UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH

*Compilation of*

# JOB AIDS FOR LABORATORY CONFIRMATION

## TOOLS THAT PROMOTE IMPROVED HEALTH WORKER PERFORMANCE

PHRplus
WORLD HEALTH ORGANIZATION
Regional Office for Africa
CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION
USAID

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**Job Aids for Laboratory Confirmation**

**Disease-specific job aids**

Acute flaccid paralysis
For health facilities and districts

Bacillary dysentery
For health facilities and districts
For referral laboratories

Cerebrospinal meningitis
For health facilities and districts
For referral laboratories

Cholera
For health facilities and districts
For referral laboratories

Measles
For health facilities and districts
For referral laboratories

Plague
For health facilities and districts
For referral laboratories

Viral hemorrhagic fevers
For health facilities and districts

Yellow fever
For health facilities and districts
For referral laboratories

**Supplemental job aids**

How to collect blood

How to collect bubo aspirate

How to collect CSF

How to obtain serum from whole blood

How to perform a skin snip

How to take a rectal swab and transfer to transport medium

How to use Cary Blair transport medium

Labeling specimens

Triple packaging system to maintain ambient temperature

Triple packaging system to maintain cold chain

Using trans-isolate transport medium for CSF

**References**

# 1.0 Objectives of this *Compilation of Job Aids for Laboratory Confirmation*

## 1.1 What is in this compilation?

This compilation contains the job aids for laboratory confirmation developed by the Tanzania Ministry of Health (MOH) and its partners based on the Tanzania *National Guidelines for Integrated Disease Surveillance and Response*. These job aids provide relevant information in a condensed, single-page format that is easy to use at the worksite. They promote standard performance by reminding health workers how and when to perform tasks.

## 1.2 Who is this compilation for?

This compilation is intended primarily for

- National surveillance officers
- National laboratory managers
- National communicable disease control managers and supervisors
- IDSR partners and donors
- Training officers
- Monitoring and evaluation officers

## 1.3 How could this compilation be used?

This compilation could be used as a reference for examples of tools for improving health worker performance in tasks that support laboratory confirmation.

In your program, this compilation could be used to

- Promote job aids as a tool,
- Apply the job aid concept, and
- Develop similar tools.

# 2.0 Surveillance and laboratory confirmation in the African region

In 1998, the World Health Organization (WHO) Regional Committee for Africa adopted the Integrated Disease Surveillance and Response (IDSR) strategy through resolution AFR/RC48/R2. IDSR aims to strengthen national communicable disease surveillance and response systems.

The specific goals for IDSR are:

- To strengthen district level surveillance and response for priority diseases,
- To integrate surveillance with laboratory support, and
- To translate surveillance and laboratory data into specific public health actions.

The Regional Committee also urged countries to develop laboratory services as a step in strengthening disease surveillance systems.

## 2.1 What is the role of laboratory confirmation in surveillance?

Laboratory confirmation is the use of testing of clinical specimens to support the diagnosis of suspected cases of communicable diseases. Laboratory testing of specimens can also identify characteristics of the disease agent that may be essential in deciding on an appropriate response. For example:

- Laboratory identification of the *Neisseria meningitidis* serogroup that is causing an outbreak can help health officials select which vaccine to use to prevent additional cases.
- Laboratory analysis of *Salmonella dysenteriae* in an outbreak of bloody diarrhoea can provide antimicrobial susceptibility information that helps clinicians treat patients most effectively.

By using laboratory-confirmed surveillance information, health workers can make evidence-based decisions for

- Case management and treatment,
- Disease prevention and control, and
- Efficient use of scarce resources.

## 2.2 Barriers to laboratory confirmation

Successful laboratory confirmation depends on viable specimens reaching the laboratories and accurate and timely results reaching the response team. This happens when trained health workers know what tasks they should perform, understand when to perform them, and have adequate resources.

In the African region, the capacity for laboratory confirmation is disadvantaged because of the lack of

- Accessible standard guidelines for health worker roles and responsibilities
- Guidelines for interacting with other levels
- Resources and materials for supervision and training
- Information for planning and budgeting for material and human resources

# 3.0 An approach to supporting health worker performance in Tanzania

To address these barriers to laboratory confirmation, the Tanzania MOH and its partners developed job aids for laboratory confirmation based on the recommendations in the Tanzania *National Guidelines for Integrated Disease Surveillance and Response* and relevant international guidelines.

## 3.1 What is a job aid?

A job aid is a condensed, ready reference in a user-friendly format, based on official recommendations or policies. It supports procedures at the worksite by describing and showing actions, timing and order of actions, and results for specific tasks. This type of tool answers the questions "how" and "when" a specific task should be done.

> A **job aid** is “a repository for information, processes, or perspective that is external to the individual and that supports work and activity by directing, guiding and enlightening performance” (Rossett, 1991).

Workers can use a job aid when the need to know arises while performing a task, and supervisors may find them useful for planning, monitoring and on-the-job training.

## 3.2 Job aids for laboratory confirmation

There are two categories of job aids. Disease-specific job aids describe laboratory confirmation tasks for specific diseases. Supplemental job aids describe selected tasks in more detail.

### 3.2.1 Disease-specific job aids

These job aids describe the tasks necessary for confirming each of eight priority diseases (See Table 1).

**Table 1:**

| Disease-specific job aids |
|---|
| Acute flaccid paralysis |
| Bacillary dysentery |
| Cerebrospinal meningitis |
| Cholera |
| Measles |
| Plague |
| Viral hemorrhagic fever |
| Yellow fever |

### 3.2.2 Supplemental job aids

These job aids provide more detailed information about selected tasks, such as how to collect and handle specific specimens, how to label specimens, and how to transport them (See Table 2).

