

HANDBOOK OF LABORATORY SERVICES

DISEASE SECTION



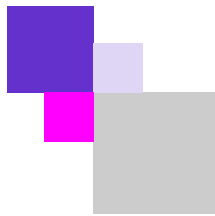
IPOH PUBLIC HEALTH LABORATORY

2025

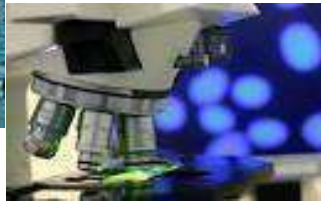


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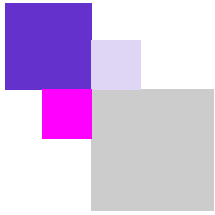
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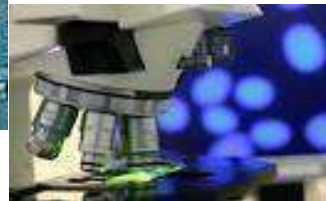
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OBJECTIVES



VISION & MISSION

OBJECTIVES OF THE MINISTRY OF HEALTH

To assist an individual in achieving and sustaining as well as maintaining a certain level of health status and to further facilitate them in leading a productive lifestyle-economically and socially. This could be materialized by introducing or providing promotional and preventive approaches, other than an efficient treatment and rehabilitation services, which is suitable and effective, whilst priorities are given to the less fortunate groups.

VISION

A nation working together for better health.

MISSION

The mission of the Ministry of Health is to lead and work in partnership:

I. To facilitate and support the people to:

- Attain fully their potential in health
- Appreciate health as a valuable asset
- Take individual responsibility and positive action for their health

II. To ensure a high quality health system that is:

- Customer centered
- Equitable
- Affordable
- Efficient
- Technologically appropriate
- Environmentally adaptable
- Innovative

III. With emphasis on:

- Professionalism, caring and team work value
- Respect for human dignity
- Community participation

OBJECTIVES OF THE DISEASE SECTION OF IPOH PUBLIC HEALTH LABORATORY

- **GENERAL OBJECTIVE**

The objective of the Disease Section, Ipoh Public Health Laboratory is to provide laboratory services as a component of the surveillance and monitoring of diseases.

- **SPECIFIC OBJECTIVES**

1. Provide laboratory services for the investigation of infectious disease outbreaks.
2. Provide laboratory services in the process of monitoring and surveillance of all public health related diseases.
3. Provide training and human resource development in the technical aspects of the laboratory.
4. Provide laboratory services for all research and development activities related to public health.

1.0 INTRODUCTION

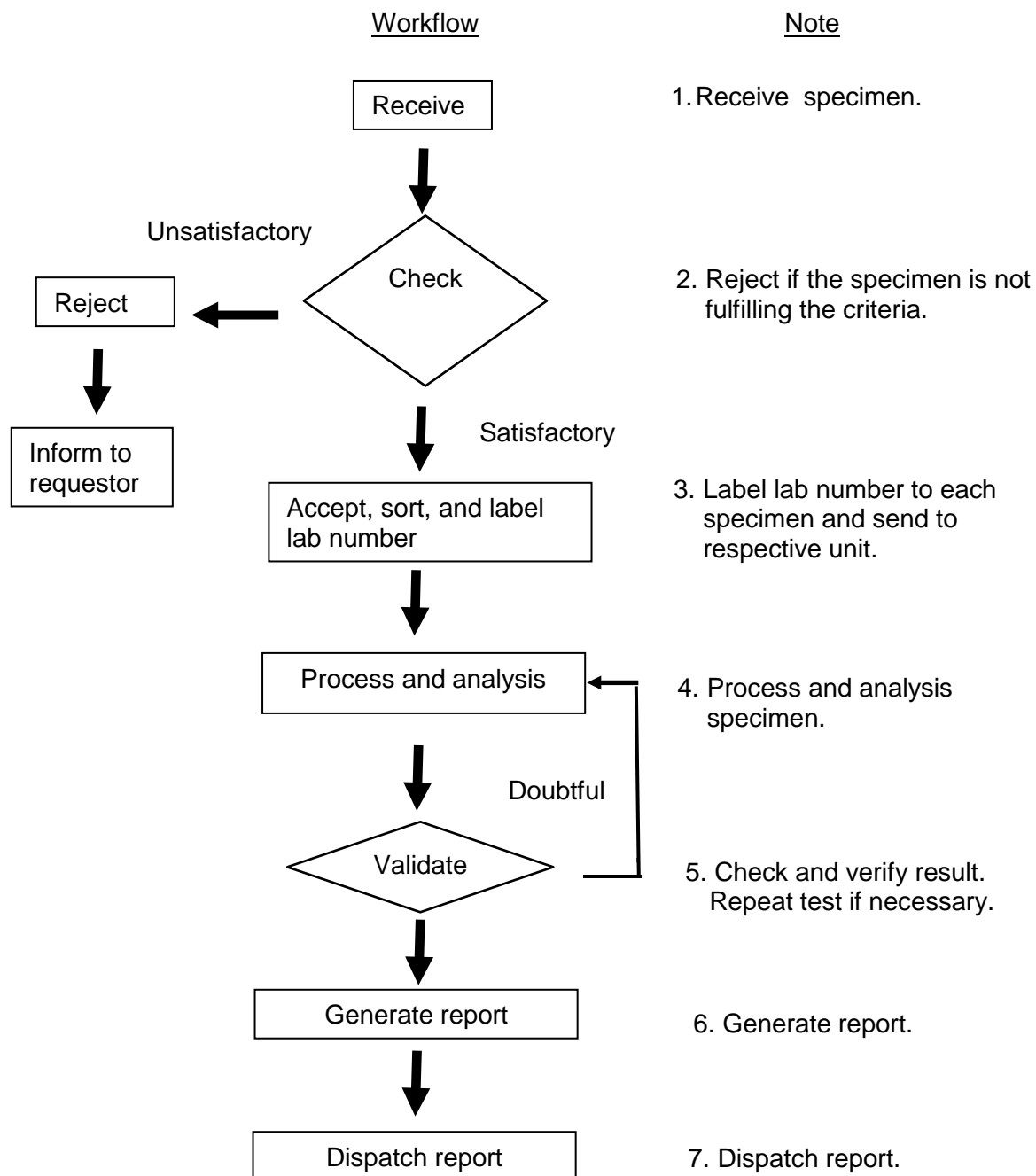
Disease Section of the Ipoh Public Health Laboratory (IPHL) comprises of Tuberculosis Unit, Bacteriology Unit, Serology/Virology Unit, Molecular Biology Unit, Parasitology Unit and Biochemistry Unit. Ipoh Public Health Laboratory (IPHL) started operation in November 1998 and over the years various new tests have been introduced.

Laboratory investigation services offered under the Disease Section of IPHL covers all health clinics, Districts Health Offices and hospitals throughout the state of Perak, Perlis, Kedah and Pulau Pinang. Disease Section is also actively involved in providing training and continuous education for Departments under Ministry of Health Malaysia such as Perak Health Department, hospitals and Districts Health Offices as well as involved in health programs organized by external parties.

The objectives of this Laboratory Handbook are to promote services offered by IPHL and to provide useful information of the services such as list of tests available, patient preparation, sample preparation and collection, and a list of the relevant telephone numbers.

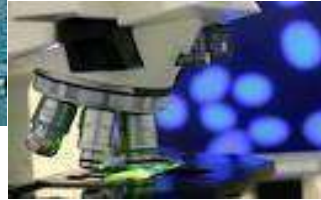
It is hoped that this Laboratory Handbook will enable the laboratory users to utilize the services wisely.

General workflow for handling of specimen in Disease Section, Ipoh Public Health Laboratory





LABORATORY SERVICE

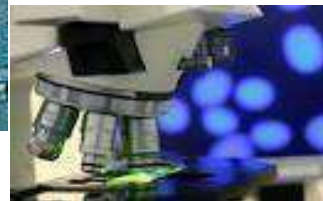
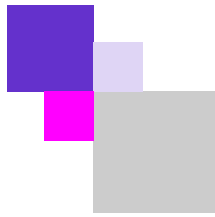


2.0 LABORATORY SERVICES

- √ Provide fast, efficient, accurate, reliable laboratory analysis services that meet the clients' standards and requirements.
- √ Provide efficient counter services and customer-friendly.
- √ Be prepared to receive samples for analysis during outbreaks and crisis.
- √ Provide administrative management services professionally.
- √ Laboratory Turn Around Time (Disease section) as below:

TESTS	LABORATORY TURN AROUND TIME (LTAT)
<u>Biochemistry Tests</u> i) Routine Biochemistry ii) Cholinesterase (surveillance) iii) Urine IDD iv) Adenosine Deaminase (ADA)	1-3 working days 7 working days 25 working days 4 working days
<u>Serology / Virology Tests</u> i) Surveillance ii) Outbreak	7 days 1-3 days
<u>Molecular Biology Tests</u> i) Surveillance ii) Outbreak iii) Diagnostic iv) Sequencing / WGS	7 working days 1-3 days 3-5 working days 7-14 working days
<u>Bacteriology Tests</u> i) <i>Salmonella</i> Serotyping Tests ii) <i>E. coli</i> Serotyping Tests iii) Culture & Sensitivity Tests iv) Microscopic Agglutination Test (<i>Leptospira</i>) MAT v) Detection of <i>Leptospira</i> in environmental water/ soil vi) Detection of Pathogenic <i>Leptospira</i> in clinical samples (PCR) vii) Detection of <i>Burkholderia pseudomallei</i> in environmental water/ soil viii) Detection of <i>Bordetella pertussis</i> in clinical samples ix) Environmental <i>Legionella</i> Culture	14 working days 14 working days 3-7 days 10 working days 21 working days 7 working days 14 working days 48 hours 14 working days
<u>Tuberculosis Tests</u> i) <i>Mycobacterium tuberculosis</i> Culture Tests ii) Identification Tests (ID) iii) MTB Sensitivity Tests (DST) iv) TB PCR v) MDR-TB Investigation vi) IGRA (Interferon Gamma Release Assay) vii) GeneXpert MTB/RIF	8 weeks 5 days from the date of positive culture 35 days from the date of ID positive 7 working days 7 working days 3-21 working days 24 Hours (working days)
<u>Parasitology Tests</u> qPCR Malaria	3-7 working days

LOCATION & CONTACTS



3.0 OPERATING HOURS

Office hours

Monday to Friday: 8.00am to 5.00pm
Outbreak Service Hours (24-hour service)

*Please visit our web site at <https://jknperak.moh.gov.my/mkai/v2/>
(Jadual On-Call>Download) for the current on-call personnel in-charge.

Customers should inform the on-call personnel prior sending the samples by calling.

4.0 LOCATION AND CONTACT DETAILS

Address : Makmal Kesihatan Awam Ipoh,
Kementerian Kesihatan Malaysia,
Jalan Jelapang,
30020, Ipoh,
Perak Darul Ridzuan.

Phone : 05-5287829/30/32/33/34

Email : mkai@moh.gov.my

Website : <https://jknperak.moh.gov.my/mkai/v2/>

4.1 Laboratories in Disease Section of Ipoh PHL:

UNIT	EXTENSION
Tuberculosis	2027 / 2028 / 2029 / 2043
Serology/ Virology	2023
Bacteriology	2019
Biochemistry	2031
Molecular Biology / Genome Sequencing & Bioinformatics	2034 / 2024
Parasitology	3023 / 3024

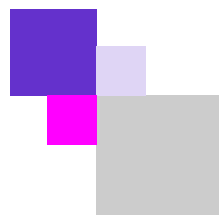
5.0 COMMENTS, COMPLIMENTS & COMPLAINTS

The Ipoh Public Health Laboratory is committed to offer high quality services that meet and respond to the needs of all service users.

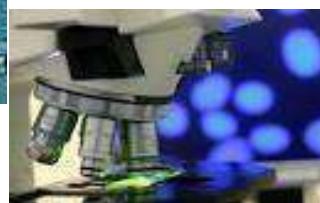
Please contact at this phone number 05-5287829/30/32/33/34 or scan the QR provided on page 50 if you have any complaints regarding to our laboratory services.

5.1 List of Officers in Disease Section of Ipoh PHL:

UNIT	NAME	POSITION	EXT.	EMAIL
Disease	Dr Julina binti Abdul Aziz	Clinical Microbiologist UD14	1005	julina.abdaziz@moh.gov.my
HEAD OF DISEASE SECTION	Farah Wahida binti Zainal Abidin	Scientific Officer (Microbiology) C13	2026	farahwahidaza@moh.gov.my
HEAD OF UNIT Tuberculosis/ Bacteriology/ Parasitology	-	-	-	-
Tuberculosis	Sakthivel a/l Narainsamy	Scientific Officer (Microbiology) C10	2017	sakthivel@moh.gov.my
	Hema Nair a/p Manian	Scientific Officer (Microbiology) C10	2039	hema_nair@moh.gov.my
Bacteriology	Tan Teik Pei	Scientific Officer (Microbiology) C10	2032	tanteikpei@moh.gov.my
Parasitology	Nazratul Shiha binti Mat Isa	Scientific Officer (Microbiology) C10	2033	nshiha@moh.gov.my
HEAD OF UNIT Biochemistry	Kam Boon Lai	Scientific Officer (Biochemistry) C12	2018	blkam@moh.gov.my
Biochemistry	Nurul Aishah binti Muhammad	Scientific Officer (Biochemistry) C9	2038	nurul.aishah@moh.gov.my
HEAD OF UNIT Molecular Biology/ Serology/ Virology	Muhammad Hasyim Chew bin Abdullah	Scientific Officer (Microbiology) C12	1017	hasyim77@moh.gov.my
Molecular Biology	Hetty Nadia binti Muhamad Nazir	Scientific Officer (Microbiology) C10	2038	hetty.nadia@moh.gov.my
Molecular Biology	Noor Humairah binti Shahidan	Scientific Officer (Microbiology) C9	2020	humairah.shahidan@moh.gov.my
Molecular Biology	Lingeswari a/p K Somasundram	Scientific Officer (Microbiology) C9	2020	lingeswari.ks@moh.gov.my
Molecular Biology	Afeeq bin Azlee	Scientific Officer (Microbiology) C9	2020	afeeq.azlee@moh.gov.my
Serology/ Virology	Nur Diyana binti Mastor	Scientific Officer (Microbiology) C10	2017	nur.diyana@moh.gov.my
Serology/ Virology	Yusnita Alwia binti Yusof	Scientific Officer (Microbiology) C9	2038	yusnitaalwia@moh.gov.my



GENERAL OPERATING POLICIES



6.0 REQUEST FORM

Ipoh Public Health Laboratory (IPHL) provides request form to be completed out for all specimens. The requestor has to complete it all the information needed by the laboratory for processing specimen correctly. All patient's personal information is treated with the strictest confidentiality.

