



PATHOLOGY SPECIMENS

Collection & Handling of Pathology Specimens

This procedural document supersedes: PAT/IC 11 v.4 Pathology Specimens – Collection and Handling of Pathology Specimens



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Date written/revised:	April 2015
Approved by:	Infection Prevention and Control Committee
Date of approval:	18 June 2015
Date issued:	25 June 2015
Next review date:	March 2018
Target audience:	Trust-wide

PATHOLOGY SPECIMENS**COLLECTION & HANDLING OF PATHOLOGY SPECIMENS****Amendment Form**

Version	Date Issued	Brief Summary of Changes	Author
Version 5	25 June 2015	<ul style="list-style-type: none"> • Policy produced in the new Trust format • Further information on viral haemorrhagic fever added • Reference to ICE order comms system • Equality Impact assessment added • References updated 	Paul Gravil
Version 4	January 2012	<ul style="list-style-type: none"> • Section added on Education and Training – page 4. • Section added on “Equality Impact Assessment” – page 5. • Insertion of new procedure for blood culture specimens – page 6. • Item 7b Procedure Change for Virus Isolation – using “Green Viral Swab” – page 8. 	Paul Gravil
Version 3	June 2010	<ul style="list-style-type: none"> • Insertion of Appendix 1 – Sepsis Screen Guidelines 	Dr K Agwuh
Version 2	Jan 2009	<ul style="list-style-type: none"> • Sentence added re. Serology/Virology samples • Blood Culture procedure added • Creutzfeldt-Jakob Disease information added in ‘Obtaining high-risk samples’ • Reference to ‘Standard Precautions’ rather than ‘Universal Precautions’ • Reference to ADR Regulations – Transport of Dangerous Goods by Road 	Paul Gravil

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1. INTRODUCTION

All Pathology specimens must be obtained and transported with care, as accidents could result in the transmission of infection to clinical, laboratory and ancillary staff.

2. PURPOSE

The purpose of this policy is to establish the correct procedures for the collection, handling and transport of laboratory samples.

3. DUTIES AND RESPONSIBILITIES

Each individual member of staff within the Trust is responsible for complying with the standards set out in this Policy if they collect, handle and/or transport Pathology specimens. They need to be aware of their personal responsibilities in preventing the spread of infection and should also continually assess whether they personally meet the required standards.

It is the responsibility of Directors and Managers to ensure compliance with this policy.

4. PROCEDURE

This policy should be read in conjunction with other Trust Infection Control Policies, particularly:

- Hand Hygiene (PAT/IC 5)
- Standard Precautions (PAT/IC 19)
- Hospital Inoculation Policy (PAT/IC 14)
- Hazard Group 4 Viral Haemorrhagic Fevers (PAT/IC 32)

4.1 Standard Precautions

Standard precautions apply to the handling of all specimens.

- Always wash hands before and after obtaining and handling specimens
- Cover cuts and lesions with a waterproof dressing
- For your own protection, disposable (non-latex) gloves **MUST** be worn if there is any likelihood of contact with blood or body fluids. If individuals experience problems such as skin irritation or dermatitis they must be referred to the Occupational Health Department for appropriate advice and management.

- Do not use specimen containers for any other purpose and close tops securely. Take care not to contaminate the outside of the container with blood or other material.
- Discard needles, Vacutainer holders and syringes safely into sharps boxes as per Trust Waste Policy CORP/HSFS 17.
- All staff taking blood samples or dealing with specimen transport must be familiar with the *Hospital Inoculation Policy* (PAT/IC 14).

Please Note: Additional precautions must be taken when a specimen is known, or suspected, to contain a hazard group 3 or 4 organism ⁽¹⁾. (See section 4.7).

4.2 Obtaining Specimens

Always ensure that the container and request form are labelled with the patient's name, date of birth, unit number, date and time of sample, and that adequate clinical information is provided on the form. (Specimens will only be analysed if they are labelled in accordance with the Trust Policy on Specimen and Request Form Labelling (PAT/T 8).

Clinical Laboratory Sciences and Virology - Place blood samples in the bags attached to the forms and ensure that they are correctly sealed. Several blood samples from each patient can be placed in the same bag; however, virology/serology samples require a separate form and bag.