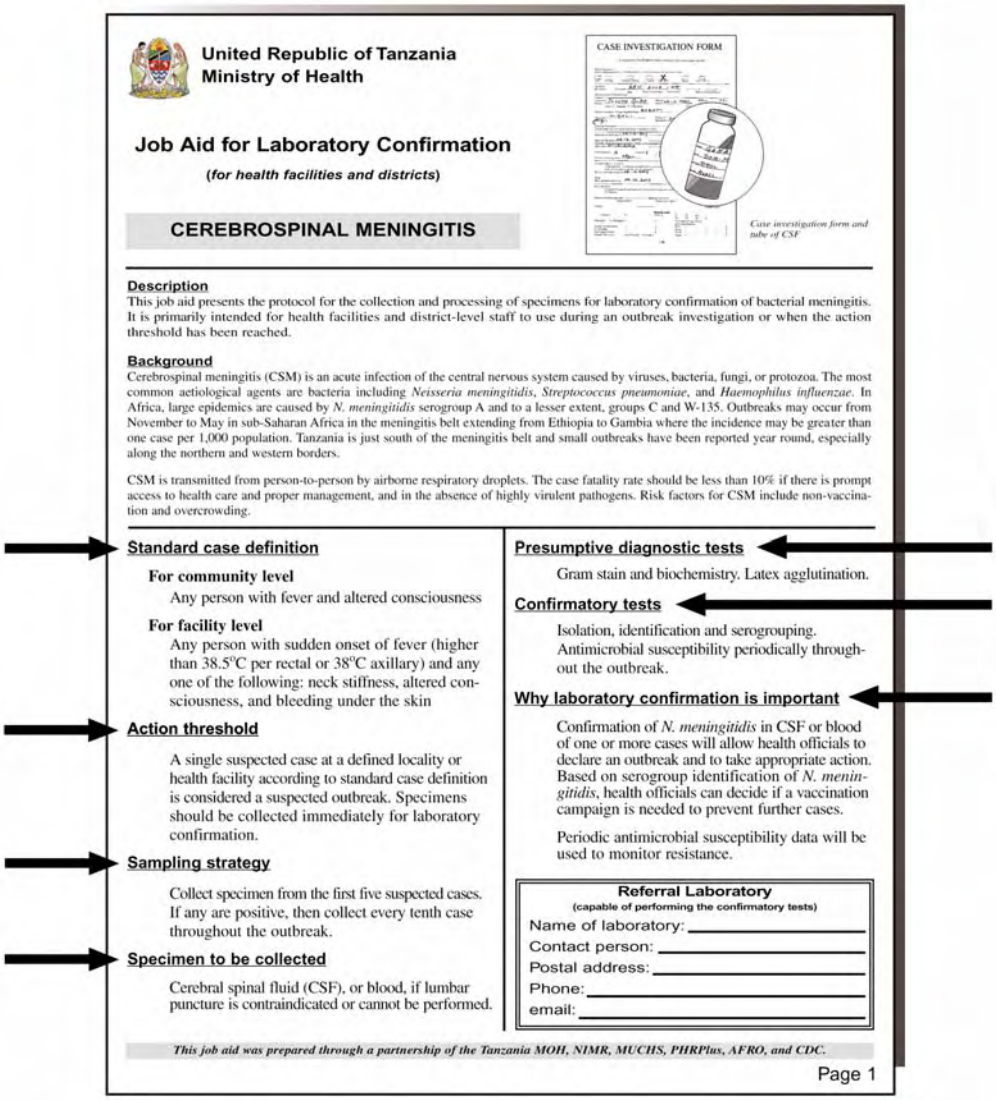
**Table 2:**

| Supplemental job aids |
|---|
| How to collect blood |
| How to collect bubo aspirate |
| How to collect CSF |
| How to obtain serum from whole blood |
| How to perform a skin snip |
| How to take a rectal swab and transfer to transport medium |
| How to use Cary Blair transport medium |
| Labeling specimens |
| Triple packaging system to maintain ambient temperature |
| Triple packaging system to maintain cold chain |
| Using trans-isolate transport media for CSF |

Figure 1 shows an example of a disease-specific job aid. The arrows point to key information located on the job aid, such as

- Standard case definition
- Action threshold
- Sampling strategy
- Specimen to be collected
- Presumptive diagnostic tests
- Confirmatory tests
- Why laboratory confirmation is important

**Figure 1**



**United Republic of Tanzania**
**Ministry of Health**

**Job Aid for Laboratory Confirmation**

***(for health facilities and districts)***

**CEREBROSPINAL MENINGITIS**

CASE INVESTIGATION FORM

*Case investigation form and tube of CSF*

**Description**

This job aid presents the protocol for the collection and processing of specimens for laboratory confirmation of bacterial meningitis. It is primarily intended for health facilities and district-level staff to use during an outbreak investigation or when the action threshold has been reached.

**Background**

Cerebrospinal meningitis (CSM) is an acute infection of the central nervous system caused by viruses, bacteria, fungi, or protozoa. The most common aetiological agents are bacteria including *Neisseria meningitidis*, *Streptococcus pneumoniae*, and *Haemophilus influenzae*. In Africa, large epidemics are caused by *N. meningitidis* serogroup A and to a lesser extent, groups C and W-135. Outbreaks may occur from November to May in sub-Saharan Africa in the meningitis belt extending from Ethiopia to Gambia where the incidence may be greater than one case per 1,000 population. Tanzania is just south of the meningitis belt and small outbreaks have been reported year round, especially along the northern and western borders.

CSM is transmitted from person-to-person by airborne respiratory droplets. The case fatality rate should be less than 10% if there is prompt access to health care and proper management, and in the absence of highly virulent pathogens. Risk factors for CSM include non-vaccination and overcrowding.

**Standard case definition**

**For community level**

Any person with fever and altered consciousness

**For facility level**

Any person with sudden onset of fever (higher than 38.5°C per rectal or 38°C axillary) and any one of the following: neck stiffness, altered consciousness, and bleeding under the skin

**Action threshold**

A single suspected case at a defined locality or health facility according to standard case definition is considered a suspected outbreak. Specimens should be collected immediately for laboratory confirmation.

**Sampling strategy**

Collect specimen from the first five suspected cases. If any are positive, then collect every tenth case throughout the outbreak.

**Specimen to be collected**

Cerebral spinal fluid (CSF), or blood, if lumbar puncture is contraindicated or cannot be performed.

**Presumptive diagnostic tests**

Gram stain and biochemistry. Latex agglutination.

**Confirmatory tests**

Isolation, identification and serogrouping. Antimicrobial susceptibility periodically throughout the outbreak.

**Why laboratory confirmation is important**

Confirmation of *N. meningitidis* in CSF or blood of one or more cases will allow health officials to declare an outbreak and to take appropriate action. Based on serogroup identification of *N. meningitidis*, health officials can decide if a vaccination campaign is needed to prevent further cases.

Periodic antimicrobial susceptibility data will be used to monitor resistance.

**Referral Laboratory**
**(capable of performing the confirmatory tests)**

Name of laboratory: _____
Contact person: _____
Postal address: _____
Phone: _____
email: _____

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

Page 1

Figure 2 shows the reverse side of the same job aid. The arrows point to the following information:

- Tasks of:

  DOCUMENTATION

  COLLECTION & HANDLING

  TRANSPORTATION

  TESTING

  RECORDING & REPORTING.

- Supplies needed for DOCUMENTATION

**Figure 2**

For health facilities and districts

**JOB AID FOR LABORATORY CONFIRMATION: CEREBROSPINAL MENINGITIS**

**1. DOCUMENTATION**

**Supplies needed:**

- Three specimen labels
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete three labels with patient name, specimen number, specimen type, date and time of collection, health facility and district (See Job Aid for Labeling Specimens)

1.2 Fill in a case investigation form completely with the patient information. Make a duplicate form.

1.3 Locate the patient entry in the register book,and record the date and specimen type to be collected.

**2. COLLECTION & HANDLING**

**Supplies needed:**

- Sterile gloves
- Sterile gown
- Sterile towels
- Sterile swabs
- Povidone iodine (10%)
- Local anesthetic
- Sterile needle and syringe
- Alcohol (70%)
- Sterile lumbar puncture needle
- Adhesive plaster
- Three small, sterile, screw-capped tubes
- Sterile gauze pad
- Sterile needle and syringe
- One vial of trans-isolate (T-I) transport medium
- Safe box for sharps

Note: Collect specimens from suspected cases before antimicrobial therapy.

**Steps:**

2.1 Collect three tubes[1] of CSF (1ml per tube) by lumbar puncture. For additional guidance, see Job Aid for How to Collect CSF.

The tubes of CSF should be handled as follows:

**Tube 1** is for staining. Keep at 4-8°C.
**Tube 2** is for biochemistry. Keep at 4-8°C.
**Tube 3** is for isolation and identification. Transfer CSF from tube 3 into a vial of T-I transport medium (See Job Aid for Using Trans-Isolate Transport Media for CSF). Keep at ambient temperature.

*If lumbar puncture is contraindicated or cannot be performed, collect blood for culture and transfer to blood culture bottles (See Job Aid for How to Collect Blood).*

2.2 Adhere labels to the tubes of CSF.

2.3 Safely dispose of all contaminated materials.

[1]If only one tube of CSF can be obtained, it should be used for isolation and identification.

**3. TRANSPORTATION**

**Supplies needed:**

- Gloves
- Insulated box
- One ice pack
- Triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature)
- Referral lab contact information

**Steps:**

3.1 Hand carry tubes 1 and 2 (for staining and biochemistry) to the local laboratory in an insulated box with ice pack.

Transport the vial *or blood culture bottles* (for isolation and identification) referral laboratory as follows:

- Pack the specimen using a triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at ambient temperature throughout transport.

  Package reaches referral laboratory **within 24 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

**4. TESTING**

Testing and documentation are done by laboratory staff according to standard operating procedures.

