

Microbiology GG&C	MP506v7
	Authorised by: David Jordan
Issued: 07/05/2020	Author: Mairi Macleod

<b>North Sector User Manual</b>	
<b>LOCATION OF COPIES</b>	Electronic Copy held on both Staff Net Intranet Homepage / GGC Website

<b>DOCUMENT REVIEW HISTORY</b>
All document details are available in Q-Pulse

Date	Amendment	Initials
Further Amendments will require the document to be updated to the next version, incorporating all previous listed amendments		

## Introduction

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The Clinical Microbiology service for Greater Glasgow and Clyde is delivered from 2 laboratories based at Glasgow Royal Infirmary & Queen Elizabeth University Hospital.

Each laboratory provides a full and comprehensive microbiology service to the population of Glasgow and Clyde and is fully accessible to hospital based users. This includes medical, nursing, pharmacy and other staff employed by Greater Glasgow and Clyde Health Board, users in primary care and general practice and customers in the private sector. The laboratories process approximately 750,000 specimens per annum.

The clinical microbiology laboratory based at Glasgow Royal Infirmary provides a, modern diagnostic service which includes microscopy, culture and drug susceptibility testing of clinically important bacteria, fungi and parasites. The laboratory is United Kingdom Accreditation Service (UKAS) accredited and is performance assessed regularly by a system of internal audit, external audit by UKAS and through participation in inter-laboratory comparison schemes such as the National External Quality Assurance Scheme (NEQAS). The laboratory holds ISO 15189 UKAS accreditation for the testing listed on the UKAS website. Please follow link below for full schedule.

[https://www.ukas.com/wp-content/uploads/schedule\\_uploads/00007/8078%20Medical%20Multiple.pdf](https://www.ukas.com/wp-content/uploads/schedule_uploads/00007/8078%20Medical%20Multiple.pdf)

This manual is intended for users based in Glasgow Royal Infirmary, Royal Alexandra Hospital, Inverclyde Royal Hospital, Vale of Leven and North Glasgow covering the Princess Royal Maternity Hospital, Stobhill Hospital, Lightburn Hospital, Gartnavel General Hospitals, the Dental Hospital and General Practices and Health Centres in North East Glasgow.

## Location

The Clinical Microbiology department is situated in Glasgow Royal Infirmary on the 4<sup>th</sup> floor of the New Lister Building:

Clinical Microbiology  
Level 4 New Lister Building  
10-16 Alexandra Parade  
Glasgow  
G31 2ER  
0141 201 8551

## Key Personnel and Contact Details

**Clinical Microbiology Laboratory Office (All general enquiries through this number)**  
**0141 201 8551**

**Key Personnel - Clinical Microbiology Staff**

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Designation/Contact	Name
Head of Microbiology Service GG&C	Professor Brian Jones
Head of Department & Consultant Microbiologist	Dr Mairi MacLeod
Consultant Microbiologist	Dr Linda Bagraade
Consultant Microbiologist	Dr Aleks Marek
Consultant Microbiologist	Professor Andrew Smith
Consultant Microbiologist	Dr Barbara Weinhardt
Consultant Microbiologist	Dr Sara Jamdar
Consultant Microbiologist	Dr Laura Cottom
Consultant Microbiologist	Dr Padmaja Polubothu
Consultant Microbiologist	Dr Michael Murphy
Consultant Microbiologist	Dr Raje Dhillon

#### Key Personnel - Microbiology Biomedical Scientist Staff

Designation/Contact	Name	Telephone
Technical Services Manger	John Mallon	0141 201 8574
Service Manager	Sandra Higgins	0141 201 8574
Operational Manager	William Ennis	0141 201 8564
Quality & Compliance Manager	David Jordan	0141 201 8570
Quality Manager	Stephanie McPhee	0141 201 8570
I.T Manager	Elaine McCormick	07939057778

#### Infection Control

Local Infection Control Team [contact details](#) are provided on Staffnet.

A link to the [Control of Infection Manual](#) is available on Staff net. It gives details of the procedures and practices that must be followed to prevent the spread of infection within the hospital (including sharps injuries).

#### Laboratory Opening Times

#### Hours of Service

Weekdays 08.30hrs - 20:30hrs

Weekends 08.30hrs - 20:30hrs

Public Holidays 08.30hrs - 20:30hrs

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Laboratory Core Hours are 08.30hrs - 17.00hrs. There is a reduced number of staff in the laboratory between 1700hrs and 20:30hrs in the evening, during the weekend and on public holidays. Hence, a limited service is available.

### Enquiries, Advice and Emergency Service

Routine enquiries are made by telephoning the department between **08:30hrs** and **17:00hrs** Monday - Friday. **If within the hospital, dial 18551 or call 0141 201 8551 if calling from outside.**

Please restrict telephone requests for results to urgent or special cases. Ward staff /GPs can access results via Portal. Contact IT Dept (#650) to set up access to the system.

Advice on choice of antibiotics, clinical significance of results, investigation of patients with undefined sepsis or pyrexia, or any other microbiological problem including infection control may be obtained from one of the clinical microbiologists. This service can be accessed by telephoning the number above.