Microbiology - Blood cultures, urines, swabs, fluids, sputum and faeces samples must not be mixed with blood samples. Specimens for culture should be obtained **before** starting antibiotics unless treatment is very urgent.

Histopathology - Request forms must not be placed within the same bag as the specimen, but the form and sample **MUST** be kept together (It is acceptable to place the form into the pocket of the specimen bag).

For more detailed information and training regarding venepuncture and blood samples refer to the Clinical Skills department who have a training package covering these aspects:
http://intranet.win2000.doncri.nhs.uk/education_and_development/training_and_development/clinical_skills_Homepage.aspx

4.3 Taking Blood Culture Specimens

It is important that when taking blood cultures the following procedure is followed to ensure the best recovery of significant micro-organisms and to minimise contamination from skin flora.

For an adult use a set of blue and purple bottles and inoculate each bottle with 10mls - aerobic (blue) bottle first. For paediatric samples use a yellow bottle and add up to 4mls.

Blood cultures must be taken from a venepuncture site specifically for this purpose. If a culture is being collected from a central venous catheter, disinfect the access port with a chlorhexidine

swab (2% chlorhexidine in 70% isopropyl alcohol) swab. When blood is being collected for other tests, always inoculate blood culture bottles first.

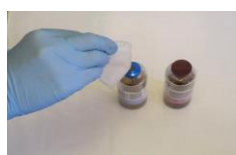
Ensure that all necessary items are available: tourniquet, blood culture pack.

Procedure for collection and inoculation of bottles

- Identify patient
- Wash hands with soap & water, clean trolley & don apron
- Decant contents of pack onto top of trolley



Equipment



Clean bottle tops



Clean skin with FREPP



Attach winged
Collection set to adaptor



Inoculate aerobic
bottle first

- Remove lids from bottles & clean with 2% Chlorhexidine in 70% Isopropyl alcohol wipe for **30secs, 1** swab for each bottle
- Place sterile towel under patients arm and apply disposable tourniquet
- Palpate chosen vein & clean skin using 2% Chlorhexidine in 70% Isopropyl alcohol in **FREPP applicator** for 30 seconds. Allow to air dry before venepuncture.

DO NOT RE-PALPATE AFTER CLEANING

- Gel hands & apply gloves.
- Attach winged blood collection set to adaptor cap & insert needle into vein.
- Place adaptor cap over aerobic bottle (blue) first & press down to pierce septum, repeat with anaerobic bottle (pink) Hold sample bottle below vein to allow fill - (approx. 10mls).
- Release tourniquet prior to removal of needle & place swab over puncture site, apply pressure
- Dispose of safety butterfly & adaptor cap as a single unit into sharps bin.
- Remove gloves & gel hands, label bottles and complete microbiology form with patient's details.
- Do not remove barcode labels from bottles. (Specimens will only be analysed if they are labelled in accordance with the Trust Labelling Policy PAT/T 8).
- Record the procedure in the patient's records.
- Send samples to laboratory and tidy away equipment.

Syringe and needle Method

- When using a **syringe and needle** draw 20mls and ensure **10mls of blood is added to each bottle**, inoculating the blue bottle first followed by the purple. Do not add more than 10mls to each bottle.

- Do not reduce the volume of blood for cultures (unless difficulty in obtaining sample) as this will affect the recovery of micro-organisms. If you have difficulty in obtaining a sample inoculate the blue bottle only.