**5. RECORDING & REPORTING**

Laboratory should verbally communicate results to the IDSR focal person in the district within two to four days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

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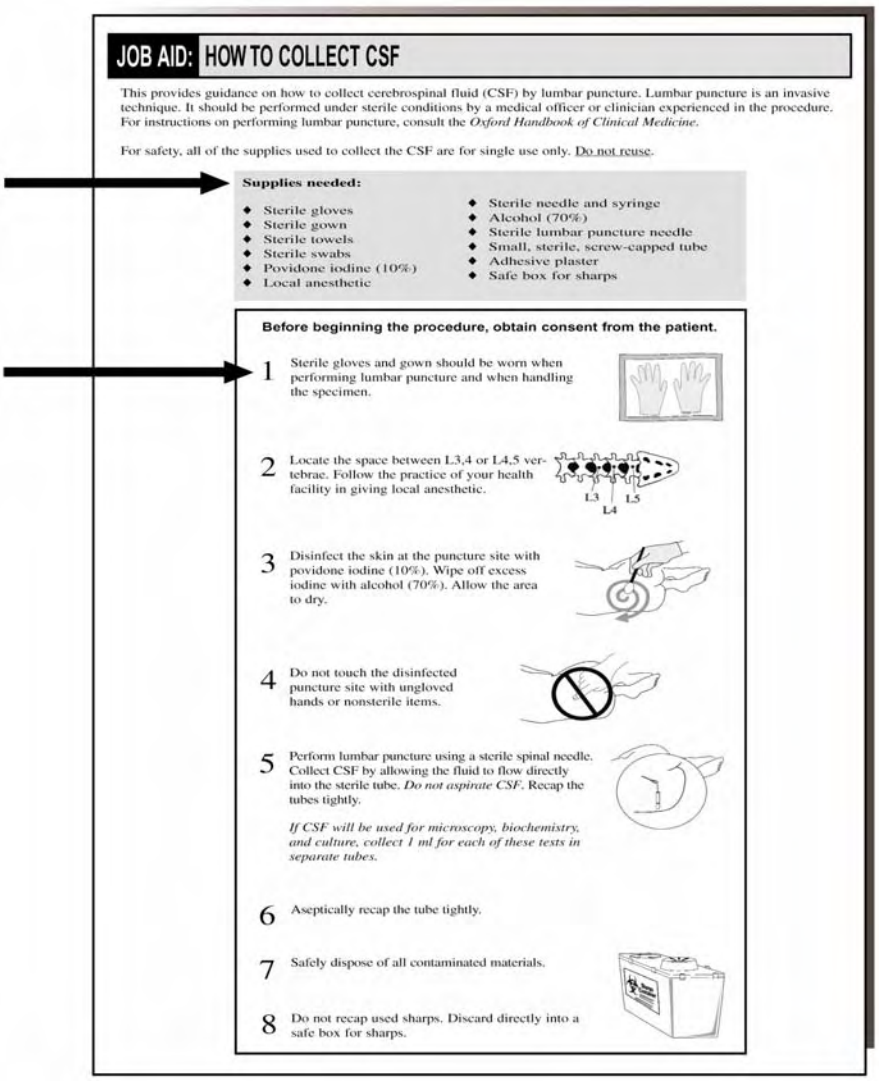
Page 2

Figure 3 shows an example of a specimen-specific job aid. The arrows point to the following information:

- Supplies needed
- Illustrated steps for how to perform the tasks

**Figure 3**



**JOB AID: HOW TO COLLECT CSF**

This provides guidance on how to collect cerebrospinal fluid (CSF) by lumbar puncture. Lumbar puncture is an invasive technique. It should be performed under sterile conditions by a medical officer or clinician experienced in the procedure. For instructions on performing lumbar puncture, consult the *Oxford Handbook of Clinical Medicine*.

For safety, all of the supplies used to collect the CSF are for single use only. Do not reuse.

**Supplies needed:**

- Sterile gloves
- Sterile gown
- Sterile towels
- Sterile swabs
- Povidone iodine (10%)
- Local anesthetic
- Sterile needle and syringe
- Alcohol (70%)
- Sterile lumbar puncture needle
- Small, sterile, screw-capped tube
- Adhesive plaster
- Safe box for sharps

**Before beginning the procedure, obtain consent from the patient.**

1. Sterile gloves and gown should be worn when performing lumbar puncture and when handling the specimen.
2. Locate the space between L3,4 or L4,5 vertebrae. Follow the practice of your health facility in giving local anesthetic.
3. Disinfect the skin at the puncture site with povidone iodine (10%). Wipe off excess iodine with alcohol (70%). Allow the area to dry.
4. Do not touch the disinfected puncture site with ungloved hands or nonsterile items.
5. Perform lumbar puncture using a sterile spinal needle. Collect CSF by allowing the fluid to flow directly into the sterile tube. *Do not aspirate CSF*. Recap the tubes tightly.

   *If CSF will be used for microscopy, biochemistry, and culture, collect 1 ml for each of these tests in separate tubes.*
6. Aseptically recap the tube tightly.
7. Safely dispose of all contaminated materials.
8. Do not recap used sharps. Discard directly into a safe box for sharps.

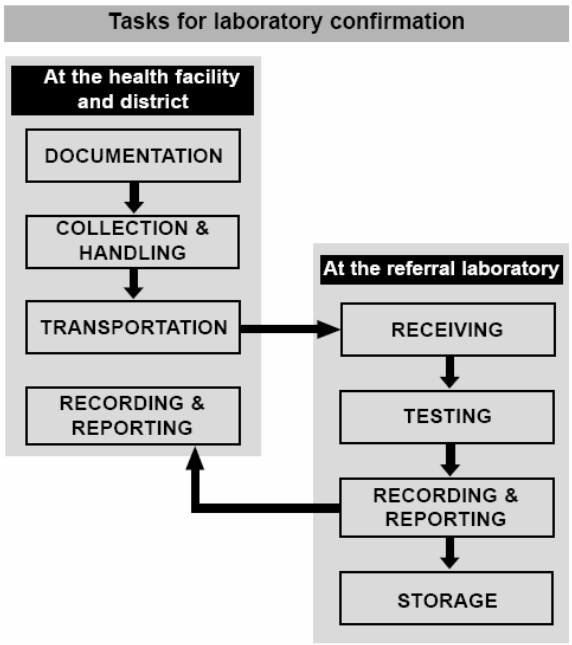
## 3.3 Using the job aids for laboratory confirmation

The process of laboratory confirmation depends on health workers performing specific tasks at their level. Figure 4 shows each task in the disease-specific job aids and the interaction between the levels.
For example:

- In the TRANSPORTATION task, health workers at a health facility transport specimens to the referral laboratory.

- In the RECORDING & REPORTING task, laboratory workers report the results back to the health facility.

Figure 4




For each disease, there is one job aid targeted for health workers at health facilities and district where the patient is seen and the disease is detected. A separate job aid is for health workers at the referral laboratory where the testing is done to confirm the disease.[1]

In the COLLECTION & HANDLING and TRANSPORTATION tasks, health workers should use the supplemental job aids when they need to know more details about a particular task. For example, when collecting cerebrospinal fluid, health workers may refer to the job aid for "How to Collect CSF."

[1] Since specimens for acute flaccid paralysis and viral hemorrhagic fevers are referred to international laboratories outside of Tanzania, job aids for referral laboratories for these diseases were not developed.

### 3.3.1 Who should use the job aids?

The job aids are primarily intended for:

- Health staff in health facilities and districts, and referral laboratories
- Program managers, health and training officers
- Budget and logistics officers

### 3.3.2 How the job aids should be used

Health workers should use the job aids for epidemic preparedness and during an outbreak investigation.

The job aids should be able to assist health workers to

- Use action thresholds to initiate laboratory confirmation
- Perform tasks that support laboratory confirmation
- Ensure that supplies and equipment are available to perform tasks
- Supervise health workers
- Train new health workers
- Identify and troubleshoot problems
- Plan for adequate financial, material, and human resources

# DISEASE-SPECIFIC JOB AIDS

## ACUTE FLACCID PARALYSIS

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for health facilities and districts*)**

## ACUTE FLACCID PARALYSIS

*Case investigation form and container of stool*

## Description

This job aid presents the protocol for collection and processing of specimens for laboratory confirmation of acute flaccid paralysis (AFP). It is primarily intended for health facilities and district-level staff to use during an outbreak investigation or when the action threshold has been reached.

## Background

Acute flaccid paralysis (AFP) is the hallmark of poliomyelitis, a disease caused by poliovirus serotypes 1, 2, and 3. The Polio Eradication Program has nearly halted ongoing wild-type poliovirus; however, serotypes 1 and 3 still circulate in several African countries. In 1994, Tanzania began polio eradication activities such as routine oral polio vaccine immunization, national immunization days, and active surveillance for AFP. The last case of polio in Tanzania was identified in 1996.

Poliovirus is transmitted from person-to-person by ingesting faecally-contaminated materials. Polio infection occurs almost exclusively among children. Paralytic polio, though not fatal, has devastating social and economic consequences for affected individuals. Only 1% of those infected have paralysis and the remaining cases suffer from a milder form of the disease. Immuno-compromised persons may shed virus for several years. Risk factors for poliomyelitis include non-vaccination and exposure to faecally-contaminated materials.