For clinical advice and urgent specimen processing between **17:00hrs** and **20:30hrs**, users should contact switchboard and ask for the Biomedical Scientist (urgent specimen processing/laboratory queries) or a Medical Microbiologist (clinical advice, treatment, patient management and infection control).

### Out of Hours Service

Please note the Microbiology on-call service is a non-resident service with regards to clinical advice and urgent/emergency specimen processing; service users should contact GRI switchboard (dial **0141 211 4000** from outside the hospital or **1000** internally) for either of the above services.

Users must ask to speak to either a Biomedical Scientist (BMS) regarding emergency/urgent specimen processing or a Medical Microbiologist (clinician) for clinical advice in terms of treatment/patient management and/or infection control. Junior medical staff must consult the GGC Infection Management Guidelines for Empirical Antibiotic Therapy in Secondary Care before contacting the Microbiologist. In addition, they should discuss cases with senior members of their own clinical team before contacting the Microbiologist.

Service users should only contact the **Biomedical Scientist (BMS)** if sending the following specimens to the laboratory to be processed as an emergency:

1. Cerebrospinal Fluid (CSF)
2. Any aspirate/specimen from a normally sterile site (e.g. ascitic fluid, peritoneal fluid, joint fluid etc.) Consequently this does not include specimens of sputum or endotracheal secretions, or respiratory films for TB or specimens of faeces
3. Specimens taken in the course of an operative procedure, including specimens obtained by CT guided drainage
4. Urine microscopy in children (where the outcome may directly influence the decision to undertake surgery)

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Please note that Biomedical Scientists are only authorised to carry out work on the above list of specimens and will ask you to telephone the switchboard again to ask to speak to the Medical Microbiologist for anything else.

Please note that it is the clinician's responsibility to arrange prompt transport of emergency specimens to the laboratory.

If you are on-site use the pneumatic tube system (PTS) but you still require to arrange for BMS to attend the lab (via Switchboard) as staff are non-residential. \*DO NOT use the PTS to send high risk samples or samples that have a risk of TB\*

If you are off-site you must arrange transport to deliver the sample(s) to the laboratory. Emergency Out Of Hours specimens will require to be sent by taxi to the Microbiology Laboratory, GRI. Please refer Emergency and Out of Hours specimen's document for specific details.

**It is not necessary to contact the on-call BMS when blood cultures have been collected.**

## Transport/Delivery of Specimens

The portering service delivers samples from within the hospital. Please make use of the pneumatic tube system for all samples (destination 604) with the exception of those that are high risk or requesting TB.

Out with GRI, there are several uplifts and deliveries throughout the day for all laboratories and GP practices that we provide a service to. Please ensure Microbiology samples are bagged separately from other disciplines and labelled for Microbiology, GRI.

ALL Clyde Microbiology specimens require to be placed in dedicated blue specimen transport bags for onward transfer to Microbiology G.R.I.

### Tube System (Destination code: 604)

<b>Accepted sample types (in sealed specimen bags)</b>	<b>Do NOT send the following</b>
Blood cultures	High risk samples e.g. TB, Anthrax, VHF

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Swabs (MRSA etc) CSF Tissue Sputum (non-TB risk) Urine Emergency samples (prior arranged) up to 20:30hrs On call BMS to be contacted for emergency specimens after 20:30hrs	Sharps e.g. needles etc Samples for Blood Gas Analysis Pathology samples in formalin Heavy material (>kg) Large liquids >30ml (e.g. CAPD, EMU) Leaking samples <b>N.B. Contamination results in tube shut down for all users until disinfection process is complete</b>
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Do NOT overload containers. This causes difficulty in removing them on receipt and can slow the tube network if overly heavy.

The portering service will continue to operate to deliver most samples.

## Tests Offered

For all tests requested please order on Trak/GP ICE and use a single request form per specimen test request, detailing relevant clinical history. Package each request separately in an individual specimen bag with 1 request form per specimen.

All microbiology investigations are performed using advice/guidelines stated in UK Standards for Microbiology Investigations (SMIs): a comprehensive referenced collection of recommended algorithms and procedures for clinical microbiology. This is supplemented with best practice as recommended by the Scottish Microbiology and Virology Network. All antimicrobial susceptibility testing is performed using guidelines and criteria as set by The European Committee on Antimicrobial Susceptibility Testing - EUCAST. Susceptibility testing is also supplemented with Clinical Laboratory Standards Institute (CLSI) criteria where appropriate.

### ACTINOMYCETES CULTURE

Usually tested for in IUCDs where infection is suspected, and in other specimens if requested and if clinical details suggest it is appropriate. As prolonged culture is required for actinomycetes a negative result will not be issued until the sample has been incubated for 10 days.

### ASCITIC FLUID

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Ensure aseptic technique while taking the sample. Blood culture bottles can be used but must also be accompanied by a portion of the sample in a sterile container if a cell count is required. Any positive Gram films will be telephoned to the ward.

