Microbiology Clinical Details Guide

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Our objective is to receive brief but pertinent clinical details on all diagnostic microbiology samples, which we believe will optimise the quality of the results that we release. We also believe that such an approach will have positive effects on diagnostic and antimicrobial stewardship.

The rationale for clinical details can be split into three areas of the testing process: pre-analytical, analytical and post-analytical. There will however be overlap between the three areas:

Pre-analytical: Clinical details allow us to decide if the test is appropriate for a given clinical situation, and whether extra or alternative testing may be indicated.

Analytical: This area is particularly important for samples which are processed for bacterial culture. Clinical details can (and often do) affect any of the following steps in the bacteriology culture process:

- Whether additional tests in addition to culture are indicated.
- Whether a Gram stain/microscopy is performed.
- What incubation conditions are used (aerobic/CO_2/anaerobic) for the culture plates.
- Which culture media are set up on the sample.
- Ascertaining the relative significance of different culture isolates and deciding further workup.
- Whether susceptibility testing should be performed, and what antimicrobials to test against.
- Which culture isolates should be reported to the requestor.
- Which antimicrobial susceptibilities are released to the requestor.
- Whether an interpretative comment is added to the final report.

Post-analytical: This allows us to decide whether the culture findings are consistent with the clinical details, which antibiotics should be reported, if any, and which interpretative or management comments should be added.

This Guide contains clinical details that are acceptable and unacceptable for the specimen types listed below. This is not an exhaustive list and will be developed further over time.

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Urine Samples

Clinical details including symptoms are particularly important amongst patient cohorts who have a high prevalence of asymptomatic bacteriuria such as older people, rest home residents, patients with long term urinary catheters.

A brief summary of the patient's specific symptoms, accompanied by any other useful information such as pregnancy, immunocompromising conditions, current antibiotics, allergies, etc. all contribute to how the sample is processed in the laboratory, what susceptibilities are performed and how the result is reported back to the requestor.

Refer to Pathlab "UTI's", "UTI's-Elderly" testing guides, https://www.pathlab.co.nz/providers

Mid-Stream Urine (MSU), Clean Catch, In/Out Catheter Urine (For CSU refer to separate table below)

Acceptable Clinical details	Unacceptable Clinical details
Symptoms • Dysuria/Frequency • Incontinence • Fever • Confusion (increased or new) • Flank pain • Suprapubic pain • Abdominal pain • Haematuria • Aggression / Agitation • Testicular pain • Falls (non-mechanical) • Urinary Retention or Retention • Vomiting in ≤ 5-year-olds **Diagnoses/Clinical Scenarios** • UTI / ?UTI * • Cystitis • Pyelonephritis • Sepsis • SIRS (Systemic inflammatory response syndrome) • Delirium • ↑PSA • Prostatitis • Pelvic inflammatory disease (PID) • Pregnant • Urology pre-op • Gynae pre-op • Post-renal transplant • Epididymitis/orchitis • In/out "catheter" specimens from infants and young children • Bladder aspirates • Pre-BCG treatment • DKA (diabetic ketoacidosis) • Renal calculus (kidney stone) • Seizures (child) • Children ≤ 3 months old • Renal Clinic • Kawasaki disease	• **No clinical details** • **Smelly urine** • **Cloudy urine** • **Concentrated urine** • **Discoloured or dark urine** • **Dipstick result only** • **Routine** • **Monitoring** • **Diabetic monitoring/annual review (DAR)** • **Screening (unless pregnant)** • **Previous UTI ?clearance (unless pregnant)** • **Catheter urine – with no evidence of systemic symptoms (see table below)** • **Cardiovascular screen** • **OPD urines (excluding Renal Clinic) that just say "Clinic" or "Monitoring"** • **Dementia screening** • **Seizures (adult)** • **Increased CRP** • **Fatigue** • **Orthopaedic Pre-op or just pre-op** • **Pneumonia** • **CKD (Chronic Kidney Disease) with no evidence of other acceptable symptoms i.e. if they are just monitoring specimens** • **Vomiting in > 5-year-olds (as the only clinical detail)**