## Standard case definition

**For community level**

Any sudden lameness in a child less than 15 years of age.

**For facility level**

Any child less than 15 years of age with sudden onset of paralysis including Guillain-Barré syndrome. Or any person at any age with paralytic illness in whom the medical practitioner suspects poliomyelitis.

## Action threshold

A single case at a defined locality or health facility according to standard case definition is considered a suspected outbreak. Specimens should be collected immediately for laboratory confirmation.

## Sampling strategy

Collect two specimens from each suspected case.

## Specimen to be collected

Stool

## Confirmatory tests

Isolation and identification of poliovirus

## Why laboratory confirmation is important

A stool positive for poliovirus type 1, 2 or 3 on one or more cases will allow health officials to declare an outbreak and to take appropriate action.

**National Surveillance Officer**

Expanded Programme for Immunizations (EPI)
Ministry of Health
Mabibo External Area
Nelson Mandela Road
P.O. Box 9083
Dar es Salaam, Tanzania
Attention: National Surveillance Officer

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO and CDC.***

For health facilities and districts

# JOB AID FOR LABORATORY CONFIRMATION: ACUTE FLACCID PARALYSIS

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen label
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete a label with patient name, specimen number, specimen type, date and time of collection, health facility and district. (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Gloves
- Leak proof screw-capped container

Note: Collect two specimens from each suspected case within 14 days of paralysis onset. The two specimens should be collected separately, 24 to 48 hours apart.

**Steps:**

2.1 Collect 5 to 10 grams (the size of a thumb nail) of fresh stool. Place stool in a leak proof screw-capped container.

2.2 Adhere a label to the specimen container.

2.3 Keep the specimen at 4-8°C.

*If the stool cannot reach the National Surveillance Officer for EPI within 72 hours, freeze at -20°C.*

2.4 Safely dispose of all contaminated materials.

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Triple packaging system (See Job Aid for Triple Packaging System to maintain cold chain)
- Four ice packs
- National Surveillance Officer contact information

**Steps:**

3.1 Transport the specimen to the National Surveillance Officer for EPI as follows:

- Pack the specimen using a triple packaging system with a solid cold box and ice packs (See Job Aid for Triple Packaging System to maintain cold chain).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at 4-8°C (or at -20°C if specimen is frozen) throughout transport.

  Package reaches referral laboratory **within 72 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

## 4. TESTING & DOCUMENTATION

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. REPORTING

National Surveillance Officer for EPI should verbally communicate results to the IDSR focal person in the district within 14 to 28 days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

# BACILLARY DYSENTERY

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for health facilities and districts*)**

## BACILLARY DYSENTERY

*Case investigation form and container of stool*

## Description

This job aid presents the protocol for the collection and processing of specimens for laboratory confirmation of bacillary dysentery. It is primarily intended for health facilities and district-level staff to use during an outbreak investigation or when the action threshold has been reached.

## Background

Bacillary dysentery is an acute disease producing bloody diarrhoea and abdominal pain, most commonly caused by the bacterium *Shigella*. It occurs in both endemic and epidemic forms. *S. dysenteriae* type 1 (SD1) has caused most of the large bacillary dysentery epidemics that have occurred across Africa. Epidemics in Rwanda and Burundi in the early 1990's spread to western Tanzania via refugee migration. Isolates of SD1 from these epidemics were resistant to commonly used drugs, but susceptible to nalidixic acid.

Bacillary dysentery is transmitted by from person-to-person through the ingestion of faecally-contaminated food or drink. Infection due to SD1 is often more severe in young children and the elderly in which the case fatality rate can exceed 2%. Antimicrobial resistance occurs more frequently among SD1 than in other *Shigella* serogroups. Risk factors for bacillary dysentery include overcrowded conditions with poor sanitation and unsafe water supplies. Refugee populations are at high risk.

## Standard case definition

**For community level**

Any person with diarrhoea and visible blood in stool.

**For health facility level**

Any person with diarrhoea and visible blood in stool and abdominal pain.

## Action threshold

Two or more suspected cases at a defined locality or health facility according to the standard case definition in a week is considered a suspected outbreak. Specimens should be collected immediately for laboratory confirmation.

## Sampling strategy

Collect specimen from the first 5 to 10 suspected cases. If any are positive, then collect every tenth case during the outbreak.

## Specimen to be collected

Stool, or rectal swab, if patient is not able to pass stool.

## Presumptive diagnostic tests

Macroscopy and microscopy

## Confirmatory tests

Isolation, identification and serogrouping.
Antimicrobial susceptibility.

## Why laboratory confirmation is important

A stool culture positive for *Shigella dysenteriae* type 1 (SD1) on one or more cases in a week will allow health officials to declare an outbreak and to take appropriate action.

Antimicrobial susceptibility data will be used to monitor resistance. These data will provide information for the MOH to develop a treatment policy for the organism.

**Referral Laboratory**
**(capable of performing the confirmatory tests)**

Name of laboratory: _____

Contact person: _____

Postal address: _____

Phone: _____

email: _____

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: BACILLARY DYSENTERY

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen labels
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete labels with patient name, specimen number, specimen type, date and time of collection, health facility and district. (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Gloves
- Leak proof screw-capped container
- Sterile cotton-tipped applicators (swabs)
- One tube of Cary Blair transport medium
- Adhesive tape

Note: Collect specimens from suspected cases during the acute stage (two to four days after onset) and before antimicrobial treatment.

**Steps:**

2.1 Collect a fresh stool including portions with blood and/or mucus. Place stool in a leak proof screw-capped container. Do not let stool dry out.

*If patient is not able to pass stool, take a rectal swab* (See Job Aid for How to Take a Rectal Swab and Transfer to Transport Medium).

2.2 Transfer a small amount of the stool (*or the rectal swab*) to a tube of Cary Blair transport medium (See Job Aid for Using Cary Blair Transport Medium).

2.3 Adhere a label to the specimen container and tube of Cary Blair.

2.4 Keep the tube of Cary Blair at 4-8°C.

2.5 Safely dispose of all contaminated materials.

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Triple packaging system (See Job Aid for Triple Packaging System to maintain cold chain)
- Four ice packs
- Referral lab contact information

**Steps:**

3.1 Hand carry the stool to the local laboratory (for macroscopy and microscopy).

Transport the tube of Cary Blair to the referral laboratory as follows:

- Pack the specimen using a triple packaging system with a solid cold box and ice packs (See Job Aid for Triple Packaging System to maintain cold chain).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at 4-8°C throughout transport. Do not freeze.

  Package reaches referral laboratory **within 48 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

## 4. TESTING

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. RECORDING & REPORTING

Referral laboratory should verbally communicate results to the IDSR focal person in the district within two to four days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

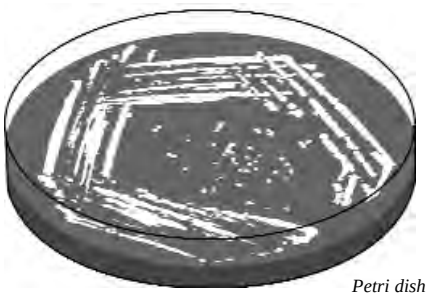
5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for referral laboratories*)**



*Petri dish containing selective agar with colonies of Shigella dysenteriae*

## BACILLARY DYSENTERY

## Description

This job aid presents the protocol for processing and testing specimens for laboratory confirmation of bacillary dysentery. It is intended for referral laboratories capable of performing the confirmatory tests. Referral laboratories should use this job aid upon receiving specimens from health facilities and districts. The job aid does not address the technical procedures for performing laboratory confirmation tests. It should be used in conjunction with the standard operating procedures (SOP) for confirming bacillary dysentery.

## Background

Bacillary dysentery is an acute disease producing bloody diarrhoea and abdominal pain, most commonly caused by the bacterium *Shigella*. It occurs in both endemic and epidemic forms. *S. dysenteriae* type 1 (SD1) has caused most of the large bacillary dysentery epidemics that have occurred across Africa. Epidemics in Rwanda and Burundi in the early 1990's spread to western Tanzania via refugee migration. Isolates of SD1 from these epidemics were resistant to commonly used drugs, but susceptible to nalidixic acid.

