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| Microbiology GG&C  | MP506v5                      |
|                    | Authorised by: Mairi MacLeod |
| Issued: 03/12/2018 | Author: Sandra Higgins       |

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

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

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

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## Introduction

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 850,000 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).

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, Canniesburn Unit, 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

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## Key Personnel and Contact Details

Clinical Microbiology Laboratory Office (All general enquiries through this number):

**0141 201 8551**

### Key Personnel - Clinical Microbiology Staff

| 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 John Hood           |
| 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   |

### Key Personnel - Microbiology Biomedical Scientist Staff

| Designation/Contact        | Name                                  | Telephone                    |
|----------------------------|---------------------------------------|------------------------------|
| Technical Services Manager | John Mallon                           | 0141 201 8565                |
| Service Manager            | Janet Young                           | 0141 201 8565                |
| Operations Manager         | William Ennis                         | 0141 201 8564                |
| Integrated Systems manager | Sandra Higgins                        | 0141 201 8570                |
| Quality Manager            | David Jordan                          | 0141 201 8570                |
| I.T Manager                | Tony Speekenbrink<br>Elaine McCormick | 0141 201 8569<br>07939057778 |

### Infection Control

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

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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

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

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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)

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, but a porter should be contacted to arrange delivery to the department.**

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## 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)

| Accepted sample types (in sealed specimen bags)   | Do NOT send the following  |
|---|--|
| Blood cultures<br>Swabs (MRSA etc)<br>CSF<br>Tissue<br>Sputum<br>Urine<br>Emergency samples (prior arranged) up to 20:30hrs<br>On call BMS to be contacted for emergency specimens after 20:30hrs | High risk samples e.g. TB, Anthrax, VHF<br>Sharps e.g. needles etc<br>Samples for Blood Gas Analysis<br>Pathology samples in formalin<br>Heavy material (>kg)<br>Large liquids >30ml (e.g. CAPD, EMU)<br>Leaking samples<br><b>N.B. Contamination results in tube shut down for all users until disinfection process is complete</b> |

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.

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## 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

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" system, in which the specimen is monitored continuously. Special sample bottles should be available on the ward. **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
- Please **do not remove** barcodes from the blood culture bottles

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

Blood cultures are indicated not only for pyrexia but also for any clinical indication that a serious infection is present.

Transport blood culture bottles to the lab using the pneumatic tube system between 08.00-20.00 hours, out with this time they can remain at room temperature and be sent the next day.

**\*DO NOT put blood cultures in fridges\***

#### **BONE MARROW**

The department stores and issues "BacT/ALERT" 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.

#### **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) and request "cell count culture and sensitivity". Cell count and Gram film are phoned to the ward.

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



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### 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. Request “cell count, culture and sensitivity”
- The results of cell count and Gram film examinations are phoned to the ward
- 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

### CPE/CRO Screening, MRSA, Renal VRE

- For CPE screening send Rectal swab
- Refer to the NHS GG&C CPE toolkit  
<http://www.nhsggc.org.uk/media/238033/cpe-acute-toolkit.pdf>
- For MRSA screening samples include Nasal, Perineum & Throat
- 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/>
- For Renal VRE screening send a Rectal swab

### EYE SWABS

Conjunctival discharge or pus is sampled using a plain swab in transport medium. Request “culture & sensitivity”(C&S).

If chlamydial or viral infection is suspected, contact the virology lab at GRI.

Please contact the laboratory if you require culture of corneal scrapings (Acanthamoeba etc).

### 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.

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Faecal samples are cultured selectively for species of *Salmonella*, *Shigella*, *Campylobacter* and for *E. coli* 0157.

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.

#### **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.

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 and if both HVS and LVS are received by the laboratory the HVS only would be processed for a single patient. Urethral swabs should be taken with a special small diameter urethral swab. Request "culture and sensitivity"(C&S).

Cervical swabs are inserted into plain Amies transport medium to allow microscopy.

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### JOINT ASPIRATES

Ensure aseptic technique when collecting the specimen. Request microscopy, culture and sensitivity (C&S). Send in a sterile container (25ml). Gram films are routinely carried out on these specimens and the result of the Gram film will be phoned to the ward.

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 samples as requested.

### PATHOLOGY SAMPLES (HUB)

Samples for referral to South Glasgow are received in Microbiology as a drop-off pick-up point on the 4<sup>th</sup> floor New Lister Building. 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 QEUH.

### PLEURAL/PERICARDIAL FLUID

Ensure aseptic technique while taking the sample. Send in a sterile container (25ml) Request microscopy, culture and sensitivity (C&S). The results of a Gram film will be phoned to the ward.

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). Request culture and sensitivity (C&S).

