding-left: 10px;"> <p><b>Different bottles available, for different patient groups</b></p> <ul style="list-style-type: none"> <li>• <b>Adult set-</b> use both the FA Plus (aerobic) and FN Plus (anaerobic) set. Ideal volume 8-10 mL per bottle, maximum fill 10mL</li> <li>• <b>For paediatrics, use PF Plus (single bottle).</b> Ideal volume 3-4mL, maximum fill 4mL.</li> </ul> <p><i>Bottles are incubated and continuously monitored for 5 days, except in cases of suspected endocarditis (7 days).</i></p> <p><i>For the majority of patients, 2 blood culture sets are recommended as this has been shown to not only increase yield but also allows for the recognition of contamination.</i></p> <p><i>Fever and rigors occur 30-60 minutes after release of the organisms into the blood stream. It is recommended that samples should be taken as soon as possible after a spike in temperature.</i></p> <p><i>For the investigation of endocarditis, 3 or more sets should be taken over a 24 hour period. It is recommended that the maximum 10mL of blood is added to each bottle. The request form should clearly indicate SBE- these are incubated for 7 days rather than 5.</i></p> <p><i>Optimal recovery of bacteria and yeasts is best obtained with the maximum fill of blood inoculated into the bottles. Under filling of blood can lead to false negative cultures, where the number of organisms remains below a detectable level. It is also important not to overfill the bottles, which leads to false positives. Ensure prompt transport of the bottles to the lab once they have been taken. This ensures maximum recovery of any bacteria/yeasts present in sample.</i></p> <p><b>DO NOT REMOVE THE DETACHABLE BARCODES FROM THE BOTTLE(S)- FOR LAB USE ONLY</b></p> <p><b>DO NOT COVER THE BARCODE WITH THE PATIENT IDENTIFIER</b></p> <p><b>DO NOT STICK PATIENT LABELS ON THE BOTTOM OF THE BOTTLE</b></p> </div> </div>	<p><b>TAT</b></p> <p><b>NEGATIVES:</b> 5 days, except endocarditis (8 days)</p> <p><b>POSITIVES:</b> Once a bottle becomes positive, an initial Gram stain is phoned to the ward. The gram stain is also available electronically.</p>

Molecular Testing		TAT
	<ul style="list-style-type: none"> <li>• <b>COBAS PCR collection device for <i>C. trachomatis</i> &amp; <i>N. gonorrhoeae</i></b>  <i>Separate collection device available for swabs (Cobas PCR Media Dual Swab Sample Kit) and urine samples (Cobas PCR Urine Sample Kit).  Follow the printed instructions available with the collection device  Samples processed on a daily basis (Monday-Friday, excluding Bank Holidays).</i> </li> </ul>	<p><b>48-72 hours</b></p>
	<ul style="list-style-type: none"> <li>• <b>Rapid Cepheid SARS CoV-2 testing</b>  <i>The assay used is a RT-PCR intended for the qualitative detection of nucleic acid from SARS-CoV-2. Depending on the circulating respiratory virus, this assay may also detect Flu A, Flu B &amp; RSV (Cobas PCR Media Dual Swab Sample Kit) is required for testing. Samples received on other swab types cannot be tested.</i>   <i>Only samples meeting current guidance will be processed as urgent requests. All other samples will be forwarded to the Regional Virus Lab in Belfast for routine PCR testing.</i>   <b><i>Please contact the lab in advance of sending the sample to ensure the sample is processed urgently and it meets the current criteria for a rapid test</i></b> </li> </ul>	<p><b>Within 90 minutes of receipt in the lab</b></p>
	<ul style="list-style-type: none"> <li>• <b>Routine SARS-CoV-2/Flu and respiratory strip testing</b>  <i>All samples are forwarded to the Regional Virus Lab in Belfast. Results are available on NIECR.</i>   <b><i>PLEASE NOTE: DO NOT SEND A DRY SWAB IN A UNIVERSAL CONTAINER. THESE ARE NOT SUITABLE FOR TESTING AND WILL BE REJECTED</i></b> </li> </ul>	<p><b>Please contact RVL in Belfast for current TAT</b></p>