Bacillary dysentery is transmitted by from person-to-person through the ingestion of faecally-contaminated food or drink. Infection due to SD1 is often more severe in young children and the elderly in which the case fatality rate can exceed 2%. Antimicrobial resistance occurs more frequently among SD1 than in other *Shigella* serogroups. Risk factors for bacillary dysentery include overcrowded conditions with poor sanitation and unsafe water supplies. Refugee populations are at a high risk.

### Sampling strategy for suspected outbreaks

Health facilities or districts collect specimens from the first 5 to 10 suspected cases. If any are positive, every tenth case will be sampled throughout the outbreak.

### Specimen to be tested

Stool or rectal swab

### Confirmatory tests to be done

Isolation, identification and serogrouping.
Antimicrobial susceptibility.

### Why laboratory confirmation is important

A stool culture positive for *Shigella dysenteriae* type 1 (SD1) on one or more cases in a week will allow health officials to declare an outbreak and to take appropriate action.

Antimicrobial susceptibility data will be used to monitor resistance. These data will provide information for the MOH to develop a treatment policy for the organism.

Referral laboratories should keep updated contact information for the health facilities and districts in their catchment areas.

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: BACILLARY DYSENTERY

## 1. RECEIVING

Upon receiving specimens for laboratory confirmation of bacillary dysentery, the laboratory must be able to start testing immediately.†

**Supplies needed:**

- Gloves
- Laboratory register
- Pen or marker

Note: Gloves should be worn when opening package, and when handling specimen and contaminated materials. Work should be done in the laboratory.

**Steps:**

1.1 Log in the sender's name and address in the laboratory register.

1.2 Locate the case investigation form and the tube of Cary Blair transport medium containing the swab.

1.3 Assess the condition of the tube and the documentation as follows:

- Tube should be labeled. Information on tube label and case investigation form should match.
- Tube should be intact and not leaking.
- Tube should be cold, but not frozen.

Record the findings in the laboratory register and on case investigation form. Reject unsuitable specimens.†

1.4 Log in the patient information, the specimen information, and the date and time of receipt in the laboratory register. File case investigation form for later use.

1.5 Keep tube at 4-8°C. Immediately prepare for testing.

## 2. TESTING

**Supplies needed:**

- Standard operating procedures (SOP), reagents, and supplies for isolation, identification, and serogrouping and antimicrobial susceptibility of *Shigella*

**Steps:**

2.1 According to the SOP, perform testing for isolation, identification, and serogrouping of *Shigella*.

If any *Shigella* species are isolated, determine antimicrobial susceptibility pattern according to the SOP.

2.2 Throughout the testing, safely dispose of all waste and contaminated materials.

## 3. RECORDING & REPORTING

**Supplies needed:**

- Laboratory register
- Case investigation form

Note: Results should be communicated within two to four days of receiving the specimen. If communication is by email or other indirect means, request confirmation that the results were received.

**Steps:**

*Isolation, identification, and serogrouping*

3.1 Record the isolation, identification, and serogrouping results in the laboratory register and on the case investigation form. Communicate the results (positive or negative) immediately to the IDSR* focal person at the district and at your level.

*Susceptibility*

3.2 Record the antimicrobial susceptibility results in the laboratory register and on the case investigation form. Communicate the results immediately to the IDSR focal person at the district and at your level.

3.3 Send the original case investigation form to the IDSR focal person at the district.

## 4. STORAGE

**Steps:**

4.1 Store one or two representative isolates from the outbreak.

4.2 Dispose remaining isolates according to the SOP.

†If laboratory cannot start testing immediately or if specimen is not suitable, contact the Integrated Disease Surveillance and Response (IDSR) focal person at your level.

*Integrated Disease Surveillance and Response

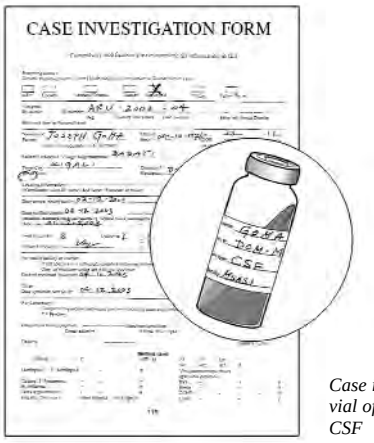
# CEREBROSPINAL MENINGITIS

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

(***for health facilities and districts***)

## CEREBROSPINAL MENINGITIS




*Case investigation form and vial of T-I inoculated with CSF*

### Description

This job aid presents the protocol for the collection and processing of specimens for laboratory confirmation of cerebrospinal meningitis. It is primarily intended for health facilities and district-level staff to use during an outbreak investigation or when the action threshold has been reached.

### Background

Cerebrospinal meningitis (CSM) is an acute infection of the central nervous system caused by viruses, bacteria, fungi, or protozoa. The most common aetiological agents are bacteria including *Neisseria meningitidis*, *Streptococcus pneumoniae*, and *Haemophilus influenzae*. In Africa, large epidemics are caused by *N. meningitidis* serogroup A and to a lesser extent, groups C and W-135. Outbreaks may occur from November to May in sub-Saharan Africa in the meningitis belt extending from Ethiopia to Gambia where the incidence may be greater than one case per 1,000 population. Tanzania is just south of the meningitis belt and small outbreaks have been reported year round, especially along the northern and western borders.

CSM is transmitted from person-to-person by airborne respiratory droplets. The case fatality rate should be less than 10% if there is prompt access to health care and proper management, and in the absence of highly virulent pathogens. Risk factors for CSM include non-vaccination and overcrowding.

### Standard case definition

**For community level**

Any person with fever and altered consciousness.

**For facility level**

Any person with sudden onset of fever (higher than 38.5°C per rectal or 38°C axillary) and any one of the following: neck stiffness, altered consciousness, and bleeding under the skin.

### Action threshold

A single suspected case at a defined locality or health facility according to standard case definition is considered a suspected outbreak. Specimens should be collected immediately for laboratory confirmation.

### Sampling strategy

Collect specimen from the first five suspected cases. If any are positive, then collect every tenth case throughout the outbreak.

### Specimen to be collected

Cerebrospinal fluid (CSF), or blood, if lumbar puncture is contraindicated or cannot be performed.

### Presumptive diagnostic tests

Gram stain and biochemistry. Latex agglutination.

### Confirmatory tests

Isolation, identification and serogrouping. Antimicrobial susceptibility periodically throughout the outbreak.

### Why laboratory confirmation is important

Confirmation of *N. meningitidis* in CSF or blood of one or more cases will allow health officials to declare an outbreak and to take appropriate action. Based on serogroup identification of *N. meningitidis*, health officials can decide if a vaccination campaign is needed to prevent further cases.

Periodic antimicrobial susceptibility data will be used to monitor resistance.

**Referral Laboratory**

**(capable of performing the confirmatory tests)**

Name of laboratory: _____

Contact person: _____

Postal address: _____

Phone: _____

email: _____

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: CEREBROSPINAL MENINGITIS

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen labels
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete labels with patient name, specimen number, specimen type, date and time of collection, health facility and district (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Sterile gloves
- Sterile gown
- Sterile towels
- Sterile swabs
- Povidone iodine (10%)
- Local anesthetic
- Sterile needle and syringe
- Alcohol (70%)
- Sterile lumbar puncture needle
- Adhesive plaster
- Three small, sterile, screw-capped tubes
- Sterile gauze pad
- Sterile needle and syringe
- One vial of trans-isolate (T-I) transport medium
- Safe box for sharps

Note: Collect specimens from suspected cases before antimicrobial therapy.

**Steps:**

2.1 Collect three tubes† of CSF (1ml per tube) by lumbar puncture. For additional guidance, see Job Aid for How to Collect CSF.

The tubes of CSF should be handled as follows:

**Tube 1** is for staining. Keep at 4-8°C.

**Tube 2** is for biochemistry. Keep at 4-8°C.

**Tube 3** is for isolation and identification. Transfer CSF from tube 3 into a vial of T-I transport medium (See Job Aid for Using Trans-Isolate Transport Medium for CSF). Keep at ambient temperature.