### BLOOD CULTURES

The department uses the automated 'BacT/ALERT®VIRTUO' system, in which the specimen is monitored continuously. Special sample bottles should be available on the ward, please check expiry date of bottles prior to use. Blood cultures are indicated not only for pyrexia but also for any clinical indication that a serious infection is present.

**Please contact the department at any time if they are not.**

- Aseptic technique should be used as skin contaminants often confuse the clinical picture
- The injection area should be swabbed with Alcohol and allowed to evaporate dry
- **10 ml** of blood should be injected into each bottle (anaerobic and aerobic) to give optimum test sensitivity
- For neonates take up to 4ml to a single BacTAlert PF bottle
- With the exception of paediatric samples, bottles filled with a sample volume of less than 8ml will have a report issued stating 'Inadequately filled bottle, interpret negative results with caution'
- Please **do not remove** barcodes from the blood culture bottles
- Always sample from a peripheral vein if possible. In cases where a CVP line infection is suspected blood cultures should be taken from both the peripheral vein and the line

#### **Direct draw inoculating procedure**

**NOTE:** If inoculating more than one type of BacT/ALERT blood culture bottle using a butterfly collection set and direct draw adapter cap, inoculate first the aerobic bottle and then the anaerobic bottle so that any oxygen trapped in the tubing will not be transferred to the anaerobic bottle.

**NOTE:** Monitor the direct draw process closely at all times to assure proper flow is obtained and to avoid flow of the bottle contents into the adaptor tubing. Due to the presence of chemical additives in the culture bottle, it is important to prevent the possible backflow and subsequent adverse reactions by following the steps below:

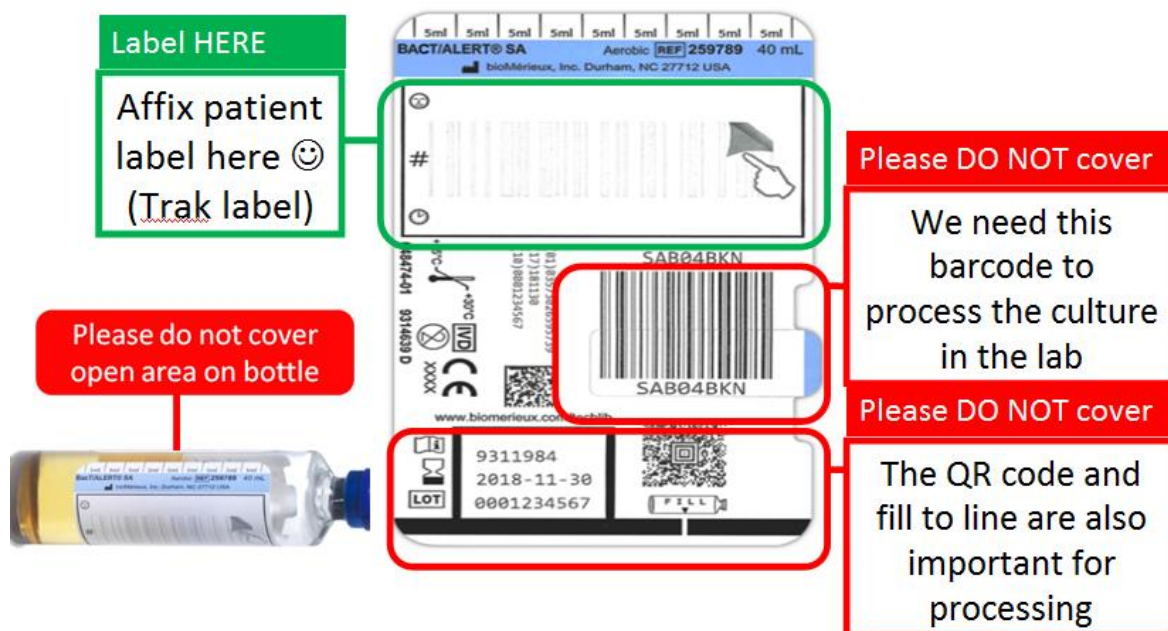
1. Hold culture bottle upright below patient's arm.
2. Collect the blood using a butterfly collection set and the BacT/ALERT Blood Collection Adapter Cap directly into the culture bottle
3. Release the tourniquet as soon as blood starts to flow into the culture bottle, or within 2 minutes of application.
4. Do not allow the culture bottle contents to touch the stopper or the end of the needle during the collection procedure. A contaminated culture bottle

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could contain positive pressure, and if used for direct draw, may cause reflux into the patient's vein.

Blood culture bottles should be labelled as follows:

## Blood Culture Labelling Guide



### BONE MARROW

The department stores and issues collection bottles used for Mycobacterium investigation, the laboratory should be contacted to request bottles prior to sampling. Microbiology will then send the sample direct to the Regional Mycobacterium Reference Laboratory for testing.



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### CAPD FLUID

Fluid from C.A.P.D. bags may be sent for microbiological investigation if peritonitis is suspected. Send the fluid in a sterile container (at least 50mls).