Swabs for culture		TAT
	<p><b>To be used for all swab types for O&amp;S. Types of samples include:</b></p> <ul style="list-style-type: none"> <li> <b>Throat swabs</b>  <i>Samples are investigated for different pathogens if the following are noted on the request form: epiglottitis, quinsy, diabetes, persistent sore throat/treatment failure</i>  <i>Check Belfast User Manual for the preferred sample for pertussis testing.</i> </li> <li> <b>Nasal swabs</b>  <i>S. aureus represents normal flora for many patients</i> </li> <li> <b>Mouth/tongue swabs</b>  <i>Investigated for yeast infection only. Indicate if mouth ulcers are present</i> </li> <li> <b>Eye swabs</b>  <i>Eye swabs are of limited value in investigating orbital cellulitis. Ideally a sample of tissue or pus should be sent. Blood cultures may also prove useful. Samples of canaliculitis pus are preferable to eye swabs. Culture for Actinomyces can take up to 10 days</i> </li> <li> <b>Ear swabs</b>  <i>Swabs taken from the nasopharynx for the diagnosis of ear infections are inappropriate and will not be processed. External ear swabs are not useful in the investigation of otitis media unless there is perforation of the eardrum.</i> </li> <li> <b>Skin/ulcer swabs/superficial wound sites</b>  <i>Indicate if the patient is diabetic. Note if the skin is broken. Blood cultures are the preferred specimen in cases of cellulitis when the skin is not broken</i> </li> <li> <b>Abscess/Wound swabs</b>  <i>If there is no indication of a surgical wound, these samples will be treated as superficial wounds. Surface wounds and sinuses are often colonised with environmental bacteria which may not reflect the cause of the infection. Where possible, pus from the wound should be sent to the lab.</i> </li> <li> <b>Vaginal swabs/swabs for genital tract infections</b>  <i>Please note, HVS samples are not suitable for the detection of gonorrhoea. Consider sending sample for N. gonorrhoeae PCR detection or a cervical swab for culture. Some bacteria are only considered significant during pregnancy. It is important to indicate if the patient is pregnant on the request form. HVS samples are not suitable for the diagnosis of PID. Pus from the fallopian tube or TOA, or peritoneal fluid are the preferred samples. Bacterial vaginosis (BV) diagnosis is carried out by microscopy. This is the most sensitive method for</i> </li> </ul>	<p>≤ 3 days</p> <p>≤ 3 days</p> <p>≤ 4 days</p> <p>≤ 3 days</p> <p>≤ 4 days</p> <p>≤ 3 days</p> <p>≤ 3 days</p> <p>≤ 3 days</p> <p>≤ 3 days</p>

	<p><i>detection of BV as it detects both clue cells and the disturbance in bacterial morphotypes associated with BV. If detected by microscopy, the report will state Microscopy suggests bacterial vaginosis. Investigation for BV is carried out on patients of childbearing age with clinical details indicating vaginal discharge</i></p> <p><i>Any request where both O&amp;S and Trichomonas are requested and where only one swab is received, only the O&amp;S will be processed. Requests for both O&amp;S and Trichomonas should be sent to the lab in the following way:</i></p> <ul style="list-style-type: none"> <li>➤ <i>2 swabs. One to be used for O&amp;S and the other for Trichomonas culture</i></li> <li>➤ <i>1 swab for O&amp;S and a different swab already inoculated in the Trichomonas culture broth</i></li> </ul> <p><b>• MRSA screening swabs</b> <i>Consult the Trusts MRSA Screening and Treatment Guidelines for sample requirements. Policy available on the Trust Intranet site.</i> <i>Antibiotic sensitivity will only be determined for patients with no previous history of MRSA or who have not been positive within the last 3 months. Check for previous records on Labs recall if the antibiotic sensitivity pattern is not displayed.</i></p> <p><b>• Other screening swabs, e.g. Pseudomonas screens, VRE screening, Resistant Enterobacteriaceae</b> <i>These will only be processed for certain wards &amp; situations. Such screens MUST be pre-arranged with the lab before testing begins</i></p> <p><b>• Group B Streptococci Screen for carriage</b> <b>It is essential that the following is clearly stated on the request form "Detection of GBS carriage"</b> <i>This is only available if the patient has had a Group B Strep isolated in a previous pregnancy. 1 swab required (combined LVS and anorectal swab). HVS samples are not suitable and will not be processed</i></p>	<p>≤ 3 days</p> <p>≤ 4 days</p> <p>≤ 3 days</p>
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Turnaround times are from receipt by the Laboratory to result availability. It is anticipated that these turnaround times will be achieved for 90% of specimens. However, due to the nature of microbiology, some results may take longer. Please also be aware that turnaround times may be elongated by up to 2 days if specimens require work over the weekend/bank holiday.