*If lumbar puncture is contraindicated or cannot be performed, collect blood for culture and transfer to blood culture bottles (See Job Aid for How to Collect Blood).*

2.2 Adhere labels to the tubes and vial of CSF.

2.3 Safely dispose of all contaminated materials.

†If only one tube of CSF can be obtained, it should be used for isolation and identification.

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Insulated box
- One ice pack
- Triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature)
- Referral lab contact information

**Steps:**

3.1 Hand carry tubes 1 and 2 (for staining and biochemistry) to the local laboratory in an insulated box with ice pack.

Transport the vial *or blood culture bottles* (for isolation and identification) to the referral laboratory as follows:

- Pack the specimen using a triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at ambient temperature throughout transport.

  Package reaches referral laboratory **within 24 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

## 4. TESTING

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. RECORDING & REPORTING

Referral laboratory should verbally communicate results to the IDSR focal person in the district within two to four days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

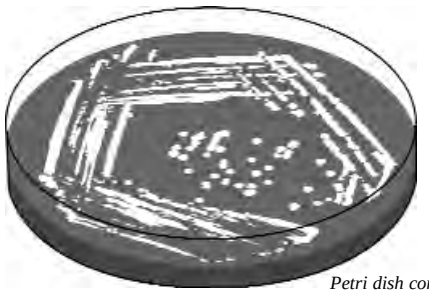
5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for referral laboratories*)**



*Petri dish containing selective agar with colonies of Neisseria meningitidis*

## CEREBROSPINAL MENINGITIS

### Description

This job aid presents the protocol for processing and testing specimens for laboratory confirmation of cerebrospinal meningitis. It is intended for referral laboratories capable of performing the confirmatory tests. Referral laboratories should use this job aid upon receiving specimens from health facilities and districts. The job aid does not address the technical procedures for performing laboratory confirmation tests. It should be used in conjunction with the standard operating procedures (SOP) for confirming cerebrospinal meningitis.

### Background

Cerebrospinal meningitis (CSM) is an acute infection of the central nervous system caused by viruses, bacteria, fungi, or protozoa. The most common aetiological agents are bacteria including *Neisseria meningitidis*, *Streptococcus pneumoniae*, and *Haemophilus influenzae*. In Africa, large epidemics are caused by *N. meningitidis* serogroup A and to a lesser extent, groups C and W-135. Outbreaks may occur from November to May in sub-Saharan Africa in the meningitis belt extending from Ethiopia to Gambia where the incidence may be greater than one case per 1,000 population. Tanzania is just south of the meningitis belt and small outbreaks have been reported year round, especially along the northern and western borders.

CSM is transmitted from person-to-person by airborne respiratory droplets. The case fatality rate should be less than 10% if there is prompt access to health care and proper management, and in the absence of highly virulent pathogens. Risk factors for CSM include non-vaccination and overcrowding.

### Sampling strategy for suspected outbreaks

Health facilities and districts collect specimens from the first five suspected cases. If any are positive, every tenth case will be sampled throughout the outbreak.

### Specimen to be tested

Cerebrospinal fluid (CSF) or blood

### Confirmatory tests to be done

Isolation, identification and serogrouping. Antimicrobial susceptibility periodically throughout the outbreak.

### Why laboratory confirmation is important

Confirmation of *N. meningitidis* in CSF or blood of one or more cases will allow health officials to declare an outbreak and to take appropriate action. Based on serogroup identification of *N. meningitidis*, health officials can decide if a vaccination campaign is needed to prevent further cases.

Periodic antimicrobial susceptibility data will be used to monitor resistance.

Referral laboratories should keep updated contact information for the health facilities and districts in their catchment areas.

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: CEREBROSPINAL MENINGITIS

## 1. RECEIVING

Upon receiving specimens for laboratory confirmation of cerebrospinal meningitis, the laboratory must be able to start testing immediately.†

**Supplies needed:**

- Gloves
- Laboratory register
- Pen or marker

Note: Gloves should be worn when opening package and when handling specimen and contaminated materials. Work should be done in the laboratory.

**Steps:**

1.1 Log in the sender's name and address in the laboratory register.

1.2 Locate the case investigation form and the vial of trans-isolate (T-I) transport medium (or blood culture bottle) inoculated with cerebrospinal fluid (CSF).

1.3 Assess the condition of the vial and the documentation as follows:

- Vial should be labeled. Information on vial label and case investigation form should match.
- Vial should be intact and not leaking.
- Vial should be at ambient temperature.

Record the findings in the laboratory register and on the case investigation form. Reject unsuitable specimens.†

1.4 Log in the patient information, the specimen information, and the date and time of receipt in the laboratory register. File case investigation form for later use.

1.5 Keep vial at ambient temperature. Immediately prepare for testing.

## 2. TESTING

**Supplies needed:**

- Standard operating procedures (SOP), reagents, and supplies for isolation, identification and serogrouping, and antimicrobial susceptibility for confirming cerebrospinal meningitis

**Steps:**

2.1 According to the SOP, perform testing for isolation and identification for confirming cerebrospinal meningitis.

Perform testing for serogrouping of *N. meningitidis*.

Periodically throughout the outbreak, determine the antimicrobial susceptibility pattern of any *N. meningitidis* species isolated.

2.2 Throughout the testing, safely dispose of all waste and contaminated materials.

## 3. RECORDING & REPORTING

**Supplies needed:**

- Laboratory register
- Case investigation form

Note: Results should be communicated within two to four days of receiving the specimen. If communication is by email or other indirect means, request confirmation that the results were received.

**Steps:**

*Isolation, identification, and serogrouping*

3.1 Record the isolation, identification, and serogrouping results in the laboratory register and on the case investigation form. Communicate the results (positive or negative) immediately to the IDSR* focal person at the district and at your level.

*Susceptibility*

3.2 Record the antimicrobial susceptibility results in the laboratory register and on the case investigation form. Communicate the results immediately to the IDSR focal person at the district and at your level.

3.3 Send the original case investigation form to the IDSR focal person at the district.

## 4. STORAGE

**Steps:**

4.1 Store one or two representative isolates from the outbreak.

4.2 Dispose remaining isolates according to the SOP.

†If laboratory cannot start testing immediately or if specimen is not suitable, contact the Integrated Disease Surveillance and Response (IDSR) focal person at your level.

*Integrated Disease Surveillance and Response

# CHOLERA

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

(***for health facilities and districts***)

## CHOLERA

*Case investigation form and container of stool*

## Description

This job aid presents the protocol for collection and processing of specimens for laboratory confirmation of cholera. It is primarily intended for health facilities and district-level staff to use during an outbreak investigation or when the action threshold has been reached.

## Background

Cholera is a disease that can produce profuse watery diarrhoea, caused by *Vibrio cholerae* bacteria serogroups O1 and O139. In Africa, cholera may cause rapidly progressive epidemics, usually between January and April. In endemic areas, small outbreaks may occur as well as sporadic cases that account for less than 5% of all non-outbreak-related diarrhoea cases. In Tanzania, cholera occurs mostly in the rainy season, usually caused by serogoup O1, biotype El Tor.

Cholera is transmitted from person-to-person through the ingestion of faecally-contaminated food or drink. It can cause severe dehydration in a few hours; in untreated patients, the case fatality rate (CFR) may exceed 50%. If patients are properly managed, the CFR is usually less than 1%, but can exceed 5%. At least 90% of the cases are mild and remain undiagnosed. Risk factors for cholera include lack of continuous access to safe water, attending large gatherings such as weddings or funerals, or contact with persons who died of cholera.

## Standard case definition

**For community level**

Any person five years of age or older passing a great amount of watery diarrhoea or who dies after passing a great amount of watery diarrhoea.

**For facility level**

Any person five years of age and older who develops severe dehydration or who dies from acute watery diarrhoea.

## Action threshold

A single case at a defined locality or health facility according to standard case definition is considered a suspected outbreak. Specimens should be collected immediately for laboratory confirmation.

## Sampling strategy

Collect specimen from the first five to 10 suspected cases. If any are positive, then collect every tenth case during the outbreak.

## Specimen to be collected

Stool, or rectal swab, if patient is not able to pass stool.

## Presumptive diagnostic tests

Macroscopy and microscopy

## Confirmatory tests

Isolation, identification and serogrouping.
Antimicrobial susceptibility.