There is different request form available for;

- a. Primary Health Care
- b. Regional and National laboratory

The following information is essential for sample processing;

a. Patient's detail:

Name, identity card (IC), gender, age, date of birth and patient registration number

b. Patient location:

Hospital ward, clinic, District Health office and place of occurrence

c. Patient clinical summary:

Clinical manifestation, clinical diagnosis and day onset fever

d. Test request:

Request must specify the test required

e. Specimen:

Specify type of specimen

f. Collection date and time:

To determine time interval between collection and receipt/processing of the specimen

g. Requestor and contact details:

Name, signature, email, phone number, and official stamp

7.0 SPECIMEN RECEIVING

All specimens submitted to the laboratory for testing must be in satisfactory condition and properly labeled with adequate information that ensures the specimen is traceable to the patient and the accompanying request form. The following specimen labeling information shall be included;

- Patient's name
- Patient's ID - Identity Card (IC)
- Date of collection
- Type of Specimen

Request forms shall be clearly and completely filled.

Unsatisfactory specimens that will compromise the quality of test results or create a safety hazard will not be processed, with the exception of highly clinical critical specimen.

The unsatisfactory comment will be recorded in the final report for interpreting the result.

7.1 Specimen Rejection Criteria

The following common criteria are unacceptable for testing:

a. Test Request Form

- Request form was not included with the specimen
- No patient's name / IC number / RN
- Patient's name / IC number / RN on the request form differs from the specimen
- No requestor address
- Test request is not specified
- No date or time of specimen collection
- Request form was damaged / contaminated due to leaked specimen
- The form is torn, and the information is unclear
- No signature and stamp from requestor
- Incomplete information
- Incorrect form

b. Specimen

- Specimen was not included with request form
- Specimen spilled / leaking / broken
- Incorrect specimen container
- Specimen is unsuitable for analysis
- Specimen is insufficient for analysis
- Blood clotted / hemolyzed due to ratio specimen with anticoagulant / incorrect media
- Patient's name / IC number / RN on the specimen differs from the request form
- The information on the specimen is illegible
- Specimen was contaminated due to spill from another specimen
- Specimen delivery temperature is unsuitable
- No label / patient information on specimen

c. Others

- Test was not offered
- Incorrect specimen delivery method
- Specimen collection time exceeds the acceptable period for testing
- Outsourced to another laboratory
- Clear swab
- Not a sentinel specimen

7.2 Procedure for Rejection of Specimen

The laboratory procedure for rejection is as follows:

- a. The laboratory staff will fill up the rejection form.
- b. The laboratory staff will inform to requestor about the reason of rejection.
- c. Record the date and time of rejection and requestor name.
- d. Rejected sample will be stored in chiller at 2-8°C (**if the rejection is because of the request form**).
- e. Client will be contacted to send a new request form within 24 hours.
- f. If laboratory did not receive the new request form within 24 hours, the specimen will be discarded.

7.3 Transport of Specimen

All specimens must be treated as hazardous and should be dispatched to the laboratory as soon as possible after collection.

Note: Flow Chart and Guideline of Specimen Transportation to **Ipoh Public Health Laboratory**. Please refer **Appendix 1**.

7.4 Verbal Add-on Request

Verbal add-on test request can be done within 24 hours provided there is adequate volume and stability of the primary sample has been maintained.

7.5 Urgent Request Test

An urgent request is when the client requires the result of routine test as soon as possible and the result is critical for the immediate management of the patient. The test is performed promptly and the results are given as soon as the test completed.

Procedure:

- 7.5.1 Client must discuss with the laboratory concerned verbally before sending the urgent request.
- 7.5.2 All urgent requests must be followed by the request form.
- 7.5.3 The request form should indicate clearly as 'URGENT' (stamped/in writing). The specimen will be processed as soon as possible.
- 7.5.4 Results will be informed to the client as soon as possible depending on the test method.

7.6 Reporting of Result

- 7.6.1 All examination results are treated with the strictest confidentiality. The reports are available via:
 - a. Web-based system for the authorized user (SIMKA)
 - b. Hard copies
 - c. By telephone for urgent test result
- 7.6.2 Any deviation (e.g. Change of test method) that could impact on the examination result will be informed to the requestor.
- 7.6.3 Any reference to referral laboratory or consultant will be notified.

7.7 Revised Result



Revised result is a result that has been amended and will be informed immediately to the requestor by phone. The time and date of amended results will be indicated on the report

7.8 Examination Delay

In the event of examination delay (>TAT), requestors will be notified by verbal/electronic communication. Hard copy of notification will be dispatched if extended delay is expected.

8.0 SPECIMEN COLLECTION CONTAINER

List of specimen collection container provided in Ipoh Public Health Laboratory:

Images of container	Specimen	Container	Test	Volume	Laboratory used
	Rectal swab	Cary Blair	Culture & Sensitivity	NA	Sent the sample in room temperature.
	Throat swab, rectal swab, etc.	Viral Transport Media (VTM)	PCR	3ml	Please use Dacron swab for sample collection. Avoid using cotton swabs as they could interfere with the PCR test.

Note: Please contact the laboratory for requesting the specimen container.

8.1 General Specimen Collection and Handling Guidelines

Several essential steps are required for a successful sample collection:

- a. Identify the patient.
- b. Complete the request form, including requested tests, patient information, and clinical summary.
- c. The clinical specimen must be material from the actual infection site and collected aseptically.
- d. Label the collection container properly and placed it into a biohazard plastic bag.
- e. Collect the sample in the appropriate specimen container with the necessary volume and with appropriate mixing if required.
- f. Close the container tightly and seal with parafilm if necessary to avoid leakage during transportation.
- g. The specimen must be transported in cold chain at 4-8°C.
- h. Promptly send the specimens with the request form to the laboratory.

8.2 Laboratory Request Form

Complete the test request form as described in section 6.0 on page 8.

8.3 Specimen Collection

The specimen should be collected properly to avoid the poor outcome of the laboratory results. Improper collection of the specimen may lead to:

- Delays in reporting test results
- Unnecessary re-draws or re-tests
- Incorrect diagnosis / treatment

8.4 Specimen Labeling

Please ensure that samples are properly labeled with adequate information that ensures the specimen is traceable to the patient and accompanying request form. The information labeling should include:

- Patient's name
- Patient's ID – Identity Card (IC)
- Date of the collection
- Type of specimen





8.5 Specimen Handling

- Urgent request specimen is indicated as “**URGENT**” on the request form.
- All specimens must be treated as hazardous.

9.0 BLOOD SPECIMEN COLLECTION

9.1 Blood Collection Tube

The following directory identifies the blood collection tubes with color-coding tube tops for a sampling of different types of tests:

BLOOD COLLECTION TUBES	TUBE STOPPER COLOR	
Serum Separating Gel Tube	Yellow/Gold	
NaF/NaEDTA/ Potassium Oxalate Tubes	Grey	
EDTA Tubes	Lavender	
QuantiFERON tubes	Grey - Nil Green - TB1 Yellow - TB2 Purple - Mitogen	

9.2 Order of Draw for Multiple Tube Collections

Blood must be drawn in a specific order to avoid cross-contamination of additive between tubes. Clinical and Laboratory Standard Institute (CLSI) recommends the order as follow:

- First : Blood Culture Tube
 Second : Coagulation Tube (Light Blue)
 Third : Plain (Red top) or SSTII clot activator, gel separator tubes (Gold/Yellow top)
 Fourth : Additive Tube in the order
- Heparin (Green top)
 - EDTA (Lavender top)
 - Oxalate/Fluoride (Grey top)

Needle for transferring blood from one tube to another tube should not be in contact with the additive or anticoagulant inside the tube. Blood taken must be adequate and able to fill into the designated level of the tube. This ensures proper mixing of the blood with the anticoagulant.

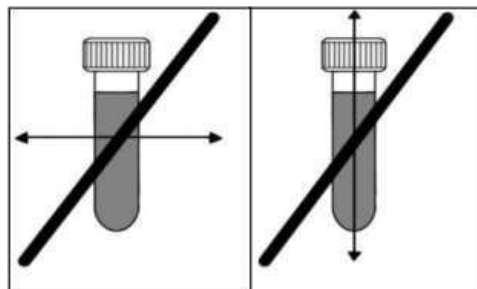
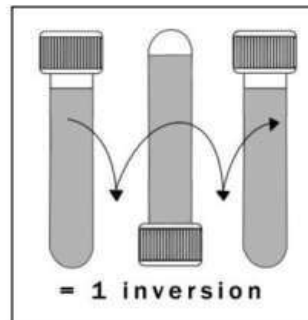
All additive tubes should be filled to their stated volumes and gently inverted as soon as possible after filling so that the additives mix evenly throughout the specimen.

9.3 Tube Mixing (Inversions)

9.3.1 Recommended Mixing Technique

Immediately after drawing, hold the tube upright, gently invert 180° and back with the recommended number of inversion times.

Do not vigorously shake the tubes.



Rocking, shaking and jiggling of tube are not acceptable. This could cause sample to be lysed (breaking of red blood cells).

9.4 Serum

- a. Draw 3-5ml blood into a plain tube with/without gel (No anticoagulants or preservatives).
- b. Allow to clot at ambient temperature for a minimum of 30 minutes.
- c. Centrifuge at 3000 ~ 3,800 rpm for 10 ~ 15 minutes.
- d. Aliquot the serum into another transfer tube when using a tube without gel.
- e. For a tube with gel, please send the original tube.
- f. If using transfer tube, seal the tube with parafilm prior to transportation (optional).

9.5 Blood Collection Problem

Problems	Common Causes	Consequences
Hemolysis	<ul style="list-style-type: none"> • Forcing blood sample through a needle into the tube • Air leakage around the needle or loss of vacuum in the tube • Removing the needle from the vein with the tube still engaged. • Vigorous mixing of tube and frothing of sample • Drawing blood from a hematoma • Drawing plunger back too forcefully in the syringe • Probing a traumatic venipuncture • The long delay in specimen transit • Long exposure to heat 	<ul style="list-style-type: none"> • Erroneous results • Interferences in colorimetric assays • Activates clotting factors • Red cell parameters altered in FBC • Falsely elevated potassium, magnesium and calcium levels
Clot in anticoagulated blood	<ul style="list-style-type: none"> • Difficult venipuncture • Specimens not mixed well 	<ul style="list-style-type: none"> • Inaccurate coagulation results • False results for assays requiring whole blood specimens
Lipemic Specimens	<ul style="list-style-type: none"> • Specimen took immediately after fatty meals • Patients with hypertriglyceridemia 	<ul style="list-style-type: none"> • Optical interference with many assays • Low sodium • Elevated hemoglobin

10.0 NON - BLOOD SPECIMEN COLLECTION

10.1 Respiratory Specimen

10.1.1 Throat swab

- a. Use polyester/cotton swab (for C&S) or Dacron (for PCR).
- b. Depress the tongue with a tongue depressor.
- c. Swab the inflamed area of the throat, pharynx or tonsils with a sterile swab taking care to collect the pus or piece of membrane. Avoid touching the cheeks, tongue, uvula or lips.
- d. Place the swab for Bacteriology testing in Amies transport medium (with or without charcoal).
- e. Place the swab for Virology testing in Viral Transport Media (VTM).

10.1.2 Nasopharyngeal Swab

- a. Use polyester/cotton swab (for C&S) or Dacron (for PCR).
- b. Hold back the patient's head slightly and insert the swab straight into the nostril.
- c. Insert the swab to least 5-6cm in length (for adults) to ensure that it reaches the posterior pharynx.
- d. Leave the swab in place for few seconds, rotate and withdraw slowly.
- e. Repeat the same procedure on the other nostril using new swab.
- f. For Bacteriology Culture and Sensitivity testing, place the swab in Amies transport medium with charcoal or without charcoal. The sample shall be transported at ambient temperature.
- g. For *Bordetella pertussis* Genome Detection testing, place swab in a sterile container with sterile saline or Amies Transport Medium (without charcoal). The sample shall be transported at 4-8°C.
- h. Place swab in Viral Transport Media (VTM) for Virology testing. The sample shall be transported at 4-8°C.

10.1.3 Nasopharyngeal Aspirates (NPA)/Nasopharyngeal Secretion

- a. Insert a small catheter through the nares to the back of the nose.
- b. Gently suction as the catheter is withdrawn slowly.
- c. Collect in the sterile screw-capped container.
- d. Ensure that the container is sealed securely to prevent leakage.
- e. The sample shall be transported at 4-8°C (for both Bacteriology and Virology testing).

10.1.4 Sputum

- a. Collect the sputum early in the morning.
- b. Use a wide-mouthed container for collection.
- c. Instruct the patient to inhale deeply 2-3 times, cough up deeply from the chest and spit the sputum into the container by bringing it closer to the mouth.
- d. Make sure the sputum sample is of good quality (2-3ml of thick and purulentsputum).

10.2 Body Fluids

10.2.1 Collect the specimen (pleural, pericardial, peritoneal, synovial, amniotic fluid, etc.) according to the Clinical Practice Guidelines (CPG) and transfer 2 to 5ml specimen into a sterile screw-capped container.