**For information on how samples should be collected, to prepare a patient for the collection of samples, please refer to the following website [www.labtestsonline.org.uk](http://www.labtestsonline.org.uk), or follow the link below:**

**[Lab Tests Online-UK: Welcome!](#)**

## 11. INTERPRETING LABORATORY RESULTS

### ADDITIONAL ANTIBIOTICS

To aid with antimicrobial stewardship, Microbiology reports a limited number of antibiotics for each organism. In most cases, further antibiotics are available. If the patient is on a specific antibiotic, or you are considering an antibiotic which is not listed on the Microbiology report, please contact the lab. In all cases, patient treatment should be detailed on the request form.

### URINE BACTERIAL GROWTHS

Bacterial growths of  $\geq 10^5$  colony forming units/mL (cfu/mL) are consistent with infection and counts below this usually indicate contamination. A pure growth (single organism) with counts between  $10^4$  and  $10^5$  cfu/mL need to be evaluated based on clinical information or confirmed by repeat culture. Interpretation of these culture results must be made with care and take into account adverse factors in specimen collection and transport. The probability of UTI is increased by the isolation of the same organism from two specimens. Urines which contain more than a single organism usually indicate contamination.

Microbiology reports urines in the following manner:

- For a colony count  $< 10^4$  cfu/ml- Negative.
- For a colony count of a single organism of  $> 10^5$  cfu/ml- Significant. Antibiotics are reported.
- For a colony count of 2 or more single organisms of  $> 10^5$  cfu/ml- this will be reported as Mixed Growth.
- For a colony count of a single organism between  $10^4$ - $10^5$  cfu/mL- Equivocal. Antibiotics are reported. These reports need to be evaluated on the basis of the clinical presentation of the patient or confirmed by repeat culture.
- Isolates of Group B Strep  $< 10^4$  cfu/ml are noted on the final report ONLY if there is an indication of pregnancy provided on the request form. Antibiotic susceptibility is not performed for these samples.

Microbiology uses the calibrated loop technique to culture urine samples and quantify the bacterial count. Microbiology does not routinely screen for colony counts below  $10^4$ cfu/mL.



### C DIFFICILE REPORTING FORMAT

C. difficile toxin testing in Microbiology is carried out using a two-step algorithm. The first step involves the molecular detection of C. difficile toxin B gene by nucleic acid extraction/purification. For any sample testing positive for the toxin B gene, a reflex confirmation test for the presence or absence of the toxin is undertaken by immunoassay.

The following algorithm is used to report samples sent to Microbiology for C. difficile toxin detection:

<u>Laboratory Result</u>	<u>Result reported on laboratory computer system. (Mask Code).</u>	<u>Comments added to the report</u>
<i>C.difficile</i> PCR negative	Toxigenic <i>C. difficile</i> : <b>Not Detected</b> C. diff PCR (Ct value): <b>Not Applicable</b> Toxin A/B: <b>Not Applicable</b>	No evidence of C. difficile infection or carriage
<i>C. difficile</i> PCR positive, followed by a positive toxin test	Toxigenic <i>C. difficile</i> : <b>Detected</b> C. diff PCR (Ct value): <b>A numeric value will be provided</b> Toxin A/B: <b>Detected</b>	Consistent with C. difficile infection. Treat as per guidelines. Continue contact precautions if ongoing diarrhoea. INFECTION CONTROL RISK
<i>C. difficile</i> PCR positive, followed by a negative toxin test	Toxigenic <i>C. difficile</i> : <b>Detected</b> C. diff PCR (Ct value): <b>A numeric value will be provided</b> Toxin A/B: <b>Not Detected</b>	Probable toxigenic C. difficile carriage. Treatment not usually indicated but requires clinical assessment. Continue contact precautions if ongoing diarrhoea.

### SARS CoV-2 & Ct VALUES

As an aid to result interpretation, Microbiology will report the Ct values associated with SARS-CoV-2 testing. The Ct values will be available under the overall test report on both the Web Browser & NIECR. The higher the Ct value, the less viral RNA is present in the sample.

Positive results are indicative of the presence of SARS-CoV-2 RNA; clinical correlation with patient history and other diagnostic information is necessary to determine patient infection status. Positive results do not rule out bacterial

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infection or co-infection with other viruses. The agent detected may not be the definite cause of disease.

Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for treatment or other patient management decisions. Negative results must be combined with clinical observations, patient history, and epidemiological information.

Samples with a positive result with a CT value of >35 should be interpreted with caution.

Samples reported as INDETERMINATE will be accompanied by the following comment

Indeterminate CoVID19 screen result. Please repeat in 24 hours.

Please contact the Consultant Microbiologist if you are unclear on how to interpret the result.