**Please do not send the whole C.A.P.D. bag.**

### CEREBRO-SPINAL FLUID

- Use aseptic technique
- For routine microbiology culture 1-3 ml of fluid in a sterile universal container is required (5 to 10mls for TB investigation)
- More may be needed if extra tests are requested. **Do not refrigerate**
- Send immediately to the laboratory (pneumatic tube is recommended) as an urgent sample and warn the laboratory to expect it
- Results are reported in LIMS and are available in real time
- Note that spectrophotometry for **xanthochromia** is **not performed** in the microbiology department but in the biochemistry laboratory
- If the patient is **immunocompromised**, further tests can be discussed with the clinical microbiologist

### MRSA SCREENING

- For MRSA screening samples include Nasal & Perineum (Throat if the patient refuses perineum) refer to the NHS GG&C MRSA policy for sampling information

<http://www.nhsggc.org.uk/your-health/public-health/infection-prevention-and-control/prevention-and-control-of-infection-manual-policies-sops-guidelines/disease-specific-policies/>

A duo eSwab which covers nose & perineum in one specimen container is used, however, single liquid eSwabs are available to use for single sites (e.g. throat).

#### **PECOS Codes:**

Duo eSwab: 4E047S02

Single eSwab: 90CE.A

Please note these eSwabs can come with a short expiry date. Please check expiry date before use, expired swabs will not be processed by the laboratory.

#### **Examples:**

- Nose, throat & perineum screening
  - Duo eSwab for nose and perineum - Trak order as MRSA Screen, Duo swab - Nose-perineum
  - Single eSwab for throat - Trak order as MRSA Screen, site throat
- Nose & perineum screening
  - Duo eSwab for nose and perineum - Trak order as MRSA Screen, Duo swab - Nose-perineum
- Nose & throat screening

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- Single eSwab for nose - Trak order as MRSA Screen, site nose
- Single eSwab for throat - Trak order as MRSA Screen, site throat

### CPE/CRO SCREENING & RENAL VRE

- For CPE screening send Rectal swab or stool sample
- Refer to the NHS GG&C CPE toolkit  
<http://www.nhsggc.org.uk/media/238033/cpe-acute-toolkit.pdf>
- For renal VRE screening send a Rectal swab

### EYE SWABS

Conjunctival discharge or pus is sampled using a plain swab in transport medium. If chlamydial or viral infection is suspected, contact the virology lab at GRI. Please contact the laboratory if you require culture of corneal scrapings and/or Acanthamoeba testing.

### FAECES

Collect in a sterile container (25 ml) with or without spoon. Please do not contaminate the outside of the container with faeces. Badly contaminated specimens will not be accepted.

Faecal samples are cultured selectively for species of *Salmonella*, *Shigella*, *Campylobacter* and for *E. coli* O157.

Consider and request **faecal parasites** if there is a history of foreign travel, HIV infection or if the diarrhoea is chronic. Always include details of travel history when requesting.

All specimens are routinely examined for *Cryptosporidium*.

Diarrhoeal stool samples (samples that conform to the shape of the container) are routinely screened for *C. difficile* toxin in patients >3yrs old but please state if this is clinically suspected. It is accepted that if a patient's diarrhoea is intermittent, or if they are incontinent of faeces, it may not be possible to obtain a diarrhoeal sample. In this case **the clinical details on the request form should make this fact clear, and the requesting clinician should highlight that they nonetheless wish *C. difficile* toxin testing to be performed on the sample.** There is **no requirement to test for clearance in known toxin-positive patients** and re-testing in cases of suspected relapses/re-infection **should not be performed within 10 days of the original positive sample.**

Fresh samples (<2hrs old) are required. If unable to deliver samples within 2 hours then samples should be refrigerated. Storage at ambient temperature is not recommended. Specimen may be passed into a clean, dry, disposable bedpan or similar container and transferred into a CE marked leak proof container. The specimen is unsatisfactory if any residual soap, detergent or disinfectant remains in the pan.

Diarrhoeal outbreaks should be discussed with both the Infection Control nurses and the clinical microbiologist.

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### **GASTRIC BIOPSIES (for *Helicobacter pylori* culture)**

Small biopsies should be in a sterile container with a small amount of saline (<2ml) to prevent drying. Do NOT place in formalin fixative. These samples should be referred to the lab urgently for *Helicobacter* culture and the lab contacted. If within GRI the pneumatic tube system is recommended (destination 604). Culture results can be expected in about 10 days.

### **GENITAL TRACT SWABS**

High and Low Vaginal Swabs are taken using a plain swab, which is then inserted into charcoal Amies transport medium. There is no need to send both swabs, HVS is the preferred sample type. Urethral swabs should be taken with a special small diameter urethral swab.

### **JOINT ASPIRATES**

Ensure aseptic technique when collecting the specimen. Send in a sterile container (25ml). Gram films are routinely carried out on these specimens and the result of the Gram film will be reported in LIMS and available in real time. The Microbiology department does not look for crystals in joint aspirates.

### **MYCOLOGY**

Mycology samples for superficial infection - mycology specimens should be collected in either sterile universal containers or relevant mycology collection pack. Microscopy and or culture will be performed depending on sample type and clinical history.