10.2.2 Cerebrospinal Fluid (CSF)

- a. Collect CSF before antimicrobial therapy is started.
- b. Collect 1-3ml in sterile screw-capped container (Bijou bottle or Cryovial).
- c. Do not use urine container.

10.3 Urine

10.3.1 Midstream Urine

10.3.1.1 Adult Male

- a. Give the patient a sterile urine container.
- b. Instruct the patient to wash hands with soap and water before collection of urine specimen.
- c. Cleanse the glands penis with soapy water and rinse with water.
- d. Pass the few millimeters of urine to flush out the bacteria from the urethra, and then collect the mid-stream urine (MSU) in sterile urine container.

10.3.1.2 Adult Female

- a. Give the patient a sterile urine container.
- b. Instruct the patient to wash hands with soap and water before collection of urine specimen.
- c. Cleanse the area around the urethral opening with clean water, dry the area, and collect the urine with the labia held apart.
- d. Discard the first portion of the stream and collect MSU in sterile urine container (without preservative).

10.3.1.3 Infant and young children

- a. Instruct the child to drink water.
- b. Clean the external genitalia.
- c. Encourage the child to urinate and collect the MSU in sterile urine container.
 - * Urine collection bag can be used to collect urine.
 - * If is not possible to send the urine specimen to Ipoh PHL within 2-4 hours, boric acid must be added, except for virology testing.

10.4 Stool/Rectal Swab

- a. Collect bean size of stool into stool screw-capped container.
- b. Collect rectal swab if fresh stool collection is not possible. Ensure that the swab shows some fecal staining.
- c. Place the swab for Bacteriology testing in Cary Blair transport medium.
- d. Place the swab for Virology testing in Viral Transport Media (VTM).

10.5 Eye/Ear/Genital/Pus Swab

10.5.1 Eye swab

- a. Clean skin around the eye using a sterile moistened swab to remove pus and discharge.
- b. Use a separate swab for each eye for specimen collection.
- c. Place the swab for Bacteriology testing in Amies transport medium (with or without charcoal).
- d. Place the swab for Virology testing in Viral Transport Media (VTM).

10.5.2 Ear Swab

- a. Do not apply any antibiotic drops 3 hours prior to specimen collection.
- b. Swab the external ear canal by using a sterile swab.
- c. Place the swab for Bacteriology testing in Amies transport medium (with or without charcoal).
- d. Place the swab for Virology testing in Viral Transport Media (VTM).

10.5.3 Urethral Discharge Swab for Sexually Transmitted Infection (Male)

- a. Clean the foreskin of the penis using sterile moistened swab.
- b. Collect the exudates with a sterile swab and inoculate into the Amies transport medium with/without charcoal or Stuart transport medium.
- c. If a discharge cannot be obtained, use a sterile swab to collect material from about 2cm inside the urethra.

10.5.4 Pus/Pus Swab

- a. Clean the skin around the specimen collection area using a sterile swab.
- b. Collect pus in sterile screw-capped container or if minimal pus is available, use a sterile swab.
- c. Place the swab in Amies transport media with/without charcoal or Stuart Transport Media.

10.6 Skin Biopsy/Lesions/Vesicle Swabs

10.6.1 Skin lesions/Vesicle swab

- a. Examine the body part and choose the largest vesicle (representative lesion).
- b. Clean the area around the lesion gently with a normal saline-soaked cotton swab.
- c. Rupture the vesicle carefully with a hypodermic needle.
- d. Swab the vesicular fluid from the ruptured vesicle quickly or use the swab to squeeze out the vesicular fluid.
- e. Place the swab in VTM.
- f. Send the specimen to the laboratory as soon as possible.

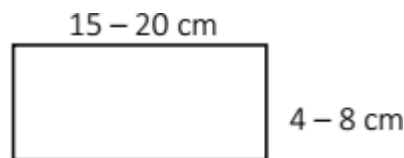
11.0 ENVIRONMENTAL AND NON-CLINICAL SPECIMEN

11.1 Untreated Water Sampling for *Leptospira*

- a. Select appropriate water sampling areas, such as:
 - i. Bodies of water such as lakes/ wells/ rivers/ waterfalls etc.
 - ii. Water in a shaded area.
 - iii. Water in an area with the presence of animals (i.e. paw print marks).
 - iv. Water in between stones or cracks on the stone.
 - v. Water samples were taken one foot below the water surface.
- b. Record temperature and pH (compulsory) in the test request form.
- c. Sterilize the collection bucket/pail by pouring 70% alcohol. Let it dry.
- d. Lower the bucket into the river/ well/ pond/ lake and ensure that the connecting rope/string does not touch the inner part of the bucket.
- e. Draw up a bucket with caution when it is full.
- f. Fill 100 ml (minimum) of the collected untreated water into sterile universal samples bag (e.g. Whirl-Pak bags).
- g. Label accordingly and put it into the cooler box following a vertical arrangement.
- h. Wash the bucket with clean water after use, sterilize with 70% ethanol and dry it.
- i. Repeat procedures for sampling in other areas.

11.2 Soil Sampling for *Leptospira*

- a. Select the land area for sampling with a distance of fewer than 5 meters from a river/pond/ lake.
- b. The appropriate soil sampling areas are
 - i. Wetland area soil.
 - ii. Shaded area soil.
 - iii. The soil in an area with the presence of animals (i.e.: paw print marks).
- c. Sterilize the respective tools by pouring 70% alcohol. Let it dry.
- d. A soil sample size of 15 – 20 cm X 4 – 8cm should be taken in the area after all the loose surface materials are removed.



- e. Place 100 g (minimum) of soil into a sterile universal sample bag (e.g. Whirl-Pak).
- f. Record temperature and pH in the test request form.

11.3 Water Sampling for *Legionella*

- a. Collect water from a central air conditioning cooling tower or other similar types of water sources.
- b. Water samples must be collected before dosing with a biocide.
- c. If dosing has been carried out, take water samples at least 3 days after the dosing.
- d. Ensure that the central air conditioning system is operating and water from the cooling tower is circulated through the system for at least one hour before the collection of samples.
- e. Do not collect samples near the take-up water inlet.
- f. Do not stir up sediments in the cooling tower.
- g. Take 1000 ml of water for each sample in sterile containers.

***Note:** Please notify the laboratory at least 3 days before sending the samples.

11.4 Soil Sampling for *Burkholderia pseudomallei*

- a. Use a spade, a small gardening shovel or a scoop.
- b. Sterilize the tools by pouring 70% alcohol. Let it dry.
- c. Collect a 100g (minimum) of moist soil samples from a depth of 30cm during the dry season or surface soil during the rainy season.
- d. Put the soil sample in a sterile universal sample bag (e.g. Whirl-Pak).
- e. Label the sample accordingly and record the site sampled.

11.5 Water Sampling for *Burkholderia pseudomallei*

- a. Sterilize the tools by pouring 70% alcohol. Let it dry.
- b. Collect 100ml of stagnant water (from a suspected contaminated pool of water) into a sterile universal sample bag.
- c. Label the sample accordingly and record the site sampled.

11.6 Isolate (*Escherichia coli*, *Salmonella spp.* & *Shigella spp.*)

- a. Please send pure isolate for serotyping.
- b. Sent isolate in nutrient slant to prevent drying.
- c. Label the slant accordingly.
- d. Transport sample at ambient temperature.

12.0 BASIC TRIPLE PACKAGING SYSTEM

Proper packaging of the specimen is crucial in avoiding leakage during transportation and ensuring the specimen arrives at the destination undamaged, without any potential for environmental release. Basic triple layer packaging system is essential for all modes of transportation of clinical specimens. This system comprises of three individual layers:

12.1 Primary receptacle

- a. Primary receptacle is the carrier (e.g. tube, vial and bottle) that carry the specimen.
- b. The carrier must be watertight and leak proof. The cap should be correctly and securely sealed. The primary receptacles are advisable to transport in upright position.
- c. It must be legibly labeled as to its contents.
- d. If the specimens contain liquid or semi-liquid substances, the primary receptacles must be wrapped in adequate absorbent material (e.g. gauze, cotton and super-absorbent packets) to absorb all the leaked liquid in the event of breakage or leakage.

12.2 Secondary receptacle

- a. It is the container which the primary receptacle and the surrounding absorbent materials are placed in.
- b. A secondary receptacle must be watertight and leak proof (e.g. disposable zip-lock biohazard plastic bags, screw cap plastic and canisters) in order to enclose and protect the primary receptacle.
- c. Several individually wrapped primary receptacles may be placed in single secondary receptacle. It is important that the individually wrapped primary receptacles securely sealed to prevent contact among them.

12.3 Third Packaging

- a. A third, outer layer packaging is where the secondary receptacle placed.
- b. It must be rigid in order to protect the secondary receptacles from physical damage while in transit.
- c. It must therefore be a suitable strength for the weight, size and composition of the inner packages to be protected.
- d. Specimen laboratory request forms, and other types of information that identify or describe the specimens should be placed in protective cover and placed between the secondary receptacle and third layer packaging. If needed, these documents may be taped to the secondary packaging.

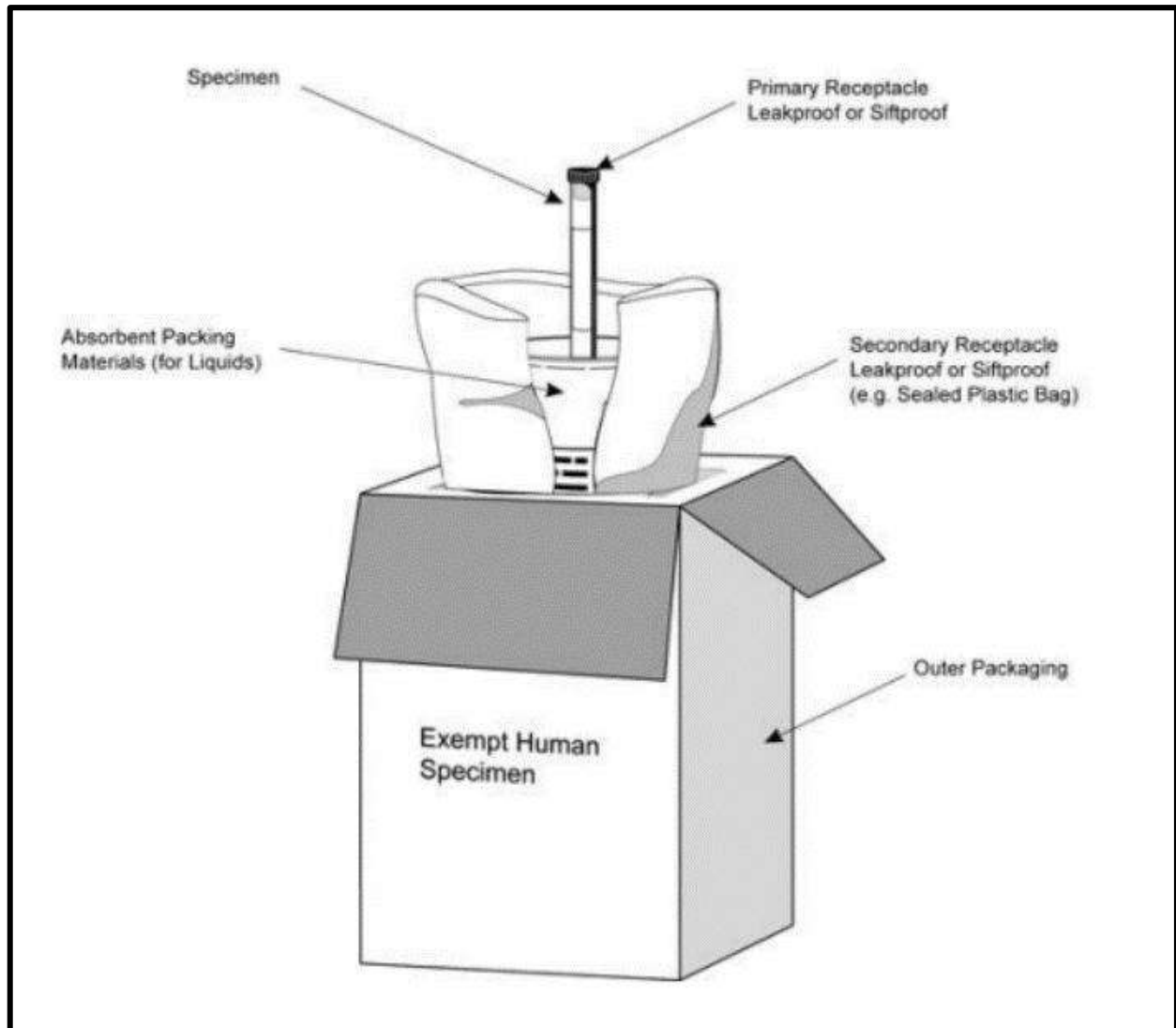


Figure 1: Example of presentation of basic triple packaging

Source: Guidelines for the safe transport of clinical specimens and infectious substances in Malaysia 2023 (MOH/P/PAK/528.23(GU)-e)

13.0 PACKING INSTRUCTION P650 (CATEGORY B INFECTIOUS SUBSTANCE REQUIREMENTS)

Packing instruction P650 provides a slightly more detailed set of triple packaging requirements than that of the basic triple packaging system. Infectious substances sub-classified as Biological Substance, Category B (UN3373) and packaged in accordance with P650 may be considered safe and compliant for all modes of transportation and are not subject to any other packaging requirement outlined in the UN model regulations, for example the more detailed testing and approval processes which will be required for packaging of Category A infectious substances.

For this reason, it is generally feasible to source P650 compliant packaging materials from local manufacturers and/suppliers. In this case, the manufacturers/supplier should provide clear instructions for the user (shipper, sender or consignee) on how to correctly fill and close the package ensuring full compliance with P650.

It should be noted that there is no comprehensive list of suppliers of packaging that comply with Packing Instructions P650 or P620. However, an Internet search using a suitable international or national search engine usually provides appropriate information, as well as access to national regulations. Search phrases such as "UN packaging" and "UN infectious substance packaging" produce extensive results. Carriers and forwarding agents (couriers or logistics companies) should also be able to supply details of local suppliers or local companies that can provide such information.