4.4 Other Samples

- **Mid-stream urines:** - the external genitalia should be cleaned first with soap and water or sterile saline. The patient passes the first and last part of the stream into a toilet, urine bottle or bedpan, and the middle 10-20ml into a sterile universal container.
- **Catheter urines:** - disinfect the sampling port with 70% isopropyl alcohol (e.g. Steret), then, using a syringe, aspirate 10ml urine into a sterile universal container using a no-touch technique.
- **Swabs:** - Cotton-tipped swabs [black top] must be used for routine sampling. The swab is inserted into the deepest part of the wound or lesion, before cleaning, and placed in the tube of charcoal transport medium. Throat swabs are taken from the tonsils and back of the naso-pharynx using a wooden spatula to depress the tongue. Nose swabs are taken from the anterior nares. Moisten the Swab by dipping it into the tube that contains the sterile charcoal. One swab used inside both anterior nares (fleshy-part of the nose). Wire shafted swabs should be used for male urethral and wherever a small cotton tip is required.
- **Per nasal:** - (for whooping cough) swabs are extra-long, wire-shafted.
- **Faeces samples:** - use a faeces container and collect a walnut-sized amount with the spatula provided in the container (blue capped universal). Gloves must always be worn.
- **Sputum samples:** - ask the patient to cough into a sputum container and explain that sputum, NOT saliva, is required. Additional precautions are required for known or suspected pulmonary tuberculosis (see section 4.7).
- **Fluids and pus:** - aspirate with needle and syringe into a sterile universal. Pus samples are preferable to swabs in serious infections. Sterile gloves must be worn.
- **Virus Isolation:** - using the Green Viral Swab, ensure the container is sealed tightly.
- **High vaginal and cervical swabs:** - Specific swabs are available for **Chlamydia** detection from the cervix and urethra which must be used for this purpose. Note also that Chlamydia and N. gonorrhoeae can be detected in urine samples. Guidance is available from the Departments of Genitourinary Medicine for taking swabs from patients who are being investigated for any sexually transmitted infections.

4.5 Specimen Collection and Transport

Transport of Samples by Road

All road transport of samples must be in accordance with current Carriage of Dangerous Goods by Road legislation (ADR) ⁽²⁾. Specimen bags must be placed in an appropriate secondary bag containing absorbent material. This secondary bag must be carried in an approved appropriately labelled transport box.

All vehicles transporting specimens must carry a spillage kit containing disinfectant, protective clothing, absorbent material and a clinical waste bag

Internal Sample Transport

To prevent spillage and to maintain patient confidentiality, specimens transported within the hospital, ie, not by road, **MUST** be carried in the Pathology approved specimen buckets with the lid in place. These buckets are fully labelled according to current legislation and are available in all wards and clinic areas.

Cleaning Transport Containers

All transport containers must be washed weekly in hot soapy water. If contaminated with blood/body fluids, wash and dry, then disinfect with a solution containing 10,000ppm available chlorine, (e.g. Haztabs).

4.6 Specimen Storage

- **Blood samples:** refer to laboratory handbook via Trust website or relevant ICE order comms information for test specific details
- **Urines, faeces and sputum samples, aspirates:** refrigerate within one hour.
- **Swabs:** refrigerate within four hours.
- **Blood cultures:** incubate within one hour.
- **Histology Samples containing Formalin: DO NOT REFRIGERATE**

4.7 Precautions for High Risk Samples

The Approved List of biological agents is produced and regularly updated by the Advisory Committee on Dangerous Pathogens. The classifications in the Approved List assign each biological agent listed to a hazard group according to its level of risk of infection to humans, where Hazard Group 1 agents are not considered to pose a risk to human health and Hazard Group 4 agents present the greatest risk.

Hazard group 4

The main organisms in group 4 are the viruses causing the viral haemorrhagic fevers (VHF) e.g. Ebola and Lassa viruses. Advice from the Consultant Microbiologist or an Infectious Diseases Physician at the Royal Hallamshire Hospital **MUST** be sought before **ANY** specimens are obtained from a patient with suspect viral haemorrhagic fever⁽³⁾.

Please refer to **Trust Policy PAT/IC 32 – Hazard Group 4 Viral Haemorrhagic Fevers**. This policy aims to assist staff working in accident and emergency as well as medical admission units in the hospital, who may assess patients with pyrexia of unknown origin (PUO) following a recent stay in countries where viral haemorrhagic fevers are endemic. Firm diagnosis solely on clinical grounds will be difficult, epidemiology is essential in assessing the feverish returning traveller with a history suggestive of VHF. It provides a brief guide to the assessment of such cases, and aims to provide efficient and timely management for patients, while preventing healthcare workers acquiring or exposing vulnerable patients to the infection.