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.

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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.

**Broncho-alveolar lavage fluid (BAL)** is routinely cultured for common respiratory pathogens and TB. Legionella and fungi 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. Request “culture and sensitivity”(C&S). 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 and request culture and sensitivity (C&S). 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. Request microscopy, culture and sensitivity (C&S). 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

#### Processed by flow cytometry (negatives reported on day of receipt)

#### **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**

- GP Adult -Small volume specimens (< 8ml) are rejected
- Hospital Adult -Small volume specimens (< 2ml) are rejected
- Paediatrics -Small volume specimens (< 1ml) are rejected

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

**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. Request culture and sensitivity (C&S). 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. Skin lesions or ulcers may become colonised with organisms of little or no pathogenic potential and for this reason antibiotic sensitivities are not always issued. Contact the laboratory for antibiotic advice if required.

Skin scrapings from the advancing edge of a suspected fungal lesion should be sent in a mycology envelope such as MycoTrans for investigation.

**WATER / ENVIRONMENTAL SAMPLING**

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

Water samples are examined for Legionella and for viable counts of indicator organisms **by arrangement**.

Particle counts & settle plates are performed **by arrangement** on clean room areas, theatres etc.

Legionella testing is an ISO 17025 UKAS accredited test. For 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**.

**Specimens for other Laboratories**

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

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- 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

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 “Vacuette” 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<br>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                                       |

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|---|---|
| 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. For tissue samples please use containers with beads and maximum recovery diluent (available from Microbiology)<br>Ensure there is NO formalin or other preservative<br>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<br>For investigation of <i>Chlamydia trachomatis</i> Please 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   |
| Screening swabs and surface swabs (including MRSA, 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 collection and transporting specimens of skin, hair and nail is by Fold into a slip of black or dark blue paper approximately 15cm square or a commercial specimen packaging kit For tissue samples, please indicate on form if fungal infection is suspected.<br>Amies transport medium swab with charcoal are used  |

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| Specimen / investigation   | Container and comments   |
|--|--|
|  | 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 slide box.<br><br>Alternatively send 3 dry perianal swabs taken on consecutive day  |
| Urine for routine culture<br>Clean-voided midstream specimen of urine<br>Catheter specimen of urine (CSU)<br><br>DO NOT SEND URINARY CATHETER TIPS | Routine bacteriology:<br><br>Samples <10mls may give false negative results<br><br>Primary urine Red top Boric acid containers for all adult specimens<br><br>Mini containers available for paediatric samples<br>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<br><br>Minimum volume required 500ml  |
| Wound and ulcer swabs  | Amies transport medium swab with charcoal  |



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## 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 (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 misdiagnosis and wastage. 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

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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   |
|---------------------|--|---|
| <b>Specimen</b>     | <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>   |
| <b>Request form</b> | <ol style="list-style-type: none"> <li>1. CHI / Hospital number<br/>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> |

It is the responsibility of the requesting clinician 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 and label both the sample and form with a "**Danger of Infection**" label.

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### Deviating Samples (excessive delay etc)

Deviating samples can be defined as those which are not (correctly) cared for, for example they may have exceeded their maximum holding time, lack the date and time of sampling and/or other relevant information, have not been retained at appropriate temperature, are presented in inappropriate containers/packaging, be denatured through heat, have rotted or suffered microbiologically, have become cross contaminated, been damaged in transit have been supplied in insufficient quantity and so on. **As a result deviating samples may jeopardise the validity of the report.**

In certain circumstances a laboratory may receive a sample or item where it is evident (or suspected) that integrity may have been compromised prior to receipt and should therefore be defined as deviating.

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 sample report comment will be issued if samples are received out with the following general guidelines shown in the table below**

| Specimen type  | Requirement   | Comment  |
|--|---|--|
| Urine  | <48hrs if in boric acid (red cap)<br><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 saline).<br>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.<br>Must be transported to the lab within 24hrs                               |
| CSF  | <6hrs (1-10ml volume)   | <b>Never fridged</b><br>(5-10ml for TB culture)  |

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### 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 as directed by the Head of Service. Reports are printed and dispatched every working day, Monday to Friday.

Interim and final results are available 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

### 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

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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.

Reports are not issued on Sundays and non-urgent tests will be delayed by one day if Sunday intervenes. Reports should be in the ward on the same day as authorisation, and should get to GP practices by the next working day at the latest.

#### 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-2    |
| 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          |

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

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## Quality Assurance

The Microbiology department at GRI participates in several EQA schemes, including those run by the UK National External Quality Assurance Scheme (NEQAS). 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/Health%20Information%20Technology/InfoKnowledgeAndHealthRcds/Information%20Services/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.