## Why laboratory confirmation is important

A stool culture positive for *Vibrio cholerae* serogroup O1 on one or more cases will allow health officials to declare an outbreak and to take appropriate action.

Antimicrobial susceptibility data will be used to monitor resistance. These data will provide information for the MOH to develop a treatment policy for the organism.

**Referral Laboratory**
**(capable of performing the confirmatory tests)**

Name of laboratory: _____

Contact person: _____

Postal address: _____

Phone: _____

email: _____

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: CHOLERA

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen labels
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete labels with patient name, specimen number, specimen type, date and time of collection, health facility and district. (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Gloves
- Leak proof screw-capped container
- Sterile cotton-tipped applicators (swabs)
- One tube of Cary Blair transport medium
- Adhesive tape

Note: Collect specimens from suspected cases during the acute stage (two to four days after onset) and before antimicrobial treatment.

**Steps:**

2.1 Collect a fresh stool. Place stool in a leak proof screw-capped container.

*If patient is not able to pass stool, take a rectal swab* (See Job Aid for How to Take a Rectal Swab).

2.2 Transfer a small amount of the stool (*or the rectal swab)* to a tube of Cary Blair transport medium (See Job Aid for Using Cary Blair Transport Medium).

2.3 Adhere a label to the specimen container and tube of Cary Blair.

2.4 Keep the tube of Cary Blair at 4-8°C.

2.5 Safely dispose of all contaminated materials.

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Triple packaging system (See Job Aid for Triple Packaging System to maintain cold chain)
- Four ice packs
- Referral lab contact information

**Steps:**

3.1 Hand carry the specimen to the local laboratory (for macroscopy and microscopy).

Transport the tube of Cary Blair to the referral laboratory as follows:

- Pack the specimen using a triple packaging system with a solid cold box and ice packs (See Job Aid for Triple Packaging System to maintain cold chain).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at 4-8°C throughout transport. Do not freeze.

  Package reaches referral laboratory **within 48 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

## 4. TESTING

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. RECORDING & REPORTING

Referral laboratory should verbally communicate results to the IDSR focal person in the district within two to four days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

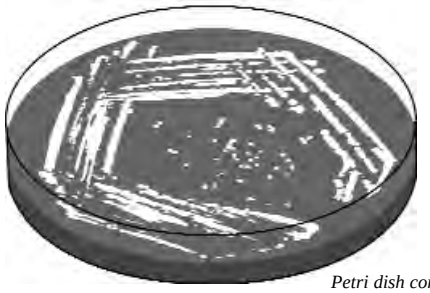
5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for referral laboratories*)**



*Petri dish containing selective agar with colonies of Vibrio cholerae*

## CHOLERA

## Description

This job aid presents the protocol for processing and testing specimens for laboratory confirmation of cholera. It is intended for referral laboratories capable of performing the confirmatory tests. Referral laboratories should use this job aid upon receiving specimens from health facilities and districts. This job aid does not address the technical procedures for performing laboratory confirmation tests. It should be used in conjunction with the standard operating procedures (SOP) for confirming cholera.

## Background

Cholera is a disease that can produce profuse watery diarrhoea, caused by *Vibrio cholerae* bacteria serogroups O1 and O139. In Africa, cholera may cause rapidly progressive epidemics, usually between January and April. In endemic areas, small outbreaks may occur as well as sporadic cases that account for less than 5% of all non-outbreak-related diarrhoea cases. In Tanzania, cholera occurs mostly in the rainy season, usually caused by serogoup O1, biotype El Tor.

Cholera is transmitted from person-to-person through the ingestion of faecally-contaminated food or drink. It can cause severe dehydration in a few hours; in untreated patients, the case fatality rate (CFR) may exceed 50%. If patients are properly managed, the CFR is usually less than 1%, but can exceed 5%. At least 90% of the cases are mild and remain undiagnosed. Risk factors for cholera include lack of continuous access to safe water, attending large gatherings such as weddings or funerals, or contact with persons who died of cholera.

### Sampling strategy for suspected outbreaks

Health facilities or districts collect specimens from the first 5 to 10 suspected cases. If any are positive, every tenth case will be sampled throughout the outbreak.

### Specimen to be tested

Stool or rectal swab

### Confirmatory tests to be done

Isolation, identification and serogrouping.
Antimicrobial susceptibility.

### Why laboratory confirmation is important

A stool culture positive for *Vibrio cholerae* serogroup O1 on one or more cases will allow health officials to declare an outbreak and to take appropriate action.

Antimicrobial susceptibility data will be used to monitor resistance. These data will provide information for the MOH to develop a treatment policy for the organism.

Referral laboratories should keep updated contact information for the health facilities and districts in their catchment areas.

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: CHOLERA

## 1. RECEIVING

Upon receiving specimens for laboratory confirmation of cholera, the laboratory must be able to start testing immediately.†

**Supplies needed:**

- Gloves
- Laboratory register
- Pen or marker

Note: Gloves should be worn when opening package, and when handling specimen and contaminated materials. Work should be done in the laboratory.

**Steps:**

1.1 Log in the sender's name and address in the laboratory register.

1.2 Locate the case investigation form and the tube of Cary Blair transport medium containing the swab.

1.3 Assess the condition of the tube and the documentation as follows:

- Tube should be labeled. Information on tube label and case investigation form should match.
- Tube should be intact and not leaking.
- Tube should be cold, but not frozen.

Record the findings in the laboratory register and on case investigation form. Reject unsuitable specimens.†

1.4 Log in the patient information, the specimen information, and the date and time of receipt in the laboratory register. File case investigation form for later use.

1.5 Keep tube at 4-8°C. Immediately prepare for testing.

## 2. TESTING

**Supplies needed:**

- Standard operating procedures (SOP), reagents, and supplies for isolation, identification and serogrouping, and antimicrobial susceptibility of *Vibrio cholerae*

**Steps:**

2.1 According to the SOP, perform testing for isolation, identification, and serogrouping of *Vibrio cholerae.*

If any *Vibrio cholerae* serogroup O1 are isolated, determine antimicrobial susceptibility pattern according to the SOP.

2.2 Throughout the testing, safely dispose of all waste and contaminated materials.

## 3. RECORDING & REPORTING

**Supplies needed:**

- Laboratory register
- Case investigation form

Note: Results should be communicated within two to four days of receiving the specimen. If communication is by email or other indirect means, request confirmation that the results were received.

**Steps:**

*Isolation, identification and serogrouping*

3.1 Record the isolation, identification, and serogrouping results in the laboratory register and on the case investigation form. Communicate the results (positive or negative) immediately to the IDSR* focal person at the district and at your level.

*Susceptibility*

3.2 Record the antimicrobial susceptibility results in the laboratory register and on the case investigation form. Communicate the results immediately to the IDSR focal person at the district and at your level.

3.3 Send the original case investigation form to the IDSR focal person at the district.

## 4. STORAGE

**Steps:**

4.1 Store one or two representative isolates from the outbreak.

4.2 Dispose remaining isolates according to SOP.

†If laboratory cannot start testing immediately or if specimen is not suitable, contact the Integrated Disease Surveillance and Response (IDSR) focal person at your level.

*Integrated Disease Surveillance and Response

# MEASLES

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for health facilities and districts*)**

## MEASLES

*Case investigation form and tube of serum*

### Description

This job aid presents the protocol for the collection and processing of specimens for laboratory confirmation of measles. It is primarily intended for health facilities and district-level staff to use during an outbreak investigation or when the action threshold has been reached.

### Background

Measles is a febrile rash illness caused by the paramyxovirus *Morbillivirus*. In Africa, large outbreaks occur every few years in areas with low vaccine coverage (<85-90%), and in areas where there is an accumulation of persons who have never been infected or vaccinated. In Tanzania, the ministry of health is implementing an accelerated measles control strategy with case-based surveillance and documentation of vaccination.

Measles is transmitted from person-to-person via airborne respiratory droplets. It is among the most transmissible of human infections among children and non-immune adults. The true incidence of measles far exceeds reported cases. In most Africa countries, measles is the fourth leading cause of death in children less than five years of age. The acceptable case fatality rate should be less than 1% of all reported cases and less than 5% of hospitalized cases. Risk factors for measles include non-vaccination, overcrowding, and exposure to infected individuals.