**Galactomannan antigen testing** is performed on clotted blood or on bronchoalveolar lavage/bronchial washings.

**Cryptococcal antigen testing** is performed on CSF and serum samples as requested.

### **PATHOLOGY SAMPLES (HUB)**

Samples for referral to QUEH pathology are received in Microbiology for pick-up and transfer to QUEH only. Do NOT send samples via pneumatic tube system. A frozen section Pathology hot lab exists on 5<sup>th</sup> floor but this is STRICTLY by arrangement only. Call QUEH.

### **PLEURAL/PERICARDIAL FLUID**

Ensure aseptic technique while taking the sample. Send in a sterile container (25ml). The results of a Gram film will be reported on LIMS and available in real time.

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Please state if TB is suspected and where possible send an additional sample requesting AAFB & TB culture.

### SPUTUM

Sputum is collected in a sterile container (25ml or 60ml).

Sputum bacteriology is often of doubtful value due to inadequate sampling of the lower respiratory tract and inevitable contamination with salivary flora. Results are greatly improved following collection of a supervised, deeply coughed specimen. The **physiotherapist** may be useful in obtaining a good quality specimen, or in obtaining induced sputum where the patient is unable to expectorate.

Please state on the form if T.B. is suspected and request T.B., AAFB and culture. **Routine AAFB microscopy will not be performed unless TB is requested.** Three early morning samples of deeply coughed sputum should be sent for this investigation. **Do not send samples via pneumatic tube system.**

**Broncho-alveolar lavage fluid (BAL)** is routinely cultured for common respiratory pathogens and TB. Legionella and fungal cultures are performed on request. Please state on the request form if any other investigations are required along with a relevant clinical history.

### THROAT SWABS

Sample the inflamed area with a plain swab with Amies transport medium. Please clearly indicate if there is a relevant travel history.

### TIPS

Tips from removed intra-vascular lines can be sent for culture. Please send in a sterile container. Culture of urinary catheter tips is thought to be of little diagnostic value and these samples are not accepted for testing.

### TISSUE

Samples of tissue (usually from theatre) should be sent in a sterile container. Any positive Gram stains will be telephoned to the ward. Please state if there is a patient history of I.V. drug injection as these specimens are processed differently.

### URINARY TRACT SAMPLES

#### **Mid-stream and catheter specimen of urine:**

- Fill a sterile primary urine container containing boric acid (red cap)
- Request culture and sensitivity (C&S)
- For catheter specimens the sample is best taken immediately after the catheter has been inserted
- If the catheter has been in situ for a while the specimen should ideally be taken from the tube of the catheter with a syringe and needle, not from the catheter bag

#### **Volume Rejection Criteria**

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- GP Adult -Small volume specimens (< 8ml) are rejected
- Hospital Adult -Small volume specimens (< 5ml) are rejected
- Paediatrics -Small volume specimens (< 1ml) are rejected

As many CSU cultures represent colonisation rather than infection, antibiotic sensitivities are not routinely issued.

### Indications for Microscopy

Microscopy will be performed in situations where the value of microscopy is supported by evidence based guidelines. These are:

- Children under 3 years of age
- Children aged 3 or over - NICE guidelines state that if leucocyte esterase is positive and nitrite is negative then arrange with the Microbiology laboratory for urine microscopy and culture to be performed. Otherwise all specimens from children (>=3) will be cultured only
- Patients with glomerulonephritis
- Specimens from patients who are post renal transplant
- Suprapubic Aspirate (SPA)

#### Early morning sample of urine/EMU for TB:

- Take first thing in the morning by completely emptying the bladder into special EMU containers (150 ml)
- Take samples on three consecutive mornings
- **Do NOT send via the pneumatic tube system**

### WOUND/SKIN INFECTION

Sample the deeper layers of a wound or ulcer site using a plain swab in Amies transport medium. Gram stains are not routinely carried out on swab specimens.

**Pus is preferred** if available, collect in a sterile container. Gram stains are routinely performed on these samples.

Wound swabs are processed for aerobic and anaerobic organisms. Contact the laboratory for antibiotic advice if required.

Skin scrapings from the advancing edge of a suspected fungal lesion should be sent in a relevant mycology collection pack.

### WATER / ENVIRONMENTAL SAMPLING

GRI has an Environmental Laboratory that carries out air sampling, environmental testing and water testing.

Water testing for indicator organisms can only be performed **by prior arrangement with the laboratory.**

Particle counts & settle plates are performed **by prior arrangement with the laboratory.**

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The Environmental Laboratory holds ISO 17025 UKAS accreditation for the testing listed:

- Potable, recreation waters and renal dialysis waters: TVC / Coliforms & Escherichia coli / Pseudomonas species and Pseudomonas aeruginosa
- Endoscopy rinse waters: TVC / Pseudomonas aeruginosa / Atypical Mycobacterium
- Air samples: Total Viable Count / Yeasts and Moulds. Settle plates, contact plates, air sampling & particle counting

The full schedule can be found by following the link below

[https://www.ukas.com/wp-content/uploads/schedule\\_uploads/00002/4211Testing%20Single.pdf](https://www.ukas.com/wp-content/uploads/schedule_uploads/00002/4211Testing%20Single.pdf)

For any additional information and to discuss submitting samples please contact the Laboratory who will complete an initial contact form (MF544) that details further information regarding the testing and pricing.