Microscopy only
• Hypertension
• Vasculitis, including
  • GPA – Granulomatosis with Polyangiitis (Wegner's)
  • Cutaneous polyarteritis nodosa (also called periarteritis nodosa)
• SLE (Systemic lupus erythematosus)
• PMR (Polymyalgia rheumatica)
• Pre Rituximab treatment
• Interstitial nephritis
• Glomerulonephritis
• Connective Tissue Disease (CTD, ?CTD)
• Iron deficiency	

*** UTI / ?UTI** or similar **will** be accepted for testing. However, this is essentially a diagnosis as opposed to relevant clinical details and we strongly discourage this practice. The patient's specific symptoms should be stated as detailed above. This helps the laboratory decide between an uncomplicated and complicated UTI and whether the upper renal tract may be involved. These decisions affect which antibiotics are tested, whether an antibiotic is interpreted as susceptible or resistant and which susceptibility results are reported back to the requestor.

References:

- Choose Wisely, The New Zealand Microbiology Network. Available from, https://choosingwisely.org.nz/professional-resource/nzmn/
- SIGN 88 Management of suspected bacterial urinary tract infection in adults. Available from, https://www.sign.ac.uk/assets/sign88.pdf , Sections 1.4, 1.5
- Ninan S et al; Investigation of suspected urinary tract infection in older people BMJ 2014; 349 :g4070. Available from, https://www.bmj.com/content/349/bmj.g4070
- Urinary tract infections (UTIs) – an overview of lower UTI management in adults, https://bpac.org.nz/2021/uti.aspx
- A pragmatic guide to asymptomatic bacteriuria and testing for urinary tract infections (UTIs) in people aged over 65 years. https://bpac.org.nz/BT/2015/July/guide.aspx
- bpac Primary Care Antibiotic Guide, https://bpac.org.nz/antibiotics/guide.aspx

Catheter Specimen of Urine (CSU)

Acceptable Clinical details	Unacceptable Clinical details
• Hypotension/low blood pressure • Sepsis/Urosepsis • SIRS (Systemic inflammatory response syndrome) • Fever • Confusion (worsening/new onset) • Altered mental status • Flank/loin pain/tenderness • Suprapubic pain/abdominal pain • Prostatitis/increased PSA • Epididymo-orchitis/testicular pain • Haematuria • Purulent discharge from around the catheter insertion site • Pre-op urological/gynae surgery • Post-renal transplant • Pre-BCG treatment • Any child less than 1 year of age • Spinal Injury patients – increased spasticity, autonomic dysreflexia, or sense of unease	• **All clinical details that are unacceptable in an MSU sample** • **Urgency** • **Frequency** • **Dysuria** • **Blocked catheter/urinary retention** • **Clots in catheter bag** • **Debris/sediment in catheter bag** • **Bypassing catheter**

NOTE: In/out catheter specimens should be treated as MSU samples. Refer to MSU table above.

Reference: Adapted from IDSA CAUTI guidelines 2010 https://academic.oup.com/cid/article/50/5/625/324341

Superficial Wound/Skin swabs

The diagnosis of wound infection is essentially a clinical diagnosis, with laboratory testing used to provide further information to guide management, particularly when the use of systemic antibiotics is deemed appropriate.

Please note: The body site the swab is taken from is a critical part of the information required for Microbiology to accept and process the swab.

Refer to Pathlab "Wound swabs" testing guide, https://www.pathlab.co.nz/providers

The table below outlines what we would regard as acceptable and unacceptable clinical details:

Acceptable Clinical details	Unacceptable Clinical details
Symptoms • New or increased pain • Swelling • Erythema • Purulent exudate • Localised warmth • Systemic signs (fever, tachycardia, etc.) **Diagnoses/Clinical Scenarios** • Post-surgical wounds • Bite wounds • Superficial burns • Penetrating wounds • Diabetic foot infections • Skin grafts • Extensive eczema • Extensive impetigo • Cellulitis (only if associated skin break/wound) • Infected wounds that have not responded to standard management	• **No clinical details** (i.e. blank or just test request) • **Chronic wounds/ulcers** These chronic lesions are inevitably colonised with bacteria, so the positive predictive value of the culture result is low. These samples will **only** be accepted if accompanied by specific clinical details suggesting infection (e.g. cellulitis, increasing erythema, rapid increase in size, increased pain, fever). • **Peri-anal and groin wounds** These are also low yield due to high contamination rate with enteric flora. These samples will **only** be accepted if accompanied by specific clinical details suggestive of infection. • **Unlabelled Site** Normal colonising flora differs at different sites of the body. If the site is unknown, the importance of isolated bacteria cannot be properly assessed.

