Storage of Clinical Specimens in Primary / Secondary Care

Introduction

Usual practice within the community is that clinical samples would be delivered to a GP collection point within 2 hours of collection, and subsequently delivered to the laboratories on the same day.

As this is not always possible, (e.g. in GP Practice if samples are taken late in the afternoon) it is important to realise which samples can be safely refrigerated overnight if that day's collection is missed. Additionally, it is important that when samples are transported from GP practices to the laboratory they are kept within an acceptable temperature range. Samples transported by the GP transport service are placed in insulated bags within the vans to avoid extremes of temperature. The Pre-analytics section of the laboratory performs an audit of van temperatures. This is done by placing several data-loggers capable of recording the temperature every few minutes throughout the day on a selection of vans. The data recorded can then be downloaded to a PC to be included in an audit report.

The following guidelines serve as a refresher/reminder of good practice for each discipline. The storage times given relate to sample integrity and will not give the best turn-around time.

Immunology

GP surgeries should be encouraged to ensure all of their samples are sent to the laboratory on the day of collection. On the rare occasions that this is not possible overnight storage in a fridge at 4c prior to sending to the laboratory will not have a detrimental effect for most tests. The main exceptions that are likely to be requested from primary care are complement assays [CH50, AP50, C1 inhibitor etc.]. These samples must be centrifuged and separated within two hours of being taken and then must be kept frozen.

Clinical Chemistry

All Clinical Chemistry samples start to deteriorate immediately following collection. It can never be suggested that it is satisfactory to store samples in the fridge overnight, especially if they have not been centrifuged. GP surgeries should be encouraged to ensure all of their samples are sent to the laboratory on the day of collection.

Histopathology

All GP samples are fixed, so there is no need for refrigeration.

Cytology

All GP samples are fixed, so there is no need for refrigeration.

Coagulation

Most coagulation laboratory tests are adversely affected by storage in refrigerators. Samples for INR, APTT or clotting screens are particularly badly affected with clinically important changes occurring within a few hours usually within six hours. This means that citrated tubes for tests of blood clotting must not be stored overnight at any temperature. Any sample which cannot be despatched to arrive on the same day should be discarded. The main exceptions that may be requested from primary care are testing for lupus anticoagulant where samples must be double centrifuged, separated and frozen within four hours of being taken. Samples for homocysteine level where in order to avoid falsely raised level require the laboratory to

separate plasma from the cells within one hour of venepuncture. **Please contact the laboratory, or consult the Laboratory Handbook for details about specific assays.**

Haematology

FBCs can be stored overnight in the refrigerator but it may be difficult to comment on the blood film if one is indicated by the FBC and the RBC indices used for Haemoglobinopathy diagnosis may be compromised.

On the rare occasion that a plasma viscosity is requested on the FBC sample, this should be sent on the day of taking as the viscosity result is not viable on a sample that has been refrigerated.

Requests for malarial parasites should always be sent urgently, for testing within 4 hours.

SAMPLE	RECOMMENDED STORAGE TEMPERATURE	COMMENTS
FBC	4°C	Less than 24 hours. Differential and some RBC parameters may / will be compromised
ESR	4°C	Ideally test same day If ESRs are stored at 4 degrees they can be tested the next day
Plasma viscosity	Room Temperature	Test within 3 days or up to 7 days if separated plasma
HbA1c	4°C	Ideally less than 24 hours
Sickle Cell / Haemoglobinopathy screen	4°C	Ideally less than 24 hours (unless pre-op in which case overnight)
Infectious Mononucleosis	4°C	Ideally less than 24 hours
Malaria	4°C	Urgent request recommended
Blood Group & Save	4°C	Less than 24 hours
Lymphocyte Subsets (CD4 count)	Room Temperature	Ideally within 24 hours
Cell Markers (Leukaemia/Lymphoma)	Room Temperature	Urgent if Acute. If Chronic ideally within 24 hours
PNH	4°C	Less than 24 hours

Microbiology

Samples should be sent to the laboratory for processing as soon as possible after collection.

Samples that are urgent or unrepeatable samples (e.g. if antibiotics are to be started) collected during Friday or Saturday morning surgeries should be brought up to the hospital, rather than being held over the weekend, if possible.

It is recommended that, wherever possible, samples for bacteriological culture are stored at +4˚C. Acceptable storage temperatures and times are given below:

Sample type	Container	Acceptable storage temperature	Comments
Wound swabs, URT swabs, genital swabs etc for culture	Charcoal transport media	Up to 24 hours at room temperature from sample collection to testing	When culture for gonorrhoea is required deliver sample to lab on the day of collection.
Lower respiratory tract samples for culture	Plain 60ml jar	Up to 24 hours at room temperature from sample collection to testing	
Faeces for culture	Blue top universal with spoon	Up to 24 hours at room temperature from sample collection to testing	
Urine for culture	Boric acid (red top) Z10	Up to 24 hours at room temperature from sample collection to testing	
Urine for culture	Plain (white top) Z10	Up to 4 hours at room temperature from collection to testing	Although not optimal, samples can be stored at room temperature for 24 hours from collection to testing
Biopsies and aspirated fluids e.g. joints, ascites etc. for culture	Plain (white top) universal	Up to 24 hours at room temperature from sample collection to testing	
CSF	Plain (white top) universal	Immediate delivery to laboratory	
Blood culture	Blood culture bottles	Immediate delivery to laboratory	
Virology samples for Nuclease Amplification Test (NAT)	Virocult Swab (green top)	Up to one week at room temperature	
Virology samples for Nuclease Amplification Test (NAT)	Urine, Fluids, CSF, NPA, BAL etc (White top) Faeces (Blue top)	Up to 2 days at room temperature	
Serology	Blood	Up to 2 days at room temperature	Refrigerate if delays of greater than 48 hours expected
Chlamydia detection	Aptima collection devices	Up to one week at room temperature	
Viral load	EDTA blood, Clotted blood, CSF,	Up to 24 hours at ambient from collection to testing	Optimally to be processed within 6 hours.

Any sample received exceeding the 'Acceptable Storage Temperature' stated above, will have the appropriate warning added to the report issued.

Please contact the laboratory, or consult the Laboratory Handbook for advice about other sample types.