Contact the Environmental Laboratory direct on: **0141 201 8546**.

### **AD HOC ENVIRONMENTAL MONITORING**

Any request for environmental monitoring should be through discussion and arrangement with the Infection Control Consultant and Laboratory Senior Management. This includes theatres or any other sites under the remit of GG&C.

The infection control consultant will arrange the testing requirements directly with the laboratory after completion of the environmental testing request form MF575.

### **Specimens for other Laboratories**

Samples for the following investigations may be sent to other hospitals via microbiology

- Amoebic, Borrellia, Brucella & Hydatid serology
- Legionella Ab and Ag detection
- Leptospirosis, Mycology - culture and serology
- Toxocara, Toxoplasma and Virology - Hepatitis, HIV, PCR, serology and culture
- Agreed therapeutic antibiotic levels

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Please use an individual request form and sample for each of these tests, DO NOT request multiple tests from one sample as these are often referred to more than one laboratory.

## Specimen Containers

Most container types are available from National Procurement Logistics, Canderside Toll, Larkhall. Items are ordered using the PECOSS on line ordering system. Blood culture bottles are supplied by Microbiology (call 201 8551 or 8558).

The Greiner “Vacurette” system is in use in GGC. All specimen containers should be robust and leak proof. The container must be properly closed and not externally contaminated by the contents, as this is hazardous to all staff coming into contact with these samples.

The table below shows the appropriate specimen container for each specimen/investigation.

Specimen / investigation	Container and comments
Antral washings	Sterile universal container
Aspergillus antigen (galactomannan testing)	Bronchoalveolar lavage/clotted blood (4ml ochre coloured blood tube)
Aspirates and fluids from normally sterile sites (joint, ascites, peritoneal and pleural fluids)	Sterile universal container
Blood cultures	Blood culture Bottles Paediatric blood culture bottles
Blood for Multiplex antigen detection for pneumococcus, haemophilus and meningococcus	Lavender-topped EDTA tube (4ml adult or 1.8ml paediatric)
Bronchial washings	White-topped sterile container
Bronchoalveolar lavage	White-topped sterile container
Cervical swab	Amies transport medium swab with charcoal
Cerebrospinal fluid (CSF)	White-topped sterile container
Chlamydia + GC PCR	Please contact Regional Virus lab for details 0141 201 8722
Culture for bacterial infections	Pus or a biopsy of the infected tissue is the ideal specimen. Send in a sterile universal container. If only a small sample of tissue is available, add a few drops of sterile normal saline to prevent drying. Ensure there is NO formalin or other preservative. If swabs are taken, send Amies transport medium swab with charcoal
Ear swab	Amies transport medium swab with charcoal
Eye swab	Amies transport medium swab with charcoal For investigation of <i>Chlamydia trachomatis</i> . Please

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Specimen / investigation	Container and comments
	contact Regional Virus lab
Faeces for microscopy, C.diff toxin, C&S and virology	With the spoon provided transfer 10-15ml of faeces, or equivalent volume of fluid, into a Blue-topped sterile universal container
High vaginal swab (HVS)	Amies transport medium swab with charcoal
Intrauterine contraceptive device -IUCD	Send the device in a sterile universal container
Mouth swab	Amies transport medium swab with charcoal
Nasal swab	Amies transport medium swab with charcoal
Pus	Transfer into a sterile universal container. Only use Amies transport medium swab with charcoal if pus cannot be obtained
MRSA Screening	Liquid eSwab For Nose & Perineum - duo swab (white top) For Single site (e.g. nose or throat) - single swab (pink top)
Screening swabs and surface swabs (including, CRO/CPE, neonatal screens)	Amies transport medium swab with charcoal
Seminal fluid for culture	Sterile plain white-top universal container
Serology - e.g. syphilis, ASO, Helicobacter and Legionella Ab	Please contact Regional Virus lab
Skin, nail and hair for mycology	The most suitable method of collecting and transporting specimens of skin, hair and nail is by relevant mycology collection pack. For tissue samples, please indicate on form if fungal infection is suspected. Amies transport medium swab with charcoal are used for the investigation of <i>Candida</i> infections
Sputum	Sputum from deep expectoration and not saliva is required. Send specimen in White-topped sterile container (preferably wide neck for sputum)
Throat swab	Amies transport medium swab with charcoal
Tracheal aspirate	White-topped sterile container
Tissues and biopsies	Send in a sterile universal container. If only a small sample of tissue is available, add a few drops of sterile normal saline to prevent drying. Ensure there is NO formalin or other preservative
Tuberculosis	Best specimens are early morning sputum, urine, pus or tissue. For sputum and urine send 3 early morning specimens taken on consecutive days
Sellotape slide for <i>Enterobius vermicularis</i>	Press Sellotape around the perianal region and transfer to a clean microscope slide. Place this in a