References:

- BPAC guidelines: Microbiological assessment of infected wounds: when to take a swab and how to interpret the results. Available from: https://bpac.org.nz/BT/2013/June/infected-wounds.aspx
- International consensus Update 2016, International wound infection Institute: Wound Infection in Clinical Practice: Principles of Best Practice. Available from: http://www.woundinfection-institute.com/wp-content/uploads/2017/03/IWII-Wound-infection-in-clinical-practice.pdf
- Scales B, Huffnagle G. The microbiome in wound repair and tissue fibrosis. J Pathol. 2013;229(2):323–31. Available from https://bpac.org.nz/BT/2013/June/infected-wounds.aspx
- bpac Primary Care Antibiotic Guide, https://bpac.org.nz/antibiotics/guide.aspx
- https://bpac.org.nz/BPJ/2016/July/correspondence.aspx

Sputum Samples

Bacterial culture of sputum samples suffers from both poor sensitivity and specificity, leading to sub-optimal antimicrobial stewardship.

Sputum samples on immunocompetent patients from the community who simply present with cough with no other complicating factors will **not** be accepted. International guidelines do not support the use of sputum cultures in non-hospitalised patients with acute bronchitis or mild community acquired pneumonia.

Acceptable Clinical details		Unacceptable Clinical details
Hospital (incl. OPC)	**Community**	**Community**
All respiratory symptoms or diagnoses. Sputum samples from hospital/OPC with no clinical details or details unrelated to the respiratory system will not be accepted.	• **Infective exacerbation of COPD** *(recommended only if failing empiric therapy or resistant organism suspected)* • **Exacerbation of bronchiectasis** • **Bronchiectasis monitoring** *(no more than every 6 months)* • **Immunocompromised patient** • **Failure to respond to initial antibiotic therapy** • **Pneumonia** *(guidelines suggest moderate to severe cases only)* • **CAP (Community acquired pneumonia)** • **LRTI** • **Haemoptysis** • **Specialist request** • **CXR changes** • **Increasing SOB/dyspnoea** • **Fever plus respiratory related clinicals** • **Pleuritic chest pain**	• **No clinical details** • **Cough/Productive cough** • **Prolonged cough** • **Chronic cough** • **Changed sputum** • **Purulent sputum** • **Increased sputum** • **Acute bronchitis** • **Screening** • **Monitoring** • **"COPD"** • **Fever as only clinical detail** • **Recurrent chest infections** • **Flu like symptoms/Influenza** • **Asthma** • **Exacerbation of asthma** • **URTI**

OPC = Outpatient Clinic

References:

- BPAC guidelines: Community Acquired Pneumonia https://bpac.org.nz/BPJ/2012/August/pneumonia.aspx
- NICE Guidelines: Community Acquired Pneumonia https://pathways.nice.org.uk/pathways/pneumonia#path=view%3A/pathways/pneumonia/assessment-of-community-acquired-pneumonia.xml&content=view-node%3Anodes-microbiological-tests
- Australia and NZ guidelines for the management of COPD 2018 https://copdx.org.au/wp-content/uploads/2019/02/COPDX-V2-56-Dec-2018-Web.pdf

Faeces Samples

Infective Gastroenteritis testing

Testing is only indicated if severity or Public Health risk factors are present, (refer to Faeces – Enteric Pathogen Laboratory Testing Guide). For bacterial and routine parasite (giardia, cryptosporidium) investigations only **ONE** faeces specimen is required.

Refer to Pathlab "Faeces enteric pathogens" testing guide, https://www.pathlab.co.nz/providers

Acceptable Clinical details	Unacceptable Clinical details
• **Food handler** • **Childcare attendance** • **Rural** (including camping trips, farm visits, untreated water supply) • **Raw seafood** • **Overseas travel** (specify countries visited) • **Recent antibiotics or chemotherapy** • **Bloody diarrhoea** • **Immunocompromised** (includes pregnancy) • **Persistent diarrhoea** (>1 week) • **Public Health request in outbreak situation** • **< 5 years old** • **> 70 years old** • **Inflammatory bowel disease (IBD)** • **Crohn's disease** • **Ulcerative colitis**	• **No clinical details** • **No risk factors indicated** • **Diarrhoea** • **Abdominal discomfort** • **Diarrhoea for <1 week with no other risk factor** • **Irritable bowel syndrome**

References:

- http://www.bpac.org.nz/resources/campaign/diarrhoea/bpac_investigating_diarrhoea_2008_wv.pdf
- https://lab.waikatodhb.health.nz/assets/Guidelines/DHB-Shared-Services-Laboratory-Test-Guidelines-2013.pdf pages 45 to 47.