Hazard Group 3

Group 3 organisms include

- Bacillus anthracis (anthrax)
- Brucella species (brucellosis)
- Chlamydia psittaci (psittacosis)
- Escherichia coli O 157 (E.coli O 157)
- Shigella dysenteriae (dysentery)
- Salmonella typhi and paratyphi (typhoid and para-typhoid)
- Mycobacterium tuberculosis and other mycobacteria (tuberculosis)
- Human immunodeficiency virus (HIV)
- Hepatitis B and C
- Plasmodium falciparum (falciparum malaria)
- Rabies virus
- The prions causing all forms of Transmissible Spongiform Encephalopathies such as Creutzfeldt Jacob Disease
- SARS virus

This list is not exhaustive. The full approved list of biological agents ⁽⁴⁾ can be found at www.hse.gov.uk/pubns/misc208.pdf

All specimens from patients with known or suspected group 3 infections must be designated as **high risk**, with the appropriate label. Precautions may be modified, on the advice of the Infection Control Team, when more information becomes available.

'Danger of Infection' labelling

It is the doctor's responsibility to decide which tests are to be done, provide adequate clinical information on request forms, and ensure that 'danger of infection' stickers are affixed to request forms and containers for all high-risk specimens.

Consent and counselling

Tests for HIV, hepatitis B and hepatitis C must be discussed with patients beforehand and patients must understand and consent to these tests. This must be documented in the notes. A counsellor from the Department of Genitourinary Medicine may be asked to see the patient. This is especially important for HIV testing. Testing without consent must only be done in exceptional circumstances and after discussion with the consultant in charge of the patient's care. The General Medical Council has provided guidance on consent and counselling ⁽⁵⁾.

Routine antenatal screening for blood-borne viruses must follow the guidelines available in the Maternity Department.

Collecting high risk specimens

- **Sputum and other samples in tuberculosis:** - For suspected pulmonary tuberculosis, three sputum samples should be collected, preferably taken on waking. The request form must be marked 'acid-fast bacilli' (AFB) and a 'Danger of Infection' sticker affixed to the form and the container. Gloves must be worn for handling sputum. For investigation of tuberculosis at other body sites, pus or tissue in a sterile universal container or 2 universals full of urine for 3 consecutive days (early morning samples) are required.
- **Creutzfeldt - Jakob disease** – See separate policy "*Variant Creutzfeldt - Jakob disease (vCJD) and transmissible Spongiform Encephalopathy Agents (TSE): minimising The Risks of Transmission (PAT/IC 4)*".
- **Viral Haemorrhagic Fever Samples** - Please refer to Trust Policy PAT/IC 32 – *Hazard Group 4 Viral Haemorrhagic Fevers* for information on assessment and correct management of patient from endemic areas.

5. TRAINING/ SUPPORT

Each staff member is accountable for his or her practice and must always act in such a way as to promote and safeguard the wellbeing and interest of patients. Staff will receive instructions and direction regarding infection prevention and control practice and information from a number of sources:-

- Trust Induction – New staff informed how to access the policy
- Trust Policies and Procedures available on the intranet
- Ward/departmental/line managers
 - Clinical skills Training Package – Venepuncture. Accessed via the Clinical skills Department http://intranet.win2000.doncri.nhs.uk/education_and_development/training_and_development/clinical_skills_Homepage.aspx
- As part of the mandatory infection control education update sessions which can be delivered by a number of formats e.g. face to face and e-learning
- Infection Prevention and Control Educational displays/ posters
- Trust Infection Prevention and Control Team
- Infection Prevention and Control Link Practitioners will be provided with education sessions about the policy at their meetings which will facilitate local training and supervision to take place.
- Pathology Handbook – accessed via the intranet or <http://intranet.win2000.doncri.nhs.uk/Library/Pathology/Laboratory%20Handbook%20-%20Users.pdf>
- Advice is also available from the Doncaster & Bassetlaw Hospitals internet sites.