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Specimen / investigation	Container and comments
	slide box. Alternatively send 3 dry perianal swabs taken on consecutive day
Urine for routine culture Clean-voided midstream specimen of urine Catheter specimen of urine (CSU)  DO NOT SEND URINARY CATHETER TIPS	Routine bacteriology: Primary urine Red top Boric acid containers for all adult specimens Mini containers available for paediatric samples Aspirate catheter urines (CSU) from catheter tubing, not from the bag.
Early morning urine for tuberculosis	3 consecutive large Early Morning Urine (EMU) samples
Urethral swab	Amies transport medium swab with charcoal
Vesicles, ulcers and genital lesions	Refer to Regional Virus Laboratory
Water Testing (Legionella)	1L sodium thiosulphate 120mg/L container Minimum volume required 500ml Contact GRI Environmental laboratory for collection requirements for other water testing
Wound and ulcer swabs	Amies transport medium swab with charcoal

## Specimen Details/Collection

### Taking specimens in clinical areas

These are generic instructions for all samples:

- Confirm the identity of the patient
- Explain the procedure to the patient and obtain consent (as appropriate)
- Consent to treatment is the principle that a person must give permission before they receive any type of medical treatment, tests or examination. The principle of consent is an important part of medical ethics and the international human rights law. For full details refer to the NHS Consent to Treatment webpage. <http://www.nhs.uk/conditions/consent-to-treatment/pages/introduction.aspx#given#>
- Check that the specimen container is appropriate for the test
- Perform hand hygiene
- Take all required equipment to the patient
- After taking sample ensure closure / security of the sample
- Complete documentation near the patient
- Ensure the outside of the container is not contaminated

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- (If so, either repeat the sample or clean container with alcohol wipe)
- Place in specimen bag for delivery to the lab

### Patient Collected Samples

Where patients are required to take their own samples they can be referred to the NHS website that provides advice on how samples should be taken.

<http://www.nhs.uk/chq/Pages/how-should-i-collect-and-store-a-urine-sample.aspx>

<http://www.nhs.uk/chq/Pages/how-should-i-collect-and-store-a-stool-faeces-sample.aspx?CategoryID=69>

### Identification and Labelling of Specimens

Specimens must be correctly assigned to patients and labelled correctly to prevent results being attributed to the wrong patient. Failure at this stage can lead to serious adverse patient impact (see request form requirements below).

### Request form Requirements

#### One form for each specimen please

Where possible, please use electronic ordering systems for all microbiology requests. If electronic systems are unavailable then microbiology request forms are the preferred option. In exceptional circumstances, should microbiology request forms not be available then a form containing all of the essential information including investigation required will be considered as a request form. Essential and desirable information for the request form and sample is given in the following table.

#### Specimen/Request Form Essential and Desirable Information

	Essential Information	Desirable information
Specimen	<ol style="list-style-type: none"> <li>1. Patients full name or unique coded identifier</li> <li>2. Specimen type (and anatomical site if appropriate)</li> </ol>	<ol style="list-style-type: none"> <li>1. Date &amp; time of sampling</li> <li>2. Specimen qualifying details e.g. Left / right especially if more than one sample submitted</li> </ol>

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<b>Request form</b>	<ol style="list-style-type: none"> <li>1. CHI / Hospital number Patient's full name or unique coded identifier</li> <li>2. Date of birth and/or hosp no.</li> <li>3. Specimen type (&amp; site)</li> <li>4. Location for report destination</li> <li>5. Patients consultant, GP, or requesting practitioner</li> <li>6. Investigation</li> </ol>	<ol style="list-style-type: none"> <li>1. Clinical information including relevant therapy.</li> <li>2. Date &amp; time of sampling</li> <li>3. Practitioners contact number (bleep or extension) especially if expecting an urgent result.</li> </ol>
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It is the responsibility of the requester to ensure that the **sample and request form** are correctly labelled with, as a minimum, **the patient name, DOB or CHI / Hospital number and specimen type**. The specimen type and site must also be identified on the specimen container and the request form.

Unlabelled or incorrectly labelled specimens or forms may not be processed and will be discarded in all but exceptional circumstances.

Easily repeatable leaking samples may be rejected.

Failure to provide essential patient details, in particular ward location or GP practice will result in a delay in receipt of telephoned/written reports.

If the sample poses a potential laboratory hazard because the patient is Hep B/C positive, HIV positive or an intravenous drug user, please indicate this on the request form.

### Deviating Samples

Deviating samples can be defined as those which may have exceeded their maximum holding time, have not been retained at appropriate temperatures or presented in the appropriate containers. Where the integrity may have been compromised prior to receipt, this should be defined as deviating if processed.

Deviating samples may jeopardise the validity of the report. Additionally, there may be instances where a laboratory by its own actions (or inactions) allows a sample or item to become deviating after it has been received. Deviating samples will be reported with the appropriate comments. General guidelines for examples of deviation are shown in the table below.