Quantity Limits (Category B) For shipments being carried by air (passenger or cargo aircraft), the primary inner receptacle must not contain more than 1L and the outer packaging must not contain more than 4L of material. This excludes any quantity of coolants used, such as dry ice or liquid nitrogen. For shipments being carried via surface transport (road, rail or maritime), there are no quantity limits per package.

In addition to the basic triple packaging system, additional stipulations outlined in P650 include:

- For surface transport, either the secondary or outer packaging must be rigid (i.e. the secondary packaging must be rigid, if the outer packaging is soft OR the outer packaging must be rigid, if the secondary container is soft). The latter is the most commonly applied arrangement, as a rigid outer packaging is always required for air transport.
- The complete triple package must be capable of passing a 1.2m 'drop test', to prove that is of an appropriate strength and quality.
- The primary receptacle OR the secondary packaging must be capable of withstanding internal pressure of 95kPa (0.95 bar). This must be tested using an appropriate methodology, which is based on the receptacle or packaging type being used: for example, internal hydraulic or pneumatic pressure gauges, or external vacuum testing.

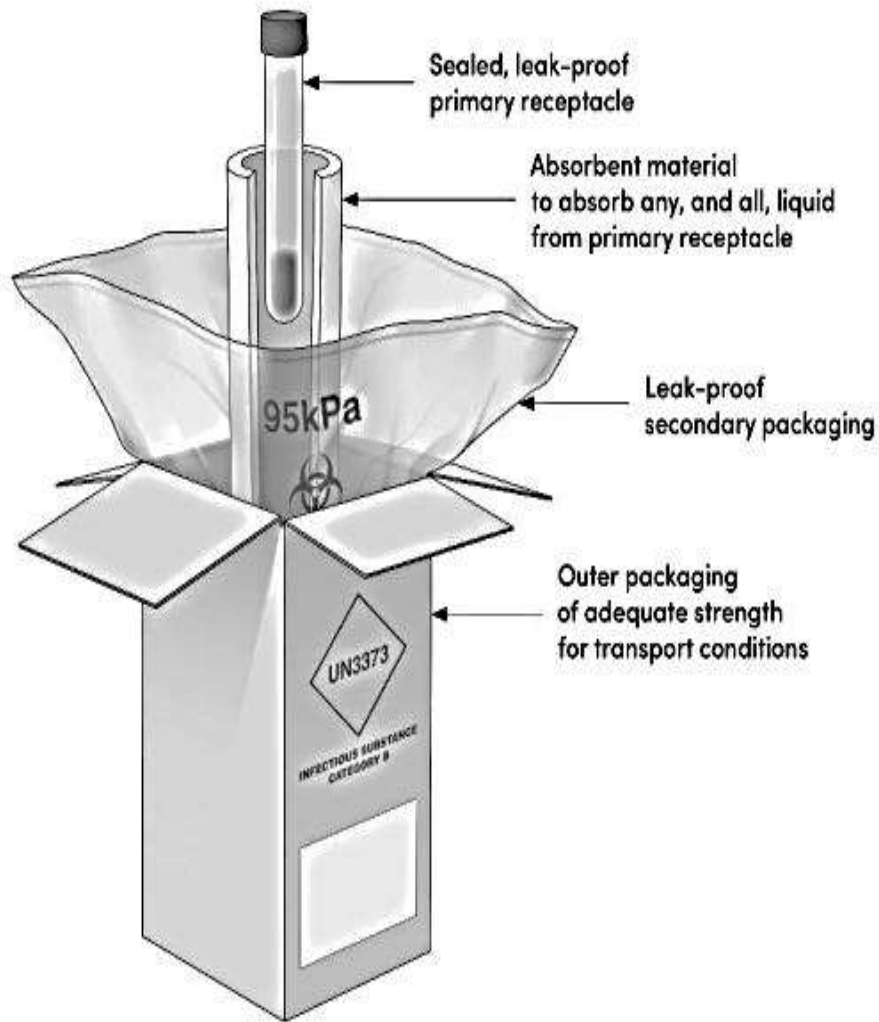
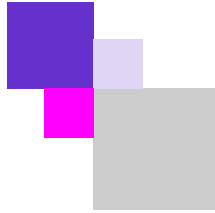


Figure 2: Example of triple packaging materials that may be used to comply with P650 for Category B infectious substances.

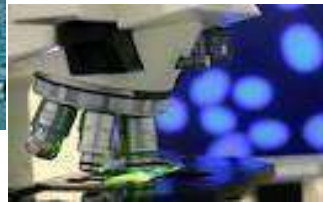
Note: Any detail or further information please refer to Guidelines for the safe transport of clinical specimens and infectious substances in Malaysia 2023 or contact Ipoh Public Health Laboratory.

REFERENCE

1. Guidelines for the safe transport of clinical specimens and infectious substances in Malaysia 2023.
2. WHO Guidance on regulations for the Transport of Infectious Substances 2021 – 2022.



TESTS AVAILABLE (DISEASE SECTION)



**LIST OF TESTS AVAILABLE IN DISEASE SECTION
IPOH PUBLIC HEALTH LABORATORY**

TB UNIT

1. 1st line Drug Sensitivity Testing for *Mycobacterium tuberculosis*
2. Culture for *Mycobacterium tuberculosis*
3. GeneXpert MTB/RIF
4. Identification of *Mycobacterium tuberculosis*
5. IGRA
6. MDR TB Detection
7. TB PCR

BACTERIOLOGY UNIT

1. Bacterial enteric pathogens C&S
2. Detection of *Burkholderia pseudomallei* in environment (water/soil)
3. Detection of *Legionella pneumophila* in environment (water)
4. Detection of *Leptospira* in environment (water/soil)
5. Ear bacterial pathogens C&S
6. Eye bacterial pathogens C&S
7. Genital bacterial pathogens C&S
8. Microscopic Agglutination Test for *Leptospira* (MAT)
9. PCR for *Leptospira* (blood)
10. PCR for *Bordetella pertussis*
11. Screening for *Corynebacterium diphtheria*
12. Serotyping for Diarrheagenic *E coli*
13. Serotyping for *Salmonella spp.*
14. Serotyping for *Shigella spp.*
15. Skin bacterial pathogens C&S
16. Urine bacterial pathogens C&S
17. Respiratory bacterial pathogens C&S

PARASITOLOGY UNIT

1. Confirmation of malaria species (Microscopy & PCR)

MOLECULAR BIOLOGY UNIT

1. **Arbovirus**
Flavivirus, Alphavirus, Bunyavirus, Arenavirus
2. **Enteroviruses (HFMD)**
Enterovirus, Enterovirus 71, Coxsackie A16, Coxsackie A6
3. **Enteric Viruses**
Enterovirus, Rotavirus A/C, Adenovirus, Astrovirus, Sapovirus GI, GII & GIV, Norovirus GI & GII, Bocavirus, Hepatitis A
4. **Respiratory Viruses**
Influenza A & B and subtyping A H1, H3, H5, H7, and H9, Coronavirus, Adenovirus, RSV, Parainfluenza 1-4, Rhinovirus, Bocavirus, Enterovirus, SARS-CoV-2, HMPV, Parechovirus, MERS-CoV
5. **Viral Haemorrhagic Fever**
Dengue Virus, Chikungunya, Zika, West Nile Virus, Yellow Fever Virus, Severe Fever with Thrombocytopenia Syndrome Virus

6. **Viral Encephalitis**

Japanese Encephalitis Virus, Nipah, Hendra, Parvovirus B19, Adenovirus, Dengue, Enterovirus, Parechovirus, Cytomegalovirus, Herpes Simplex virus 1&2, Varicella Zoster Virus, Epstein Barr Virus, Human Herpes Virus 6, John Cunningham Virus, BK Virus, Lymphocytic Choriomeningitis Virus, Mumps, Measles, Rubella, Rabies

7. PCR-*Entamoeba histolytica*

8. **Monkeypox Virus Panel**

Orthopox, Monkeypox, Monkeypox genotype, Enterovirus, Herpes Simplex virus 1&2, Varicella Zoster Virus, Measles

9. **Conjunctivitis**

Adenovirus, Rubella, Measles, Herpes Simplex virus 1&2, Varicella Zoster Virus, Epstein Barr Virus, Enterovirus

10. **Water Environment for Enteric Virus**

Enterovirus, Hepatitis A, Rotavirus A/C, Norovirus GI & GII, Adenovirus, Bocavirus, Astrovirus, Sapovirus GI, GII & GIV

11. **Sequencing / WGS**

SARS-CoV-2

12. **Measles Elimination Program Surveillance**

Measles, Rubella

13. **Influenza-Like Illness (ILI) Surveillance**

14. **Dengue Virus Serotype Surveillance (DVSS)**

15. **Flavivirus Surveillance**

SEROLOGY/VIROLOGY UNIT

1. Measles IgM
2. Rubella IgM

BIOCHEMISTRY UNIT

1. Fasting Blood Sugar (FBS)
2. Two Hours Post Prandial (2 HPP)
3. Random Blood Sugar (RBS)
4. MGTT (FBS & 2HPP)
5. Fasting Lipid Profile (FLP)
6. Liver Function Test (LFT)
7. Electrolytes (ISE: Na, K, Cl)
8. BUSE (ISE + Urea)
9. Renal Profile (BUSE + Creatinine)
10. Uric Acid
11. Calcium
12. Phosphate
13. Cholinesterase
14. Urine Iodine
15. Adenosine Deaminase (ADA)

TUBERCULOSIS UNIT

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks
1	Culture for <i>Mycobacterium tuberculosis</i> – using solid method (LJ)	Sputum	Sterile screw capped container	3-5 ml	NA	Sample should be sent immediately after collection. If there is a delay, keep sample in cold temperature (4-8°C) and send sample within 48 hours to avoid contamination. Protect sample from heat and transport sample in 4-8°C	Mon-Fri Contact on-call person if beyond office hours/ public holidays	8 weeks (Negative Culture)	ID of Non Tuberculosis Mycobacteria is performed by MKAK Sg. Buloh
		Bronchialwashing		2-5 ml					
		Pus		NA					
		Urine		3-5 ml					
		Other body fluids (pleural, synovial, CSF etc)		2-5 ml					
		Tissue (Add 2-5ml sterile saline/ distilled water to avoid drying)		NA					
Gastric Lavagelf there is delay, neutralize sample by adding 1.5ml sterile 40% anhydrous disodium phosphate (Na ₂ HPO ₄) for every 35-40 ml specimens. Store neutralized sample at 4-8°C and send to MKA Ipoh in cold box	2-5 ml								
2	MDR TB Investigation (PCR)	Sputum	Sterile screw capped container	2-5 ml	NA		Mon-Fri	7 Working days	Request endorsed by specialist
3	TB PCR for <i>Mycobacterium tuberculosis</i>	Sputum	Sterile screw capped container				Mon-Fri	7 Working days	TB PCR of Non Tuberculosis Mycobacteria is performed by MKAK Sg.Buloh
		Bronchial Washing							
		CSF							
		Urine							
		Body Fluids							
		Tissue							
Whole Blood	EDTA								
4	M10 – MDR TB	Sputum	Sterile screw capped container	1-4 ml	NA	Mon-Thurs (Before 4PM)	24 Working hours		
5	Interferon Gamma Release Assay (IGRA)	Whole Blood	Quanti FERON-Gold Plus Tubes	1 ml each tube	NA	Refer Remarks	Mon-Thurs (test perform in batches) Inform TB Unit before collect sample.	3-21 Working days	Special collection, incubation and centrifugation procedures must be followed. Contact TB Unit for further information.

BACTERIOLOGY UNIT

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks
1	<u>Culture & Sensitivity</u> Bacterial enteric pathogens including: a) <i>Aeromonas</i> spp. b) <i>Campylobacter</i> spp c) <i>Escherichia coli</i> (EPEC) d) <i>Escherichia coli</i> (O157) e) <i>Plesiomonas shigelloides</i> f) <i>Salmonella</i> spp. g) <i>Salmonella typhi</i> h) <i>Shigella</i> spp. i) <i>Vibrio cholerae</i> j) <i>Vibrio</i> spp. k) <i>Yersinia enterocolitica</i> l) <i>Listeria monocytogenes</i> m) <i>Staphylococcus aureus</i> n) <i>Bacillus</i> spp.	Stool / Rectal swab Note: 4cm depth with faecal stained	NA	NA	Carry Blair transport medium	Sample should be sent immediately after collection. If there is a delay, keep sample in Room Temperature and send sample within 24 hours. Note: Culture for <i>Campylobacter</i> spp. is not done if reach laboratory more than 6 hours after collection/ no mention of time collection.	Mon-Fri Contact on-call person if beyond office hours/ public holidays	3-7 days	Outbreak samples & Contact Investigation
2	<u>Culture & Sensitivity</u> Respiratory bacterial pathogens including a) <i>Haemophilus influenzae</i> b) <i>Klebsiella pneumoniae</i> c) <i>Streptococcus pneumoniae</i> d) <i>Streptococcus pyogenes</i>	Nasal swab/ throat swab/ sputum			Amies transport medium		Contact Bacteriology unit for appointment		
3	<u>Culture & Sensitivity</u> <i>Corynebacterium Diphtheria</i>	Throat swab (preferably from sites with evidence of membrane)			Amies transport medium		Contact Bacteriology unit for appointment		