6. MONITORING COMPLIANCE WITH THE PROCEDURAL DOCUMENT

It is the responsibility of all department heads/professional leads to ensure that the staff they manage adhere to this policy. The Infection Prevention and Control Team will review this policy in the following circumstances:-

- When new guidance is received.
- When newly published evidence demonstrates need for change to current practice.
- Every three years routinely.

Incidents where non-compliance with this policy is noted and are considered an actual or potential risk must be documented on the Datix system.

What is being Monitored	Who will carry out the Monitoring	How often	How Reviewed/ Where Reported to
Compliance with policy	Pathology Management Team– monitored via Datix reports	Daily	Datix reports reviewed on a daily basis by relevant manager. Significant findings reported to IPC team

7. DEFINITIONS

- ADR** Carriage of dangerous goods regulations
AFB Acid Fast Bacilli – Microscopic appearance of M. tuberculosis
IPC Infection Prevention and Control
PUO Pyrexia of unknown origin
TSE Transmissible Spongiform Encephalopathy

vCJD Variant Creutzfeldt-Jakob Disease
VHF Viral Haemorrhagic Fever

8. EQUALITY IMPACT ASSESSMENT

An Equality Impact Assessment (EIA) has been conducted on this procedural document in line with the principles of the Equality Analysis Policy (CORP/EMP 27) and the Fair Treatment For All Policy (CORP/EMP 4).

The purpose of the EIA is to minimise and if possible remove any disproportionate impact on employees on the grounds of race, sex, disability, age, sexual orientation or religious belief. No detriment was identified. (See appendix 2).

9. ASSOCIATED TRUST PROCEDURAL DOCUMENTS

- Hand Hygiene - PAT/IC 5
- Standard Infection Prevention and Control Precautions Policy - PAT/IC 19
- Sharps Injuries Management and other blood or body fluid exposure incidents - PAT/IC 14
- Hazard Group 4 Viral Haemorrhagic Fevers - PAT/IC 32
- vCJD and TSE: Minimising the Risks of Transmission – PAT/IC 4
- Waste Management Policy CORP/HSFS 17
- Specimen and Request Form Labelling – PAT/ T8
- Mental Capacity Act 2005 Policy and Procedure - PAT/PA 19
- Privacy and Dignity Policy - PAT/PA 28
- Equality Analysis Policy – CORP/EMP 27
- Fair Treatment for All Policy – CORP/EMP 4

10. REFERENCES

1. *Biological agents: Managing the Risks in Laboratories and Health Care Premises*. Advisory Committee on Dangerous Pathogens, May 2005
2. *European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) Regulations*, 2013.
3. *The management of Hazard Group 4 viral haemorrhagic fevers and similar human infectious diseases of high consequence*: Advisory Committee on dangerous Pathogens, July 2012.
4. *The Approved List of Biological Agents*. Advisory Committee on Dangerous Pathogens HSE, 2013
5. *Serious Communicable Diseases*. General Medical Council, October 1997. www.gmc-uk.org

APPENDIX 1

SEPSIS SCREEN GUIDANCE

1) AIM

The aim of this sepsis screen guidance is to ensure that relevant clinical specimens for culture and sensitivity testing are obtained prior to antimicrobial administration unless immediate empirical treatment is indicated.

2) CONTEXT

Historically sepsis referred to infection of the blood, as is said to be a life-threatening syndrome characterised by the body's system inflammatory response to infection.

The surviving sepsis campaign has put forward that for patients with severe sepsis, as many as seven bundle elements must be accomplished within the first six hours of presentation, but clinicians must assess for them.

For severe sepsis, the goal must be to perform all indicated tasks 100% of the time.

Under the changes for improvement, it states that blood cultures should be obtained prior to administration of antibiotic. Broadly speaking, this should also encompass full sepsis screen if possible before antibiotic.