Specimen type	Optimal Requirement	Comment
Urine	<48hrs if in boric acid (red cap) <4hrs if not in boric acid	
Faeces	<48hrs	Fridge if delayed
Sputum / Resp samples	<48hrs	Fridge if delayed
Swabs	<48hrs	In non-expired Amies transport medium
Tissue / Biopsy	<4hrs	Prevent desiccation (e.g. small amount of sterile

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		saline). Avoid delay (use tube system if possible).
Sterile fluid e.g. joint aspirate	<48hrs (at least 1ml volume)	Fridge if delayed
CAPD	<12hrs (at least 50ml volume)	Fridge if delayed
Blood culture bottles (including ascites in blood culture bottles)	<24hrs	Keep at ambient if delayed. Must be transported to the lab within 24hrs
CSF	<6hrs (1-10ml volume)	<b>Never fridged</b> (5-10ml for TB culture)

### In general

- Fresh samples are best
- If processing is delayed, refrigeration is preferable to storage at ambient temperature (other than blood cultures & CSF)
- Delays of over 48hr are undesirable
- Specimens received in formalin are not suitable for culture

**Precious samples (unrepeatable) will always be processed but if they are considered deviating will be reported as such with a disclaimer that the result may be invalid.**

### Requests for Further Investigations

Requests for further investigations on samples can be considered up to 24hrs after receipt. However, the quality of samples diminishes with time and fresh samples are always encouraged unless they are unrepeatable e.g. theatre tissue.

## Results and Reports

### Printed Results

All results are authorised for printing / release by appropriate grade of staff. Reports are printed, where applicable, and dispatched every working day, Monday to Friday. Interim and final results are available in real time on TRAKcare system & Clinical portal.

Apart from negative urines and negative MRSA samples, which can be reported after one working day, most Microbiology culture results are reported after 2-5 days, depending on the investigation. See [turnaround times](#)  
Copies of printed reports can be obtained upon request. Clinical Reports are never faxed.

### Blood Cultures

- All significant positive results shall be telephoned to the requesting clinician as soon as they are available. If there is no growth after 48 hours (of processing, not 48 hours after collection), a report to that effect is issued, but specimen processing continues for a total of five days

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### Telephoned Results

- Results of urgent requests - and those identified by the clinical microbiologist - will be telephoned to the requesting doctor or, in some cases, to the senior ward or clinic nurse. This includes **all significant** positive blood cultures and positive CSF results
- Results of epidemiological importance are always telephoned

### Using the Microbiology Result

This is often the most subjective part of microbiology. Many factors, including host immunity, site of infection, previous/current antibiotic therapy etc may be involved in determining whether a result is clinically significant or not. The clinical microbiologists are available to discuss the clinical relevance of results.

### Turnaround Times

This table gives the length of time taken to generate a report on typical specimens of various kinds. The actual turnaround times (taken from when we receive the specimen to when the report is issued) are audited on a regular basis and are available on request. The majority (>95%) of specimens can expect to be processed within these time periods, but as mentioned before, several factors may lead to delay in processing a specimen and thus it is inevitable some specimens will be out with these targets. If additional examinations are required it is essential to notify the department as soon as possible to determine if they can be carried out.

#### Typical Turn-around times for common specimens

Specimen Type	Target (days)
Blood Cultures	1-4
CSF	1-4
Faeces/C. difficile	1-4
Fluid and joint Aspirates	1-5
Genital Swabs	2-4
Helicobacter Culture	2-7
IUCD / Actinomyces Culture	2-10
MRSA / CRO / VRE / Neonatal Screening	1-4
Sputum/respiratory	1-4
TB Microscopy	Same day -2
Throat Swabs	1-4
Wound/Swab/Tissue /Pus	1-5
Urine Microscopy	Same day-1
Urine Culture	1-4
TB culture	6-8 weeks
Mycology	Up to 3 weeks
Dental	2-10
Cryptococcal antigen	Same day-2
Galactomannan test	1-7
Environmental Screening	1-10
Water Testing including Legionella	1-10

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**95% of specimens should be authorised /reported within the target time. This is the time between receipt of sample and first authorisation/report.**

### Quality Assurance

The Microbiology department at GRI participates in several EQA schemes, including those run by the UK National External Quality Assurance Scheme (NEQAS) and Public Health England (PHE). Details of participation in specific schemes are available on request.

### Data Protection

The laboratory adheres to Data Protection Law and holds all patient information in a secure manner. Staff undertake appropriate Learnpro modules that cover all statutory mandatory requirements relating to data protection. For full details refer to the NHS GG&C Data Protection link below.

<http://www.staffnet.ggc.scot.nhs.uk/Corporate%20Services/eHealth/InfoGovIndex/Pages/DataProtection.aspx>

### Complaint Procedure

Any complaints regarding the service of the Laboratory should be communicated directly to any member of the Laboratory Management Team. All complaints will be recorded formally within the QPulse electronic system upon where a full investigation will be carried out. All complaints will receive a response from management.

NHS GG&C Complaints procedure can be access directly from staff net or from the link below.

<http://www.staffnet.ggc.scot.nhs.uk/Corporate%20Services/Complaints/Pages/NHSComplaints.aspx>

### User Feedback

Users are encouraged to give feedback to the department. This can be done by contacting the laboratory by telephoning using the stated contacts listed in this manual or by email.