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks
4	<u>Culture & Sensitivity</u> Eye bacterial pathogens	Eye swab	NA	NA	Amies (with/without charcoal)/ Stuart transport media	Sample should be sent immediately after collection. If there is a delay, keep sample in Room Temperature and send sample within 48 hours.	Contact Bacteriology unit for appointment	3-7 days	Outbreak samples & Contact Investigation
5	<u>Culture & Sensitivity</u> Genital bacterial pathogens	Cervical swab/ urethral swab/ vaginal swab	NA	NA	Amies (with/without charcoal)/ Stuart transport media				
6	<u>Culture & Sensitivity</u> Skin bacterial pathogens	Skin/pus swab	NA	NA	Amies/ Stuart transport media				
7	<u>Culture & Sensitivity</u> Ear bacterial pathogens	Ear swab	NA	NA	Amies/ Stuart transport media				
8	<u>Culture & Sensitivity</u> Urine bacterial pathogens	Urine	Sterile container	NA	NA	Transport sample at 4-8°C to reach laboratory within 6 hours after collection			
9	<u>Leptospira</u> Detection of Leptospira in environment (water/soil).	water/soil	Sterile container	min (100 ml or 100g)	NA	Transport sample at room temperature to reach laboratory within 24 hours after collection.	Mon-Fri Contact Bacteriology unit for appointment	21 working days	According to schedule or outbreak samples.
10	<u>Leptospira</u> Microscopic Agglutination Test for Leptospira (MAT)	serum	Plain tube	1ml	NA	Transport sample at 4-8 °C to reach laboratory within 24 hours after collection	Mon-Fri	10 working days	Please include Rapid ELISA kit result. Please call before sending. Please note if there is 2 nd sample.
11	<u>Leptospira</u> PCR for Leptospira	Blood	EDTA	3ml	NA	Transport sample at 4-8 °C to reach laboratory within 24 hours after collection	Mon-Fri Contact Bacteriology unit for appointment	7 working days	

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks
12	Serotyping a) <i>Diarheagenic Escherichia coli</i> b) <i>Salmonella spp.</i> c) <i>Shigella spp.</i>	a) <i>E. coli</i> isolate b) <i>Salmonella spp.</i> isolate c) <i>Shigella spp.</i> isolate	NA	NA	Nutrient slant	Transport sample at room temperature.	Mon-Fri	14 working days	Please use printed ELBIS system request Form/ Per-Pat 301/ Laboratory Based Surveillance Notification Forms.
13	Detection of <i>Legionella pneumophila</i> in environment (water)	Water/Slime from cooling tower	Sterile container	1000 ml (water) 5 ml - 10 ml (slime)	NA	Transport sample at 4-8 °C to reach laboratory within 24 hours after collection	Contact Bacteriology unit for appointment	14 working days	Inform laboratory at least 3 days before sending.
14	Detection of <i>Burkholderia pseudomallei</i> in environment	Water/soil	Sterile container	min (100 ml or 100g)	NA	Transport sample at room temperature (in a dark container) to reach laboratory within 24 hours after collection			
15	PCR for <i>Bordetella pertussis</i>	Nasopharyngeal aspirate (NPA)	Sterile container	NA	NA	Transport sample at 4-8 °C to reach laboratory within 24 hours after collection	48 hours	Inform laboratory before sending	
		Nasopharyngeal swab (NPS)	NA		Dacron swab in Amies transport media without charcoal / VTM				

PARASITOLOGY UNIT

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks
1	qPCR Malaria	Whole blood, dried blood spot, blood smear (BFMP)	EDTA tube	2 ml	NA	Transport sample at room temperature	Mon-Fri	3-7 working days	

MOLECULAR BIOLOGY UNIT

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks
1	RT-qPCR Respiratory Viruses	Combine OPS & NPS	NA	3ml	VTM	Specimens are to be sent immediately to the lab. Transport sample at 4-8 °C to reach laboratory within 24 hours after collection.	i) Surveillance: Mon - Fri ii) Outbreak: Mon - Sun iii) Diagnostic: Mon - Fri	i) Surveillance: 7 working days ii) Outbreak: 1-3 days iii) Diagnostic: 3-5 working days	Seal the sterile container with parafilm to avoid leak during transportation to lab.
		Sputum	Sterile container		NA				
		Nasopharyngeal aspirate							
		Bronchiol alveolar Tracheal aspirate							
2	RT-qPCR Dengue Virus Serotype Surveillance (DVSS)	Serum	Plain tube with gel	3-5ml	NA				
		Plasma	EDTA	1-3ml					
3	RT-qPCR Flavivirus Surveillance	Serum	Plain tube with gel	3-5ml	NA				
		Plasma	EDTA	1-3ml					
4	RT-PCR Arbovirus	Serum	Plain tube with gel	3-5ml	NA				
5	RT-qPCR Enteric viruses	Rectal Swab	NA	3ml	VTM				
		Fresh stool	Sterile container	Bean size	NA				
		Water environment	Sterile Falcon Tube	30ml					
6	RT-qPCR Enterovirus (HFMD)	Mouth Ulcer Swab	NA	3ml	VTM				
		Vesicle Swab							
		Rectal swab							
		Fresh stool	Sterile container	Bean size	NA				
		CSF	Sterile screw-capped container (Bijou bottle or Cryovial)	1ml	NA				
		Throat swab	NA	3ml	VTM				
7	RT-qPCR Measles / Rubella	Throat swab	NA	3ml	VTM				
		Urine	Sterile screw-capped container	10ml (early morning first void)	NA				
		Nasopharyngeal aspirate		1 – 3ml	NA				
		Tracheal aspirate							
8	RT-qPCR Conjunctivitis	Eye swab	NA	3ml	VTM				
9	RT-qPCR for Chikungunya	Serum	Plain tube with gel	3-5 ml	NA				
10	PCR-Entamoeba histolytica	Fresh Stool	Sterile stool container with scoop	Bean size	NA				
11	RT-qPCR Zika virus	Serum	Plain tube with gel	3-5 ml	NA				
		Urine	Sterile container	15-20 ml	NA				
12	RT-qPCR Nipah/Hendra	Serum	Plain tube with gel	3-5 ml	NA				
		CSF	Sterile screw-capped container (Bijou bottle or Cryovial)	0.5-1 ml					
		Urine	Sterile container	15-20 ml					
13	RT-qPCR Avian Flu H7N9, H5, H9	Combine OPS & NPS	NA	3 ml	VTM				

Please use
borang
MKAK/BP/ENV/
02 Rev 1

Please use
borang "Measle-
Borang
Permohonan
dan Keputusan
Ujian Makmal
MSLF:
02/Rev2024

Both serum and
urine are
required.

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks
14	RT-qPCR Viral Hemorrhagic Fever: a) West Nile Virus b) Yellow Fever Virus c) Dengue Severe Fever with Thrombo- cytopenia Syndrome Virus (SFTSV)	Serum	Plain tube with gel	3-5 ml	NA	Specimens are to be sent immediately to the lab Transport sample at 4-8 °C to reach laboratory within 24 hours after collection	i) Surveillance: Mon - Fri ii) Outbreak: Mon - Sun iii) Diagnostic: Mon - Fri	i) Surveillance: 7 working days ii) Outbreak: 1-3 days iii) Diagnostic: 3-5 working days	
		CSF	Sterile screw- capped container (Bijou bottle or Cryovial)	1-2 ml	NA				
		Plasma	EDTA	1-3 ml	NA				
15	qPCR Monkeypox Virus panel	Lesion fluid swab	NA	3 ml	VTM	Transport sample at 2-8 °C to reach laboratory as soon as possible after collection		48 hours	Please use Dacron swab for collect the sample. Do not use cotton swab & wooden swab would inhibit the PCR test.
		Nasopharyngeal swab (NPS)							
		Tonsillar tissue swab							
		Lesion scab / crust	Sterile container	NA	NA				
16	RT-qPCR MERS-CoV	Combine OPS & NPS	NA	3 ml	VTM	Specimens are to be sent immediately to the lab Transport sample at 4-8 °C to reach laboratory within 24 hours after collection		Suspected case: 1-3 working days	Seal the sterile container with parafilm to avoid leak during transportation to lab.
		Sputum	Sterile container		NA				
		Nasopharyngeal aspirate							
		Bronchiol alveolar							
		Tracheal aspirate							
17	RT-qPCR Varicella Zoster virus (Chickenpox)	Vesicle swab	NA	3 ml	VTM			Outbreak: 1-3 days	Please use <i>borang</i> Borang Permohonan Ujian Makmal (Spesimen Klinikal) MKAK-BPU- U01/Rev2018
		Lesion scab / crust	Sterile container	NA	NA				
18	RT-qPCR Mumps virus	Oropharyngeal Swab	-	3 ml	VTM				Test offered for outbreak cases only. Please consult our Clinical Microbiologist (ext.: 1005) prior to sending.
		Buccal swab							
		Saliva	Sterile screw- capped container	3-5 ml	NA				
19	RT-qPCR Viral encephalitis	Serum	Plain tube with gel	3 ml	NA				
		CSF	Sterile container	1 ml					
		Urine	Sterile container	15-20 ml					
		Saliva	Sterile container	3-5 ml					
20	WGS SARS- CoV-2	Combine OPS & NPS	NA	3 ml	VTM	Transport sample at 4-8 °C to reach laboratory within 24 hours after collection		7- 14 working days	
		Cassette RTK (positive)		NA	RTK strip				

SEROLOGY/VIROLOGY UNIT

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks
1	Measles IgM	Serum	Plain/Gel tube	3-5 ml	NA	Transport sample at 4-8 °C to reach laboratory within 48 hours after collection. Please keep in 2-8°C if more than 48 hours.	Tue / Wed, Fri	4 days	Please use borang "Measle-Borang Permohonan dan Keputusan Ujian Makmal MSLF: 02/Rev2024"
2	Rubella IgM						Mon, Thurs	7 days	

BIOCHEMISTRY UNIT

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks	
LIPID PROFILE (LP)										
1	Total Cholesterol	Serum/ Plasma	Plain/Gel/ Heparin tube	3.5ml	NA	Transport sample with ice pack. Store at 4-8°C while waiting for transportation	Mon-Fri	3 working days	For Fasting Lipid Profile, blood should be collected after an overnight fasting for at least 8 hours. (Refer reference ranges Beckman Coulter AU480 on page 34 & 35)	
2	Triglyceride									
3	HDL-Cholesterol									
4	LDL-Cholesterol									
LIVER FUNCTION TEST (LFT)										
1	Total Protein	Serum/ Plasma	Plain/Gel/ Heparin tube	3.5ml	NA	Transport sample with ice pack. Store at 4-8°C while waiting for transportation	Mon-Fri	3 working days	Refer reference ranges Beckman Coulter AU480 on page 34 & 35	
2	Albumin									
3	ALT/SGPT									
4	AST/SGOT									
5	ALP									
6	Total Bilirubin									
7	Direct Bilirubin									
RENAL PROFILE (RP)										
1	Creatinine	Serum/ Plasma	Plain/Gel/ Heparin tube	3.5ml	NA	Transport sample with ice pack. Store at 4-8°C while waiting for transportation.	Mon-Fri	3 working days	Refer reference ranges Beckman Coulter AU480 on page 34 & 35	
2	Urea									
3	Sodium									ISE
4	Potassium									
5	Chloride									
SINGLE TEST										
1	Calcium	Serum/ Plasma	Plain/Gel/ Heparin tube	3.5 ml	NA	Transport sample with icepack. Store at 4-8°C while waiting for transportation.	Mon-Fri	3 working days	Refer reference ranges Beckman Coulter AU480 on page 34 & 35	
2	Phosphate									
3	Uric Acid									
4	Cholinesterase	Serum	Plain/Gel tube					7 working days		

No	Test	Specimen	Container	Volume	Transport Media	Transportation & Storage	Lab Schedule	TAT	Remarks
ADENOSINE DEAMINASE (ADA)									
1	Adenosine Deaminase (ADA)	Pleural Fluid	Plain tube (without gel)	3 ml (min. 1 ml)	NA	Sample transportation 2-8°C (48 hours)	Mon-Fri	4 working days	Refer reference ranges Beckman Coulter AU480 on page 34 & 35
GLUCOSE									
1	Fasting Blood Sugar (FBS)	Plasma	NaF/ Potassium Oxalate/ NaF+EDTA	2ml	NA	Transport sample with ice pack. Store at 4-8°C while waiting for transportation.	Mon-Fri	3 working days	For Fasting Blood Sugar (FBS), blood should be collected after an overnight fasting for at least 8 hours. (Refer reference ranges Beckman Coulter AU480 on page 34 & 35)
2	Two Hours Post Prandial (2HPP)								Refer reference ranges Beckman Coulter AU480 on page 34 & 35
3	Random Blood Sugar (RBS)								Refer reference ranges Beckman Coulter AU480 on page 34 & 35
IODINE DEFICIENCY DISORDER (IDD)									
1	Urinary Iodine	Urine	Urine container/ Falcon tube (conical)	15 ml	NA	Sample Transportation: 1. 4-8°C (<7 days) 2. -20°C (>7 days)	Mon-Fri	25 working days	Refer on page 36 for reference range

Reference Ranges for Analyzer Beckman Coulter AU480

No.	Analyte	Reference ranges Beckman Coulter AU480 (unit)
1	Total Cholesterol	0 - 5.2 mmol/L
2	Triglyceride	0 - 1.7 mmol/L
3	HDL cholesterol	> 1.55 mmol/L (Male), > 1.55 mmol/L (Female)
4	LDL cholesterol	< 3.36 mmol/L
5	Total Protein	66 – 83 g/L
6	Albumin	35 – 52 g/L
7	Alanine aminotransferase (ALT)	0 – 50 U/L (Male), 0 – 35 U/L (Female)
8	Aspartate aminotransferase (AST)	0 – 50 U/L (Male), 0 – 35 U/L (Female)
9	Alkaline phosphatase (ALP)	43 - 115 U/L (Male), 33 - 98 U/L (Female)
10	Total bilirubin	5 - 21 µmol/L
11	Direct bilirubin	0 – 3 µmol/L
12	Creatinine	59 - 104 µmol/L (Male), 45 - 84 µmol/L (Female)
13	Urea nitrogen	2.8 - 7.2 mmol/L
14	Sodium	136-146 mmol/L
15	Potassium	3.5-5.1 mmol/L
16	Chloride	101-109 mmol/L
17	Calcium	2.20 - 2.65 mmol/L
18	Phosphorus	0.81 - 1.45 mmol/L
19	Uric acid	208 - 428 µmol/L (Male) 154 - 357 µmol/L (Female)
20	Cholinesterase, (CHE)	4620 - 11500 U/L (Male) 3930 - 10800 U/L (Female)
21	Adenosine Deaminase (ADA)	< 29.6 U/L
22	Fasting Blood Sugar, (FBS)	3.9 – 6.0 mmol/L
23	Two Hours Post Prandial, (2HPP)	< 7.8 mmol/L
24	Random Blood Sugar, (RBS)	< 7.8 mmol/L

Diabetic Screen

- Fasting Plasma Glucose

Interpretation:	
Category	Fasting Plasma Glucose (mmol/L)
Normal	3.9 - 6.0
IFG (Prediabetes)	6.1 - 6.9
T2DM	≥ 7.0

IFG = Impaired fasting glucose
 T2DM = Type 2 Diabetes Mellitus
 Recommend OGTT for plasma glucose levels 6.1 - 6.9 mmol/L

- Random Plasma Glucose

Interpretation:	
Category	Random Plasma Glucose (mmol/L)
Normal	< 7.8
Indeterminate	7.8 - 11.0
T2DM	≥ 11.1

T2DM = Type 2 Diabetes Mellitus
 Recommend OGTT for plasma glucose levels 7.8 - 11.0 mmol/L.