Helicobacter pylori stool antigen testing

The clinical presentation of *H. pylori* infection is very different from that of infective gastroenteritis and testing for one will not be done in conjunction with the other. In addition, our assay for *H. pylori* antigen detection is neither recommended nor validated for unformed stool samples.

Refer to Pathlab "Faeces enteric pathogens" testing guide, https://www.pathlab.co.nz/providers

Acceptable Clinical details	Unacceptable Clinical details
Dyspeptic Symptoms • Heartburn • Abdominal discomfort • Nausea/vomiting • Anorexia • Excessive belching/burping • Epigastric pain **Diagnoses/Clinical Scenarios** • "Gastritis" • Unintentional weight loss • History of peptic ulcers • Suspected, confirmed or family history of gastric carcinoma • Chronic urticaria • Family history of *H. pylori* infection • Endoscopic evidence of ulceration • Monitoring of treatment of *H. pylori* infection (>8 weeks post treatment) • ITP (Immune thrombocytopenia) • Pre-Weight loss Gastric surgery	• **No clinical details** • **Signs/Symptoms suggestive of infective gastroenteritis** • **Requested in conjunction with infective gastroenteritis** (enteric bacterial PCR panel)

References:

- American college of Gastroenterology: Guidelines on Management of *Helicobacter pylori* infection. American Journal of Gastroenterology: February 2017 - Volume 112 - Issue 2 - p 212–239
- The Changing face of *Helicobacter pylori* testing: BPAC May 2014

Vaginal Swabs

Testing of genital swabs is separated into two distinct categories, molecular testing for STIs and microbiology microscopy/culture (e.g. BV, thrush).

- Molecular STI swabs (small green cap tube for chlamydia/gonorrhoea/trichomonas), will be processed but relevant clinical details are recommended as they assist in result interpretation and appropriate interpretive comments.
- Microbiology microscopy/culture swabs (white cap eSwab) will be rejected if relevant clinical details are not provided. The table below outlines acceptable and unacceptable clinical details.

Refer to Pathlab "Vaginal swabs" testing guide, https://www.pathlab.co.nz/providers

Acceptable Clinical details	Unacceptable Clinical details
Symptoms • Discharge • Itch • Genital irritation/Vaginal soreness • Lower abdominal/pelvic pain **Diagnoses/Clinical Scenarios** • Post-partum • Miscarriage/RPOC • TOP • Post TOP • Post-operative, post colposcopy • Cancer of genital tract • Sexual abuse/assault • Bacterial vaginosis (BV) • Thrush/Yeast • PROM/SROM • Irregular bleeding • Endometritis • PID/?PID	• **No clinical details** • **Routine screen** • **Pregnant** • **Infection** • **Symptomatic** • **Asymptomatic screening**

References:

- http://www.bpac.org.nz/resources/handbook/sti/sti.asp?artID=1
- https://sti.guidelines.org.nz/
- https://bpac.org.nz/2019/chlamydia-gonorrhoea.aspx

Ear Swabs

There is a paucity of evidence to support the clinical usefulness of ear swabbing in otitis externa, and guidelines based on expert opinion do not recommend ear swabbing in uncomplicated otitis externa infection.

Acceptable Clinical details	Unacceptable Clinical details
• **Otitis media** • **Perforation / Grommets with discharge** • **Recalcitrant otitis externa** (which has failed initial treatment with ear drops) • **Recurrent or chronic (>2 weeks) otitis externa** • **Topical treatment can't be delivered effectively** • **Evidence infection extends beyond the external auditory canal** (e.g. osteomyelitis, cellulitis, nerve palsy) • **Condition is complex/severe enough to warrant systemic antibiotic treatment** • **Systemic symptoms** (i.e. fever) • **Immunosuppression** • **ENT Specialist request** • **< 5 years old** • **Foreign body present**	• **No clinical details** • **Otitis externa** • **Earache** • **Ear discharge** • **Otorrhea**