## **12. SAMPLES REFERRED TO OTHER LABORATORIES**

Tests are either referred to other labs within Northern Ireland, or to national reference centres. All of the Referral labs used by Microbiology are accredited to ISO15189. A list of the current accreditation status for each of the referral labs is maintained by Microbiology, and is available on request.

### **TESTS REFERRED TO LABORATORIES WITHIN NORTHERN IRELAND**

The Regional Virus Reference Laboratory, Regional Immunology Laboratory, Regional Mycology and Regional Medical Genetics are part of the Belfast Health and Social Care Trust. All requests will be transported to the Belfast trust from the Laboratory daily at 8am. This service is Monday to Friday only. Reports for samples referred within Northern Ireland will be available on NIECR.

For the further details on the service provided by the Belfast Health and Social Care Trust Laboratory, including tests, specimen requirements and result interpretation, please see the Belfast Health and Social Care Trust Laboratory User Manual, available from the Belfast Health and Social Care Trust website.

[Laboratory Services | Belfast Health & Social Care Trust](#)

**Please note: it is the responsibility of the ward to check with the referral lab if an urgent sample will be processed. The cost of sending urgent requests outside of the normal delivery service will be charged to the requesting department**



## TESTS REFERRED TO NATIONAL REFERRAL LABORATORIES

Sample types and request forms vary for each test. Please follow the link for individual user manuals, request forms and sample containers:

[Specialist and reference microbiology: laboratory tests and services - Detailed guidance - GOV.UK](#)

Due to limitations in place with the current LIMS, Microbiology cannot update the electronic report to include all of the information from the referral lab reports. Microbiology sends out a printed copy of the referral lab report when this is received. It is important to refer to this report to ensure the full result, along with any comments, are considered.

## 13. PROTECTION OF PERSONAL INFORMATION

Microbiology follows the Western Health & Social Care Trust Data Protection and Confidentiality Policy (Reference Number Corp 11/003), which is available on the Trust Intranet.

## 14. LABORATORY COMPLAINT PROCEDURE

Microbiology follows the Western Health & Social Care Trust Policy and Procedures for Management of Complaints and Compliments/Service User Feedback (Reference Number Med 11009), which is available on the Trust Intranet.

Service users are encouraged to provide feedback to the laboratory. If you have a compliment or complaint, please contact a member of the laboratory team who will attempt to rectify the issue.

## 15. UNCERTAINTY OF MEASUREMENT (UoM)

Microbiology has calculated the UoM for some tests, results and procedures, for example cell counts. These are available to users on request. A formal request must be made to the Lead Biomedical Scientist who will supply a copy of the current UoM calculations if available.

## 16. GEN6 STATEMENT

WHSCCT Laboratory Services utilises the Winpath Enterprise (Cellular Pathology) and BSO (Clinical Chemistry, Haematology & Transfusion and Microbiology) Laboratory Information Management Systems (LIMS). Due to the limitations of this software, we are currently unable to meet the requirements of

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UKAS publication GEN 6 – Reference to accreditation and multilateral recognition signatory status.

GEN6 sets out the requirements of our Laboratory examination reports/results released by the laboratory containing the appropriate use of UKAS logos and identifying any tests that are accredited and those that are not.

The LIMS systems currently utilised within Laboratory Services do not allow us to present the UKAS logo within our reports. Whilst it is possible to enter a small amount of additional text without any difference in formatting at the end of each report, the referencing to the accreditation of tests could potentially interfere or cause the misinterpretation of pathology results. Where possible the Laboratory shall include a statement in the body of the report if a test used is out of our scope of accreditation.

Laboratory Services have risk assessed this and communicated with UKAS. Although we are not able to present this information on our reports; our user manuals include full details of our accreditation and links to our UKAS schedules of accreditation with lists of currently out of scope techniques.

Work is ongoing with the new regional WinPath LIMS system provider to address these issues. It is hoped that the new LIMS system will be able to fulfil GEN6 requirements

## **17. REQUESTING ADDITIONAL EXAMINATIONS**

Investigations are best performed on fresh primary specimens, where possible. However, under certain circumstances, it may be possible to add tests onto samples that are already in the Laboratory, but this will depend on sample stability and remaining sample volume available. Requests for additional examinations must be received within 24 hours of original receipt of the specimen in the Laboratory. All requests for additional examinations **MUST** be accompanied by a completed sample request form.

Additional requests can only be accepted if the original sample container, sample size and pre-analysis treatment are suitable for the required test.

Additional requests will not be processed based only on a telephone call.