3) SIGNS AND SYMPTOMS OF INFECTION

Two or more of the following:

- Temperature $\geq 38^{\circ}\text{c}$ or $\leq 36^{\circ}\text{c}$
- Heart Rate ≥ 90
- Respiratory Rate ≥ 20
- WBC count ≥ 12000 cells/mm³ or ≤ 4000 cell/mm³
- Hyperglycaemic >6 months in the absence of diabetes
- Altered mental state

Surviving Sepsis Campaign 2008

4) MICROBIOLOGICAL INVESTIGATIONS / SAMPLES REQUIRED IN SEPSIS SCREEN:

- **Blood cultures** – when taking blood cultures two sets of blood cultures should be sent. Each set (2 bottles, except for paediatric patients) should be taken from separate venepuncture site if possible. For patients with suspected Central Venous line sepsis send a set (2 bottles) of blood cultures taken from each lumen plus a peripheral blood culture (PBC).

- **Urine Culture** – especially if patient has a positive urine dipstick or if catheterised.
- **CSF** – if meningitis suspected and if there is no contra-indication to perform a lumbar puncture.
- **Sputum** – especially if patient is expectorating and respiratory tract infection suspected.
- **Swabs** – from skin lesions/discharges or ulcers associated with signs of inflammation or cellulitis. Swabs will produce better results if taken from deep sites rather than superficially sloughy areas.
- **Tissues** – are samples usually taken in sterile conditions especially during surgical procedure or investigation.
- **Abscess/Pus** – as above, or via ultra sound scan / CT guide.
- **Serological Investigations** – as discussed with Microbiologist.

Adequate clinical information on the request form is important, this helps in the laboratory processing and reporting of results.

5) CONCLUSION

The rationale for appropriate microbiological investigations before starting antimicrobials, is that when culture and sensitivity results are available, antimicrobials are prescribed according to the microbiology test results or where empirical treatment was initiated, broad-spectrum antibiotics are de-escalated to narrow spectrum agents where possible.

The result obtained will also guide in the duration of treatment based on the virulence factor of the pathogen or extent of disease caused.

6) REFERENCES

- 1) Saving Lives, High Impact Intervention: Antimicrobial Prescribing Care Bundle, Draft for Consultation, Principles by HCAI and Cleanliness Division, DH, 2010
- 2) Royal College of Physicians Healthcare Associated Infection Working Group. Short Guidelines for Optimal Hospital Antimicrobial Prescribing at <http://www.rcplondon.ac.uk>
- 3) Surviving Sepsis Campaign: <http://www.survivesepsis.org>

APPENDIX 2 – EQUALITY IMPACT ASSESSMENT - PART 1 INITIAL SCREENING

Service/Function/Policy/Project/Strategy	CSU/Executive Directorate and Department	Assessor (s)	New or Existing Service or Policy?	Date of Assessment
Pathology Specimens - Collection & Handling of Pathology Specimens	Corporate Nursing, Infection Prevention & Control	Paul Gravil	Existing policy	27.05.2015
1) Who is responsible for this policy? Infection Prevention & Control				
Describe the purpose of the service / function / policy / project/ strategy? To establish the correct procedures for the collection, handling and transport of laboratory samples.				
2) Are there any associated objectives? No				
3) What factors contribute or detract from achieving intended outcomes? None				
4) Does the policy have an impact in terms of age, race, disability, gender, gender reassignment, sexual orientation, marriage/civil partnership, maternity/pregnancy and religion/belief? No				
• If yes, please describe current or planned activities to address the impact N/A				
5) Is there any scope for new measures which would promote equality? N/A				
6) Are any of the following groups adversely affected by the policy?				
Protected Characteristics	Affected?	Impact		
a) Age	No	Neutral		
b) Disability	No	Neutral		
c) Gender	No	Neutral		
d) Gender Reassignment	No	Neutral		
e) Marriage/Civil Partnership	No	Neutral		
f) Maternity/Pregnancy	No	Neutral		
g) Race	No	Neutral		
h) Religion/Belief	No	Neutral		
i) Sexual Orientation	No	Neutral		
7) Provide the Equality Rating of the service / function /policy / project / strategy – tick (✓) outcome box				
Outcome 1 ✓	Outcome 2	Outcome 3	Outcome 4	
<i>*If you have rated the policy as having an outcome of 2, 3 or 4, it is necessary to carry out a detailed assessment and complete a Detailed Equality Analysis form in Appendix 4</i>				
Date for next review: March 2018				
Checked by: Paul Gravil		Date: 27.05.2015		