References:

- Ordering and interpreting ear swabs in otitis externa. BMJ 2014; 349
- Clinical Practice Guideline: Acute Otitis Externa. Rosenfeld, R. et al. *Otolaryngology–Head and Neck Surgery*, 2014, *150*(1_suppl), S1–S24.
- bpac Primary Care Antibiotic Guide, https://bpac.org.nz/antibiotics/guide.aspx

Eye/conjunctival Swabs

Conjunctival swabbing for bacterial culture has limited value in uncomplicated conjunctivitis. Eye/conjunctival swabs should be sent to the laboratory where they have the potential to make a difference to clinical management.

It is important to always remember the possibility of sexually transmitted infection and the usefulness of a molecular swab to diagnose both chlamydia and gonorrhoea infection.

Acceptable Clinical Details	Unacceptable Clinical details
• **Neonatal conjunctivitis** (in addition to a bacterial culture swab, send a molecular swab for *C. trachomatis & N. gonorrhoeae* PCR) • **Conjunctivitis not responding to standard topical treatment** • **Persistent conjunctivitis > 1 week** (If associated "red eye" consider also viral swab for HSV and adenovirus) • **Conjunctivitis with surrounding cellulitis or associated with fever** • **Conjunctivitis associated with contact lens use** (Consider also testing for HSV and acanthamoeba in severe or prolonged cases) • **Conjunctivitis with clinical suspicion of STI** (Please also send a molecular swab for *C. trachomatis & N. gonorrhoeae* PCR)	• **Conjunctivitis** • **Infection** • **Discharge** • **Sticky eye** • **Gunky eye** • **Mucky eye**

Reference:

- Drew RJ et al; How to use eye swabs, https://ep.bmj.com/content/edpract/100/3/155.full.pdf

Nasal Swabs

Up to 30% of the population has nasal colonisation with *Staphylococcus aureus.* Nasopharyngeal flora such as *Haemophilus influenzae*, *Streptococcus pneumoniae* and *Moraxella catarrhalis* are also commonly found as commensals in the nares. These facts limit the usefulness of nasal swabs in diagnosing localised infection.

Nasal swabs are generally only useful when nasal *Staphylococcus aureus* colonisation needs to be identified for clinical or infection control reasons.

Acceptable Clinical Details	Unacceptable Clinical details
• **Recurrent skin infections/boils/impetigo.** For decolonisation. • *Staphylococcus aureus* screening prior to certain types of surgery (hospital setting, refer to local protocols). • MRSA screening (hospital setting, refer to infection control screening guidelines). • **Vestibulitis** (recalcitrant – please specify treatment given).	• **Infection of nostrils/nares** • **Nasal Sore** • **Nasal discharge** • **Epistaxis**

Please note: If the swab involves the external part of the nose, it is important to clearly state this on the request form. A "nasal swab" will be assumed to be from the nares unless stated otherwise.

Throat Swabs

Throat swabs without any clinical details or information will be processed but for a streptococcal pharyngitis culture only. If other infections are being considered, then please provide brief clinical details so additional culture can be performed. (Please see table.)

Acceptable Clinical Details
• **Epidemiological risk factors for rheumatic fever present** (ethnicity, socioeconomic status) **AND clinical evidence of streptococcal pharyngitis**. • Symptoms of **severe pharyngitis** (e.g., fever, marked lymphadenopathy, copious tonsillar exudate) • **Suspicion of peri-tonsillar or retropharyngeal abscess** • **Prolonged pharyngeal symptoms** (>1 week) • **Suspected scarlet fever** • **Suspected candida infection** (where diagnosis is not clinically obvious) • **Suspected STI** (e.g., gonorrhoea, chlamydia) - Molecular swab required, and bacterial swab if gonorrhoea culture needed

References:

- Group A streptococcal sore throat management | Guidelines - Heart Foundation, https://www.heartfoundation.org.nz/resources/group-a-streptococcal-sore-throat-management
- sore-throat-algorithm.pdf (heartfoundation.org.nz)
- Sore throat - Health Information and Services, https://info.health.nz/conditions-treatments/ear-nose-throat/sore-throat/
- bpj_37_rheumatic_fever_pages_22-33.pdf (bpac.org.nz)
- https://sti.guidelines.org.nz/