OGTT Plasma Glucose

- OGTT Plasma Glucose Values

Interpretation:		
Category	OGTT Plasma Glucose Values (mmol/L)	
	0-hour	2-hour
Normal	≤ 6.0	< 7.8
Impaired Fasting Glu. (IFG)*	6.1 - 6.9	-
Impaired Glu. Tolerance (IGT)*	-	7.8 - 11.0
Diabetes Mellitus (DM)	≥ 7.0	≥ 11.1

*Patients with Prediabetes (IFG & IGT) have a 2 to 3-fold risk of cardiovascular disease & DM.

Urine Iodine Concentration (IDD)

Epidemiological criteria for assessing iodine nutrition based on median urinary iodine concentrations of school-age children (≥ 6 years)*

MEDIAN URINARY IODINE (ug/L)	IODINE INTAKE	IODINE STATUS
<20	Insufficient	Severe iodine deficiency
20-49	Insufficient	Moderate iodine deficiency
50-99	Insufficient	Mild iodine deficiency
100-199	Adequate	Adequate iodine nutrition
200-299	Above requirements	Likely to provide adequate intake for pregnant/lactating women, but may pose a slight risk of more than adequate intake in the overall population
≥ 300	Excessive	Risk of adverse health consequences (iodine-induced hyperthyroidism, autoimmune thyroid diseases)

Epidemiological criteria for assessing iodine nutrition based on the median or range in urinary iodine concentrations of pregnant women*

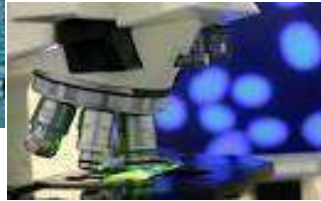
POPULATION GROUP	MEDIAN URINARY IODINE CONCENTRATION (ug/L)	IODINE INTAKE
Pregnant women	<150	Insufficient
	150-249	Adequate
	250-499	Above requirements
	≥ 500	Excessive**

*For lactating women and children <2 years of age a median urinary iodine concentration of 100ug/L can be used to define adequate iodine intake, but no other categories of iodine intake are defined. Although lactating women have the same requirement as pregnant women, the median urinary iodine is lower because iodine is excreted in breast milk.

**The term "excessive" means in excess of the amount required to prevent and control iodine deficiency.



FORMS



KEMENTERIAN KESIHATAN MALAYSIA
PERKHIDMATAN PATOLOGI
HOSPITAL.....

PER-PAT301

UNTUK KEGUNAAN MAKMAL

LAB. No

1. Nama :		2. No. Pendaftaran			
3. No. K/P :		4. Jantina : <input type="checkbox"/> Lelaki <input type="checkbox"/> Perempuan			
5. Umur :	6. Keturunan :	7. Wad/Klinik :			
8. Tarikh Masuk Wad :	9. Pekerjaan :	10. Taraf Perkahwinan :	11. <input type="checkbox"/> Bayar <input type="checkbox"/> Percuma		
12. No. Laporan Dahulu :		13. Butiran Penting :			
		Ya	Tidak		
		Jaundice	<input type="checkbox"/>	<input type="checkbox"/>	
		Lymphadenopathy	<input type="checkbox"/>	<input type="checkbox"/>	
		Hepatomegaly	<input type="checkbox"/>	<input type="checkbox"/>	
		Splenomegaly	<input type="checkbox"/>	<input type="checkbox"/>	
		Bleeding tendency	<input type="checkbox"/>	<input type="checkbox"/>	
		h/o Transfusion	<input type="checkbox"/>		
		Haematinics _____			

		Drug/Chemical History			

		Data Makmal Terdahulu			
		Hb _____			
15. Diagnosis :		Platelet _____			
		TWDC _____			
16. Kategori Permohonan/Jenis Ujian :					
Patologi Kimia	Klinikal	Hematologi	Histo/Sitologi	Mikro/Immunologi	
B. Sugar	Bld. Count	FBP	Spesimen	Spesimen	Ujian
B. Urea	ESR	BM ASP			
B. Elec.	BFMP	Hb. Analysis			
B. Gases	U. Sugar	Coagulation			
S. Bilirubin	U. Alb	PT			
LFT	U. Me	PTT			
Se.Creatinine	Stool ME	BTCT			
Lain-lain _____					

17. Pengambilan Spesimen :		Tarikh :	Masa :		
18. Nama Doktor :					
19. Tarikh :		Tandatangan dan Cop Doktor			

LABORATORY BASED SURVEILLANCE NOTIFICATION FORM
DISEASE SECTION, IPOH PUBLIC HEALTH LABORATORY
MINISTRY OF HEALTH MALAYSIA

TEL : 05-5287829 ext 2011

FAX : 05-5287836

Reporting Lab : PHL Ipoh / Johor Bahru / Sungai Buloh / FQC Lab _____

E-mail : _____

Please tick the relevant box

1. Food taken from

- Routine
 Outbreak
 Food poisoning

2. Type of food

Please tick Please specify the food

- | | | |
|-------------------|--------------------------|-------|
| Ready to eat | <input type="checkbox"/> | |
| Raw food packaged | <input type="checkbox"/> | |
| Canned food | <input type="checkbox"/> | |
| Others | <input type="checkbox"/> | |

3. Date of specimen taken /...../.....(dd/mm/yy)

4. Place of specimen taken

Please tick Address

- | | | |
|--------------|--------------------------|-------|
| Restaurant | <input type="checkbox"/> | |
| Hawker stall | <input type="checkbox"/> | |
| Supermarket | <input type="checkbox"/> | |
| Market | <input type="checkbox"/> | |
| Institution | <input type="checkbox"/> | |
| Others | <input type="checkbox"/> | |

5. PHL/FQC Laboratory

E.coli isolated

Serotype :

Reporting Officer

Name of Reporting Officer : Signature :

Designation : Date :/...../.....

Note : Please send this form to Ipoh Public Health Laboratory together with *E. coli* isolate

LABORATORY BASED SURVEILLANCE NOTIFICATION FORM
DISEASE CONTROL DIVISION
MINISTRY OF HEALTH MALAYSIA

TEL : 03-26946601 FAX : 03-26946404

Email : survelan@dph.gov.my

Reporting Laboratory

Patient Name:

Patient's Address:

.....

.....

IC No :

R/N No:.....

Age: Sex :.....

Race :

Hospital

Ward :.....

Please tick the relevent box

Specimen type Stool Urine

Blood CSF

Date of Specimen taken :...../...../.....

Source of specimen Case Contact Food

Others

Hospital laboratory

Reference Laboratory

Salmonella spp isolated

Serotype:.....

Salmonella typhi/ paratyphi isolated

Phage Type:.....

Chloramphenicol Resistant
 Sensitive

Haemophilus influenzae isolated

Serotype.....

Neisseriae meningitidis isolated

Serotype.....

Leptospira: Antibody Positive
Titre

MAT : Positive/Negative
Titre :.....

Vibrio cholerae
Serotype.....
Biotype

Serotype.....
Biotype

Tetracycline Resistant
 Sensitive

Name of Reporting Officer.....Signature.....

Designation..... Date :...../...../.....

Note : Send this form to : 1) Surveillance Section , Disease Control Division , MOH
2) Reference Laboratory together with the isolated.

Laboratory Request Form MKA (Environmental Sample)

Annex 1c

MAKMAL KESIHATAN AWAM IPOH,

Jalan Jelapang, 30020 Ipoh, Perak.

No. Tel : 05-5287829/32/33/34 No. Faksimili : 05-5287836

BORANG PEMOHONAN PENYIASATAN/PEMANTAUAN LEPTOSPIRA

Institusi yang memohon:	Tarikh/ masa pengambilan sampel:
No Faks:	Lokasi Persampelan:
Tandatangan/ cop rasmi:	Jenis sampel:
	Maklumat kes:
Lakaran Kawasan Persampelan/ Kolar:	
Petunjuk:	

Analisa Parameter Fizikal

ID Sampel	Masa Persampelan	Suhu (°C)	pH	Kekeruhan	Clarity	Warna	Catatan

Tarikh/masa terima sampel:

Nama dan Tandatangan penerima:



TBIS 20C
Sistem Maklumat TB, KKM

Kementerian Kesihatan Malaysia
Program Kawalan Penyakit TB
Permohonan ujian TB

A. Pusat Pungutan spesimen (Wad/KK/Hospital) :		Tarikh Permohonan:	
B. Maklumat Pesakit			
Nama :		No Pengenalan Din (IC/Pasport) :	
Umur :	No Telefon :	Jantina: <input type="checkbox"/> M <input type="checkbox"/> F	
Alamat		Warganegara : <input type="checkbox"/> Malaysia <input type="checkbox"/> Bukan Malaysia, Nyatakan	
Status RVD : <input type="checkbox"/> Positif <input type="checkbox"/> Negatif		<input type="checkbox"/> Diabetik? : <input type="checkbox"/> Ya <input type="checkbox"/> Tidak	
C. Sebab memohon (Tandakan satu)		Adakah pesakit telah menerima rawatan \geq 1 bulan?	
<input type="checkbox"/> Presumptive TB		<input type="checkbox"/> Ya <input type="checkbox"/> Tidak (New Case)	
<input type="checkbox"/> Follow-up TB case (Month of treatment:months)		Sekiranya YA,	
<input type="checkbox"/> Contact of TB case		No Pendaftaran TB bagi kes adalah: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
<input type="checkbox"/> Contact of DRTB case (RR, MDR, XDR, TDR)		Klasifikasi <i>Previously Treated TB</i> adalah :	
<input type="checkbox"/> Suspected MDR-TB		<input type="checkbox"/> After Failure of 1st treatment <input type="checkbox"/> After Failure of retreatment	
<input type="checkbox"/> Surveillance of		<input type="checkbox"/> After loss to follow-up <input type="checkbox"/> Relapse <input type="checkbox"/> Others	
D. Jenis Specimen : <input type="checkbox"/> Kahak (x1 / x2 / x3) <input type="checkbox"/> Spot <input type="checkbox"/> Pagi <input type="checkbox"/> lain-lain (nyatakan) :			
Tarikh pengambilan spesimen : <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
E. Ujian Di pohon <input type="checkbox"/> Mikroskopik <input type="checkbox"/> Kultur <input type="checkbox"/> ID & Kerentanan Ubatan (Drug susceptibility)			
<input type="checkbox"/> PCR MTB <input type="checkbox"/> Xpert MTB/RIF <input type="checkbox"/> LPA <input type="checkbox"/> Interferon Gamma Release Assay (IGRA)			
F. Maklumat Pemohon			
Tandatangan :			
Nama :			
Jawatan & Cop Rasmi :			
No. Telefon :			
KEPUTUSAN UJIAN MAKMAL (Di isi oleh pihak makmal yang menjalankan ujian)			
(Sila gunakan bahagian belakang mukasurat ini sekiranya ruangan tidak mencukupi)			
Diuji oleh:		Disahkan oleh	
Tandatangan:		Tandatangan:	
Nama:		Nama:	
Jawatan & Cop Rasmi:		Jawatan & Cop Rasmi:	
No. Telefon:		No. Telefon:	

MKAK-BPU-U01/Rev2018

BORANG PERMOHONAN UJIAN MAKMAL (SPESIMEN KLINIKAL)
MAKMAL KESIHATAN AWAM

NO RUJUKAN MAKMAL (MKA) :

A. MAKLUMAT PESAKIT

Nama Pesakit:	Umur:	No Rujukan Pesakit (R/N):
No K.P/ Lain-lain:	Jantina: L / P	
Warga Negara:	Bangsa:	Wad:
Alamat pesakit:	Pekerjaan:	Status perkahwinan Tanda (v) yang berkenaan:
	No. Tel.:	<input type="checkbox"/> Bujang <input type="checkbox"/> Berkahwin <input type="checkbox"/> Lain-lain

B. TUJUAN PERSAMPELAN Tanda (v) yang berkenaan

Wabak/ Kluster	<input type="checkbox"/>	Pesakit (Ada gejala)	<input type="checkbox"/>
Survelan	<input type="checkbox"/>	Kes	<input type="checkbox"/>
Diagnostik	<input type="checkbox"/>	Kontak	<input type="checkbox"/>
Projek	<input type="checkbox"/>	Kluster	<input type="checkbox"/>
Lain-lain	<input type="checkbox"/>		

C. LAIN-LAIN MAKLUMAT

Lokality kejadian:	
Sejarah melancong: Ada / Tiada	Negara:
Tarikh keluar:	Tarikh masuk:

D. RINGKASAN KLINIKAL**Tanda (v) yang berkenaan**

Tanda dan Gejala	Ada (v)	Tarikh onset	Tanda dan Gejala	Ada (v)	Tarikh onset
1) Demam (°C)			6)		
2) Selsema			7)		
3) Cirit-birit			8)		
4) Muntah			9)		

Status & tarikh imunisasi berkaitan: Ada _____ Tarikh _____ Tiada _____ Tidak diketahui _____

E. MAKLUMAT SPESIMEN

Jenis Spesimen	Jenis ujian dipohon	Tarikh diambil	Tarikh dihantar	Tanda Tangan Pegawai yang mengambil spesimen (sila cop)

* Nota: Sila rujuk Service Handbook Makmal Kesihatan Awam Kebangsaan untuk maklumat lanjut tentang spesimen

F. BUTIRAN PEMOHON**G. BUTIRAN MAKMAL TRANSIT**

Nama		Nama	
Jawatan		Jawatan	
Tempat bertugas (sila cop)		Tempat bertugas (sila cop)	
No H/P:	Email:	No tel & samb.	Email:
KK/PKD/Hospital:		Nama Pusat Transit:	
Daerah:	Negeri:	Daerah:	Negeri:

H. MAKMAL (untuk kegunaan MKA):

Unit Pengurusan Spesimen	Makmal	Catatan
Suhu: °C	Jenis sampel:	Terima / Tolak
Sampel: Terima / Tolak	Sampel dlm transport media: Ya / Tidak	Suhu: °C
Nama Penerima :	Nama Penerima:	
Tarikh & masa:	Tarikh & Masa:	
Keputusan ujian disahkan oleh :	Tarikh:	

Lampiran 4

**SURVELAN INFLUENZA-LIKE-ILLNESS (ILI) DAN SEVERE ACUTE
RESPIRATORY INFECTION (sARI)**

BORANG PERMOHONAN UJIAN MAKMAL
(Sampel ILI Dihantar Ke MKAK/MKA Mengikut Zon & Sampel sARI Dihantar Ke Unit Virologi, IMR)

No. Rujukan Makmal (MKAK/MKA/IMR):

A. MAKLUMAT PESAKIT			
Negeri:			
Hospital / Klinik Kesihatan:		Wad:	
Nama Pesakit:		No. Kad Pengenalan / Passport:	
Alamat:		Poskod:	No. Telefon:
R/N:	Warganegara:	Umur:	Jantina: L / P

B. MAKLUMAT KLINIKAL		
Gejala	Tandakan (✓) di ruangan berkenaan	Tarikh mula
Demam $\geq 38^{\circ}\text{C}$ / sejarah demam beberapa hari sebelumnya		
Batuk		
Sakit Tekak		
Pneumonia		
Lain-lain (Nyatakan)		

Dapatan X-Ray (sekiranya berkenaan):

C. MAKLUMAT SPESIMEN KLINIKAL				
Jenis Spesimen	Tandakan (✓) di ruangan berkenaan	Tarikh diambil	Tarikh dihantar	Pengambil Sampel
Nasopharyngeal swab (NPS) Oropharyngeal swab (OPS)				(Tandatangan & Cop)
Saliva				
Aspirate (sila nyatakan:)				
Lain-lain (sila nyatakan:)				

NOTA: Sampel palitan (swab) mesti dimasukkan ke dalam bekas yang mengandungi Virai Transport Media (VTM) dan sampel lain dimasukkan ke dalam bekas steril kosong. Kesemua jenis sampel mesti disimpan pada suhu 2^o-8^oC sejurus diambil dan tiba di makmal yang dikenalpasti dalam tempoh sekurang-kurangnya 48 jam selepas pengambilan.

CATATAN:

D. MAKLUMAT PEMOHON	E. MAKLUMAT MAKMAL TRANSIT* (sekiranya berkenaan)
Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:
No. Telefon:	No. Telefon:

* Makmal Transit: Makmal dimana spesimen dihantar untuk tujuan pengumpulan sebelum ia seterusnya dihantar ke MKAK/MKA Mengikut Zon / Unit Virologi, IMR

F. UNTUK KEGUNAAN MAKMAL	
Kaunter Penerimaan Sampel	Makmal
Tarikh spesimen diterima:	Tarikh spesimen diterima:
Suhu: °C	Suhu: °C
Jenis spesimen:	Jenis spesimen:
Status: Sampel Diterima / Sampel Ditolak*	Status: Sampel Diterima / Sampel Ditolak*
* Sekiranya spesimen ditolak, sila nyatakan sebab:	
CATATAN:	
Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:

- Makmal Kesihatan Awam Kebangsaan (MKAK) Sungai Buloh, Selangor (u.p. Makmal Isolasi Virus): 03-6126 1200 / 1325
- Unit Virologi, Institut Penyelidikan Perubatan (IMR), NIH, Setia Alam; 03-33628960

MSLF:02/Rev2024

No. Rujukan Makmal: MKA..... / CL/ 20..... /

MEASLES & RUBELLA / CONGENITAL RUBELLA SYNDROME (CRS) - BORANG PERMOHONAN UJIAN MAKMAL

A. MAKLUMAT PESAKIT				
Nama Pesakit:		Daerah:		Negeri:
Warganegara / Bukan Warganegara (nyatakan):		Bangsa:		Jantina: L / P
No. KP/ lain-lain:		Umur: tahun / bulan		
B. MAKLUMAT IMUNISASI MEASLES (MMR/MR/MMRV)				
Belum layak <input type="checkbox"/> Ada <input type="checkbox"/> Tiada <input type="checkbox"/> Tidak diketahui <input type="checkbox"/>		Tarikh dos terakhir: / /		Jumlah dos: 1 / 2
C. MAKLUMAT EPIDEMIOLOGI				
Tujuan pensampelan		Ya (✓)		
Wabak/ Kluster/Kontak rapat				
Sporadik/ Diagnostik/ Kes suspected				
Lokaliti kejadian:				
Sejarah ke luar negara: Ada / Tiada			Negara:	
Tarikh keluar: / /			Tarikh masuk: / /	
D. MAKLUMAT KLINIKAL				
Gejala (Simptom)		Ada (✓) / Tiada (X)		Tarikh mula
Demam				/ /
Ruam (<i>maculopapular rash</i>)				/ /
Konjunktivitis				Catatan:
Batuk				
"Coryza"				
Kes Kematian/ICU				
Lain-lain (nyatakan):				
E. SPESIMEN KLINIKAL				
Spesimen: <input type="checkbox"/> Pertama <input type="checkbox"/> Kedua (sampel serum ulangan sahaja)			Untuk kegunaan makmal	Tandatangan pegawai yang mengambil spesimen
Spesimen (tandakan ✓ di ruang berkenaan)		Tarikh diambil	Tarikh penghantaran	Sila tanda jika terima (tandakan ✓ di ruang berkenaan)
Darah / Serum		/ /	/ /	Tandatangan: Nama dan Cop Pegawai:
Sekresi pemapasan (<i>Throat swab/ Nasopharyngeal swab/Respiratory secretion</i>)		/ /	/ /	
Air kencing (<i>Urine</i>)		/ /	/ /	
CSF (<i>Cerebrospinal fluid</i>)		/ /	/ /	
F. MAKLUMAT PEMOHON				
Hospital/Klinik Kesihatan/PKD:				
Tandatangan: Nama dan Cop Pegawai:			No telefon:	
G. KAUNTER PENERIMAAN SPESIMEN				
Cop Makmal:		Suhu Penerimaan:		Tarikh:

**MAKMAL KESIHATAN AWAM IPOH
KEMENTERIAN KESIHATAN MALAYSIA
Tel : 05 - 528 7829**

VIRAL ENCEPHALITIS / MENINGITIS INVESTIGATION REQUEST FORM

PURPOSE OF SAMPLING	SPECIMEN CATEGORY
<input type="checkbox"/> Diagnostic <input type="checkbox"/> Outbreak / Cluster	<input type="checkbox"/> Case <input type="checkbox"/> Contact

PATIENT INFORMATION			
Name		Age	
I/C No.		Gender	Male / Female
R/N No.		Occupation	
Ward		Nationality	Malaysian / Non-Malaysian (_____)

EPIDEMIOLOGY INFORMATION			
Travelling History		Place of Occurance <small>(Please state it e.g. school/ household/ public places)</small>	
Country	Date Visit		
Exposure History		Recreational Activities	
Type of animal/ arthropod	Date of Exposure	<input type="checkbox"/> Camping	<input type="checkbox"/> Swimming
Animal		<input type="checkbox"/> Hunting	<input type="checkbox"/> Others (_____)
Arthropod			
Immunization Status			
<input type="checkbox"/> Complete	<input type="checkbox"/> Incomplete	Other Vaccination Taken:	Date of Last Dose:

CLINICAL SUMMARY			
Date Onset of Fever:	<input type="checkbox"/> Altered mental status	<input type="checkbox"/> Nausea	<input type="checkbox"/> Seizures
	<input type="checkbox"/> Irritability	<input type="checkbox"/> Patient Expired	<input type="checkbox"/> Stiff Neck
<input type="checkbox"/> Fever (T_____°C)	<input type="checkbox"/> Loss of Consciousness	<input type="checkbox"/> Photophobia	<input type="checkbox"/> Sudden severe dementia
<input type="checkbox"/> Headache	<input type="checkbox"/> Muscle Weakness	<input type="checkbox"/> Rash	<input type="checkbox"/> Vomiting
Clinical/ Provisional Diagnosis:			

LABORATORY FINDINGS AT ADMISSION								
Hb	TWBC	%PN	%L	%N	%M	%E	Platelets	HCT

CEREBROSPINAL FLUID (CSF) ANALYSIS RESULT		
Pressure : Normal / High	Appearance : Clear / Turbid	Protein : Normal / High
Glucose : Normal / Low	Cell Count : _____/ul lymphocytes (Normal Range : <5/ul)	

SPECIMEN INFORMATION			
Specimen Type :	<input type="checkbox"/> CSF	<input type="checkbox"/> Serum	<input type="checkbox"/> Throat Swab
	<input type="checkbox"/> Urine	<input type="checkbox"/> Saliva	<input type="checkbox"/> Others :
Date & Time Specimen Collection: dd/mm/yyyy @ ____am/pm			

REQUESTOR INFORMATION			
Name		Emel Address	
Designation		Hosp. / PKD	
Sign & Cop		Tel & Fax No.	

FOR LABORATORY USE ONLY	
Specimen received by :	Date & Time specimen received:

MAKMAL KESIHATAN AWAM KEBANGSAAN
BORANG PERMOHONAN UJIAN MAKMAL HFMD

No. Rujukan Makmal: MKAK/ENT/20___/___)

A. TUJUAN PERSAMPELAN	
Wabak	<input type="radio"/>
Survelan (Klinik Sentinel)	<input type="radio"/>
Kes Teruk (Masuk Wad & Umur < 5 tahun)	<input type="radio"/>

B. MAKLUMAT PESAKIT	
Nama Pesakit:	
No. Kad Pengenalan / Passport:	Umur:
Warganegara:	Jantina: L / P
Hospital / Klinik Kesihatan:	Wad:
R/N:	Bangsa :
Negeri:	Daerah :

C. MAKLUMAT KLINIKAL		
Gejala	Tandakan (✓) di ruangan berkenaan	Tarikh mula
Demam $\geq 38^{\circ}\text{C}$		
Ulser di mulut & tekak		
Maculopapular rash dan / vesikel pada tapak tangan dan tapak kaki		
Tanda dan gejala URTI		
Lain-lain		

D. MAKLUMAT SPESIMEN KLINIKAL				
Jenis Spesimen	Tandakan (✓) di ruangan berkenaan	Tarikh diambil	Tarikh dihantar	Pengambil Sampel
Rectal swab				
Mouth ulcer				
Vesicle swab				
Stool				

E. MAKLUMAT PEMOHON	F. MAKLUMAT MAKMAL TRANSIT* (sekiranya berkenaan)
Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:
No. Telefon:	No. Telefon:

G. UNTUK KEGUNAAN MAKMAL	
Kaunter Penerimaan Sampel	Makmal
Tarikh spesimen diterima:	Tarikh spesimen diterima:
Suhu: $^{\circ}\text{C}$	Suhu: $^{\circ}\text{C}$
Jenis spesimen:	Jenis spesimen:
Status: Sampel Diterima / Sampel Ditolak*	Status: Sampel Diterima / Sampel Ditolak*

* Sekiranya spesimen ditolak, sila nyatakan sebab:

CATATAN:

Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:
----------------------------	----------------------------

Sebarang komusykalan sila hubungi:

- Makmal Kesihatan Awam Kebangsaan (MKAK) Sungai Buloh, Selangor (u.p. Makmal Isolasi Virus): 03-6126 1200 / 1325
- Sample swab mesti dimasukkan dlm vtm dan suhu penghantaran utk semua sample adalah 2-8 degree celcius

MKAK-BPU-D02(rev_Nov_2015)

MAKMAL KESIHATAN AWAM KEBANGSAAN, KEMENTERIAN KESIHATAN MALAYSIA

Lot 1853, Kg Melayu Sungai Buloh, 47000 Sungai Buloh, Selangor Darul Ehsan

Tel: 03-61565109 Fax: 03-61402249/61569654

LABORATORY REQUEST FORM FOR DENGUE AND FLAVIVIRUS

Lab No. (for lab use) :	
REQUESTOR INFORMATION	
Name :	
Post :	
Address :	
District :	
State :	
Tel. No. :	Fax No. :
Email :	
Purpose of Sampling	
a. Dengue (please tick purpose of sampling as below)	b. Flavivirus (please tick purpose of sampling as below)
<input type="checkbox"/> Outbreak	<input type="checkbox"/> Outbreak
<input type="checkbox"/> Surveillance	<input type="checkbox"/> Surveillance
<input type="checkbox"/> Diagnostic	<input type="checkbox"/> Diagnostic
Specimen Category : <input type="checkbox"/> case <input type="checkbox"/> Contact <input type="checkbox"/>	
A. PATIENT'S INFORMATION	
Name :	Age : Date of birth
IC No.	Sex : <input type="checkbox"/> Male <input type="checkbox"/> Female
Reference No. :	Nationality : <input type="checkbox"/> Malaysian <input type="checkbox"/> Non Malaysian
Address	(Please state country of origin) _____
District :	Occupation :
Postcode :	Tel. No. :
State :	
B. CLINICAL SUMMARY	
<input type="checkbox"/> Fever : T°C	<input type="checkbox"/> Diarrhea
<input type="checkbox"/> Retro-orbital pain	<input type="checkbox"/> Bleeding tendencies
<input type="checkbox"/> Maculopapular rash	<input type="checkbox"/> Hepatomegaly
<input type="checkbox"/> Vomitting	<input type="checkbox"/> Shock
<input type="checkbox"/> Myalgia/arthritis	<input type="checkbox"/> CNS Complications
Date of fever onset : _____ (dd/mm/yyyy)	
Clinical/Provisional Diagnosis :	
<input type="checkbox"/> Dengue Fever	<input type="checkbox"/> Dengue Hemorrhagic
<input type="checkbox"/> Dengue Shock Syndrome	<input type="checkbox"/> Death : _____ (dd/mm/yyyy)
<input type="checkbox"/> Compensated Shock	<input type="checkbox"/> Other (flavivirus).
C. PATIENT'S LOCATION	
<input type="checkbox"/> Clinic	<input type="checkbox"/> Ward
<input type="checkbox"/> ICU	
D. SPECIMEN INFORMATION	
Type of specimen :	Name of Collector :
Date of Collection: (dd/mm/yyyy)	Date specimen Received (for lab use) : (dd/mm/yyyy)
E. RESULTS (for lab use only)	
Verified by :	Date:

MKAK/BP/ENV/02 Rev 1

BORANG UMUM
PERMOHONAN PENYIASATAN/PEMANTAUAN SAMPEL PERSEKITARAN
KEMENTERIAN KESIHATAN MALAYSIA

Pusat pengujian sampel (*bulatkan*) MKAK /MKAI/MKAKB/MKAJB/MKAKK/IMR

No makmal:

A. MAKLUMAT PEMOHON	
Nama:	
Jawatan:	
Nama Institusi:	
Daerah:	Negeri:
No. Telefon:	No. Fax:
Email:	
Nama Pegawai mengambil sampel:	
No. Kad Kuasa Pegawai:	

B. MAKLUMAT SAMPEL	
No ID sampel:	
Jenis Sampel:	
Tarikh Persampelan:	Masa:
Lokaliti Umum Persampelan:	
Sub lokaliti persampelan: <i>(STP/ open canal/river)</i>	
Geocoordinates:	Tahap kandungan minyak:
Warna:	Ciri fizikal yang lain:
Tahap keladak:	Bau:
Suhu sampel:	pH:
Cuaca semasa persampelan:	Isipadu: m/ kg
Kadar aliran air:	
Jenis ujian dipohon:	

C. MAKLUMAT SAMPEL BERKAITAN PENGESANAN LEGIONELLA SAHAJA	
Jumlah Tangki/Menara Penyejuk:	Tarikh Akhir Penyelenggaraan:
Kaedah yang digunakan untuk penyelenggaraan (termasuk jenis bahan kimia):	
D. MAKLUMAT KES (jika ada)	
Nama Kes / Kontak:	Status Kes / kontak: (Hidup/ Mati) *
No. K/P atau ID	Tanda dan Gejala:
Pekerjaan / Pendedahan	

E. MAKLUMAT LOKASI PERSAMPELAN

Keadaan Sekitar Lokasi Persampelan

- Premis makanan *(Kekal/Bergerak)
- Penternakan haiwan. Nyatakan:
- Kawasan kediaman / Perumahan. Nyatakan:
- Aktiviti rekreasi. Nyatakan:
- Aktiviti pertanian
- Sistem pengurusan sisa *(Baik/Tidak)
- Sistem saliran air*(Baik/Tidak)
- Kawasan banjir
- Kawasan redup / celah batu
- Lain-lain:

*potong mana yang tidak berkenaan

Adakah sampel air menjadi sumber bekalan air kepada awam? Ya TidakJenis sumber air: Terawat Tidak terawat. Nyatakan**F. LAKARAN LOKASI PERSAMPELAN**

Petunjuk:

Document No.	MKAI/SP/F-36
Edition No.	2
Edition Date	1 st March 2020

INFORMED CONSENT LABORATORY TEST

TEST INFORMATIONS

Name of Disease / Test : _____

I understand the following :

1. This is specific for _____
 - A **POSITIVE** result is an indication that i may be predisposed to or have the specific disease, or condition. Further testing may be needed to confirm the diagnosis
 - A **NEGATIVE** result is an indication that i may not be predisposed to or may not have the specific disease. Due to limitation in the technology, maybe not be detected by the test
 - There may be a possibility that the laboratory findings will be UNINTERPRETABLE or of unknown significance. In rare circumstances, findings may be suggestive of a condition different than the diagnosis that was originally considered.
2. The potential benefit of this test is to confirm the diagnosis of the condition.
3. Erroneous result and incorrect interpretation may occur because of the rare technical error, sample misidentification, sample contamination and general laboratory error.
4. Accurate interpretation of the sample test result depends on correct information about the clinical diagnosis, clinical presentation and date onset fever and travelling history.
5. The test offered are considered to be the best available at this time
6. In order to help me understand the test results, the results will be reported to me only through a doctor.
7. The reports shall be used ONLY for clinical interpretation.
8. This report shall NOT be used for any forensic purposes or is NOT VALID for forensic interpretation.
9. This report shall NOT be used in any courts of law or in legal matters and is NOT VALID for legal interpretation.

INFORMED CONSENT :

1. A biologic specimen (blood, tissue, respiratory samples, body fluids and feces) will be collected for the tests for the above conditions.
2. After sample testing is completed, a small amount of my sample may be made anonymous and used for medical education, quality control or research. Since the samples have been anonymised, any research results obtained cannot be reported to me. I understand that any biologic specimens obtained for the purpose of the laboratory testing become the exclusive property of MKAI's laboratories. After the specific test(s) requested have been completed, the laboratory may dispose, retain, or use the de-identified specimen(s) for the validation or education; i.e publication into journals. I understand that my identity will be protected.
3. Laboratory results are strictly confidential and will not be released to anyone including my relatives/ other than my doctors without my consent.

To be completed by the:

PATIENT / PARENTS / LEGAL GUARDIAN	DOCTOR / COUNSELLOR
<p>I have read and received a copy of this consent form. I understand the information provided in this document and I have had the opportunity to ask questions about testing, the procedure and the associated risks, benefits and limitations. I agree to have the testing and accept the risks and limitations.</p> <p>SIGNATURE :</p> <p>NAME & I/C NO. :</p> <p>DATE :</p>	<p>I have fully explained the nature of the requested test(s) to the patient / parent / legal guard</p> <p>SIGNATURE AND OFFIAL STAMP :</p> <p>NAME :</p> <p>DATE :</p>

Document No.	MKAI/SP/F-36
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Edition Date	1 st March 2020

KEBENARAN MENJALANKAN UJIAN MAKMAL

MAKLUMAT UJIAN YANG DIJALANKAN

Nama Penyakit / Ujian : _____

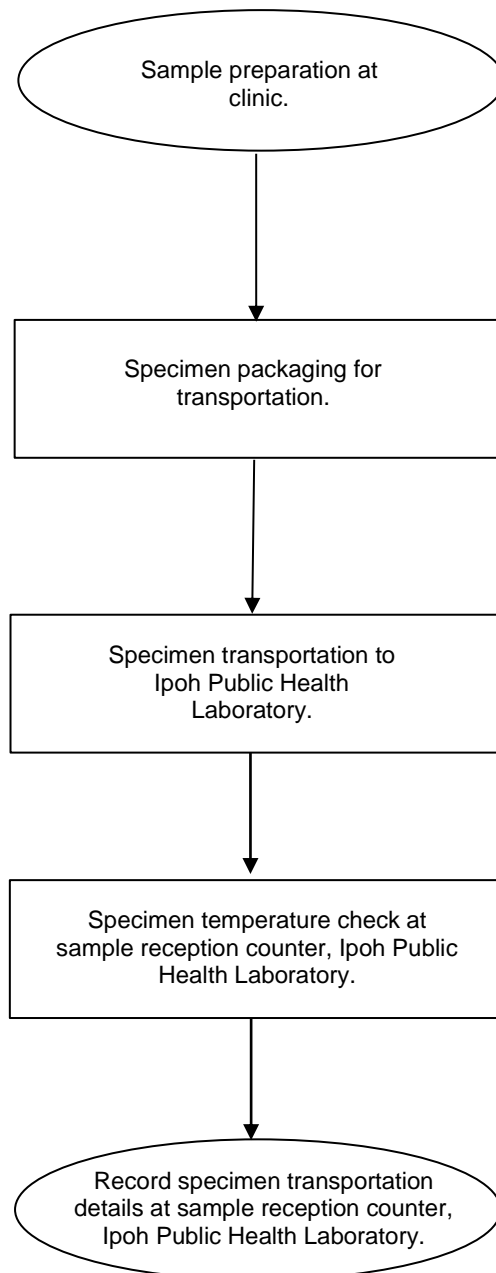
Saya memahami penerangan yang berikut :

1. Ujian ini khusus untuk _____
 - * Keputusan ujian **POSITIF** adalah indikasi bahawa saya terdedah kepada atau menghadapi penyakit/ keadaan yang tertentu. Oleh itu ujian lanjutan adalah diperlukan bagi mengesahkan penyakit tersebut.
 - * Keputusan ujian **NEGATIF** adalah indikasi bahawa saya tidak terdedah kepada atau tidak menghadapi penyakit/ keadaan yang tertentu atau tidak dapat dikesan disebabkan oleh limitasi teknologi kaedah ujian yang digunakan.
 - * Ada juga kemungkinan keputusan ujian tidak dapat DIINTERPRETASI atau tidak diketahui signifikasinya. Dalam keadaan tertentu, keputusan ujian mungkin menunjukkan keputusan yang tidak selaras dengan diagnosis asal yang telah dijangkakan.
2. Kebaikan ujian ini adalah untuk pengesahan diagnosis sesuatu penyakit.
3. Keputusan dan interpretasi yang tidak tepat berkemungkinan boleh berlaku berpunca daripada kesilapan teknikal yang tidak lazim, kesilapan pengenalpastian identiti sampel, kontaminasi sampel, mutasi pada tapak primer dan kesilapan umum makmal.
4. Ketepatan interpretasi keputusan ujian bergantung kepada ketepatan maklumat diagnosis klinikal, tanda-tanda simptomatik penyakit, 'date onset fever' dan maklumat sejarah perjalanan.
5. Ujian yang ditawarkan adalah ujian yang terbaik boleh didapati pada masa ini
6. Bagi tujuan membantu saya memahami laporan keputusan ujian, ianya akan dimaklumkan kepada saya hanya melalui doktor.
7. Keputusan ujian ini digunakan HANYA untuk interpretasi klinikal.
8. Keputusan ujian ini tidak boleh digunakan untuk apa-apa tujuan forensik atau TIDAK SAH untuk tafsiran forensik
9. Keputusan ujian ini tidak boleh digunakan dalam mana-mana mahkamah undang-undang atau dalam hal-hal berkaitan perundangan dan TIDAK SAH untuk tafsiran undang-undang.
10. Selepas ujian selesai, sebahagian sampel akan dilabel tanpa nama dan digunakan untuk tujuan pembelajaran, kawalan kualiti atau penyelidikan. Keputusan ujian tersebut tidak akan dimaklumkan kepada saya kerana sampel tersebut adalah dilabel tanpa nama. Saya faham bahawa spesimen biologi yang diambil untuk tujuan ujian tersebut adalah hak milik eksklusif makmal MKAI. Selepas ujian yang diminta selesai diproses makmal berhak melupus, menyimpan atau menggunakan kembali spesimen tersebut untuk ujian validasi atau pembelajaran,
11. Keputusan ujian adalah sulit dan tidak akan didedahkan kepada sesiapa termasuk ahli keluarga atau individu selain doktor saya tanpa keizinan saya.

Untuk diisi oleh :

PESAKIT / IBUBAPA / PENJAGA SAH	DOKTOR / KAUNSELOR
Saya telah membaca dan menerima salinan borang kebenaran. Saya memahami isi kandungan di dalam dokumen ini dan mempunyai peluang untuk bertanyakan soalan tentang ujian, prosedur ujian dan risiko yang berkaitan, manfaat dan limitasi ujian. Saya setuju untuk menjalani ujian ini dan menerima risiko serta limitasinya.	Saya telah menerangkan sepenuhnya tentang ujian yang ingin dijalankan kepada pesakit/ ibubapa/ penjaga yang sah.
TANDATANGAN :	TANDATANGAN :
NAMA & NO. I/C : TARIKH :	NAMA & NO. I/C : TARIKH :

Appendix 1

FLOW CHART AND GUIDELINE OF SPECIMEN TRANSPORTATION TO IPOH PUBLIC HEALTH LABORATORY**Flow Chart****Action (Sender)**

Make sure sample is place in a biohazard plastic bag and the request form in a separate plastic bag.

The biohazard bag which has the specimen inside is stored in a cool box with icepack. Make sure the icepack is enough to ensure the required transportation temperature 4 - 8°C is maintain. Send the cool box with the request form to Ipoh Public Health Laboratory.

Make sure to send the specimen immediately to maintain the temperature in accordance to Ipoh Public Health Laboratory requirement.

Do not remove the sample from the cool box. Bring the cool box and request form to the sample reception counter for specimen temperature checking.

Sender must place a signature in the specimen reception record book at sample reception counter, Ipoh Public Health Laboratory.



KEMENTERIAN KESIHATAN MALAYSIA
MAKMAL KESIHATAN AWAM IPOH

BORANG ADUAN / CADANGAN PELANGGAN



Mohon imbas kod QR dan isikan borang aduan
sekiranya terdapat aduan/maklumbalas untuk perhatian MKAI.



Makmal Kesihatan Awam Ipoh

Jalan Jelapang

30020 Ipoh

Perak.

Tel: 05-5287829/30/32/33/34

<https://jknperak.moh.gov.my/mkai>