### Standard case definition

**For community level**
Any person with fever and rash.

**For facility level**
Any person with history of fever, skin rash and any of the following: cough, running nose, and red eyes.

### Action threshold

A single suspected case according to standard case definition in a week at a defined locality or health facility is considered a suspected outbreak. Specimens should be collected immediately for laboratory confirmation.

### Sampling strategy

Collect specimen from each suspected case.

### Specimen to be collected

Blood

### Confirmatory tests

Serology for IgM antibodies to measles virus

### Why laboratory confirmation is important

Confirmation of measles IgM antibodies in serum of two or more cases will allow health officials to declare an outbreak and to take appropriate action. Health officials can decide if a vaccination campaign is needed to prevent further cases.

**Referral laboratory**
**(designated laboratory for confirmation of measles)**

National Virology Laboratory
Department of Microbiology/Immunology
P.O. Box 65001
Dar es Salaam, Tanzania
Phone: 022 2 15 0304

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: MEASLES

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen labels
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete labels with patient name, specimen number, specimen type, date and time of collection, health facility and district. (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Include the date of the last measles vaccination, the date of rash onset, and the date of specimen collection. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Gloves
- Tourniquet
- Sterile gauze pads
- Alcohol (70%)
- Sterile needle and vacutainer *or* sterile needle and syringe
- Sterile test tube (5-10ml), if a sterile needle and syringe are used
- Adhesive plaster
- Sterile pipette
- Sterile, screw-capped tube (glass or plastic)

**Additional supplies** if health facility has a centrifuge:

- Centrifuge tubes for balancing

Note: Collect specimens from suspected cases at the first contact with the health facility.

**Steps:**

2.1 Collect blood by venepuncture into sterile syringe or tube (See Job Aid for How to Collect Blood).

| Volume of blood to collect | |
|---|---|
| Adults | 5-10ml |
| Children | 2-5ml |
| Infants | 0.5-2ml |

2.2 Adhere a specimen label to tube of blood.

2.3 Keep the blood at ambient temperature. Do not freeze.

2.4 Separate the serum from the blood clot (See Job Aid for How to Obtain Serum from Whole Blood).

2.5 Adhere a specimen label to tube of serum.

2.6 Keep the serum at 4-8°C.

2.7 Safely dispose of all contaminated materials.

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Triple packaging system (See Job Aid for Triple Packaging System to maintain cold chain)
- Four ice packs
- Referral lab contact information

**Steps:**

3.1 Transport the serum to the National Virology Laboratory as follows:

- Pack the serum using a triple packaging system with a solid cold box and ice packs (See Job Aid for Triple Packaging System to maintain cold chain).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at 4-8°C throughout transport.

  Package reaches referral laboratory **within 72 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

## 4. TESTING

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. RECORDING & REPORTING

Referral laboratory should verbally communicate results to the IDSR focal person in the district within seven days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

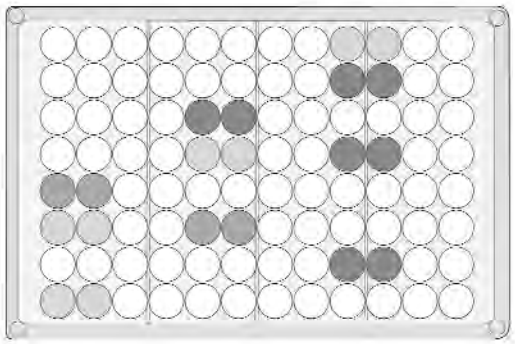
5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for referral laboratories*)**



*ELISA plate*

## MEASLES

### Description

This job aid presents the protocol for processing and testing specimens for laboratory confirmation of measles. It is intended for referral laboratories designated by the ministry of health for confirmation of measles. Referral laboratories should use this job aid upon receiving specimens from health facilities and districts. The job aid does not address the technical procedures for performing laboratory confirmation tests. It should be used in conjunction with the standard operating procedures (SOP) for confirming measles.

### Background

Measles is a febrile rash illness caused by the paramyxovirus *Morbillivirus*. In Africa, large outbreaks occur every few years in areas with low vaccine coverage (<85-90%), and in areas where there is an accumulation of persons who have never been infected or vaccinated. In Tanzania, the ministry of health is implementing an accelerated measles control strategy with case-based surveillance and documentation of vaccination.

Measles is transmitted from person-to-person via airborne respiratory droplets. It is among the most transmissible of human infections among children and non-immune adults. The true incidence of measles far exceeds reported cases. In most Africa countries, measles is the fourth leading cause of death in children less than five years of age. The acceptable case fatality rate should be less than 1% of all reported cases and less than 5% of hospitalized cases. Risk factors for measles include non-vaccination, overcrowding, and exposure to infected individuals.

### Sampling strategy for suspected outbreaks

Health facilities and districts collect specimens from each suspected case.

### Specimen to be tested

Serum

### Confirmatory tests to be done

Serology for IgM antibodies to measles virus

### Why laboratory confirmation is important

Confirmation of measles IgM antibodies of two or more cases will allow health officials to declare an outbreak and to take appropriate action. Health officials can decide if a vaccination campaign is needed to prevent further cases.

Referral laboratories should keep updated contact information for the health facilities and districts in their catchment areas.

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

For referral laboratories

# JOB AID FOR LABORATORY CONFIRMATION: MEASLES

## 1. RECEIVING

Upon receiving specimens for laboratory confirmation of measles, the laboratory must be able to start testing immediately.†

**Supplies needed:**

- Gloves
- Laboratory register
- Pen or marker

Note: Gloves should be worn when opening package and at all times when handling specimen and contaminated materials. Work should be done in the laboratory.

**Steps:**

1.1 Log in the sender's name and address in the laboratory register.

1.2 Locate the case investigation form and the tube of serum.

1.3 Assess the condition of the tube and the documentation as follows:

- Tube should be labeled. Information on tube label and case investigation form should match.
- Tube should be intact and not leaking.
- Tube should be cold.

Record the findings in the laboratory register and on the case investigation form. Reject unsuitable specimens.†

1.4 Log in the patient information, the specimen information, and the date and time of receipt in the laboratory register. File case investigation form for later use.

1.5 Keep tube at 4-8°C. Immediately prepare for testing.

†If laboratory cannot start testing immediately or if specimen is not suitable, contact the Integrated Disease Surveillance and Response (IDSR) focal person at your level.

## 2. TESTING

**Supplies needed:**

- Standard operating procedures (SOP), reagents, and supplies for serologic testing for measles IgM antibodies

**Steps:**

2.1 According to SOP, perform testing for IgM antibodies to measles.

2.2 Throughout the testing, safely dispose of all waste and contaminated materials.

## 3. RECORDING & REPORTING

**Supplies needed:**

- Laboratory register
- Case investigation form

Note: Results should be communicated within seven days of receiving specimen. If communication to the district level is by email or other indirect means, request confirmation that the results were received.

**Steps:**

3.1 Record results in the laboratory register and on the case investigation form. Communicate the results (positive or negative) immediately to the IDSR* focal person at the district and at your level.

3.2 Send the original case investigation form to the IDSR focal person at the district.

## 4. STORAGE

**Steps:**

4.1 Store one or two samples from the outbreak.

4.2 Dispose remaining samples according to the SOP.

*Integrated Disease Surveillance and Response

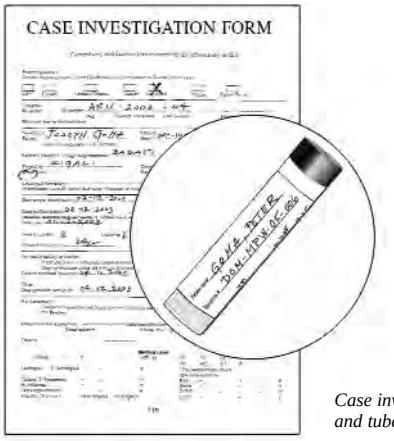
# PLAGUE

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for health facilities and districts*)**

## PLAGUE




*Case investigation form and tube containing specimen*

### Description

This job aid presents the protocol for the collection and processing of specimens for laboratory confirmation of plague. It is primarily intended for health facilities and district-level staff to use during an outbreak investigation or when the action threshold has been reached.

### Background

Plague is a zoonotic infectious disease caused by the bacterium *Yersinia pestis*. Plague is endemic in many African countries including Tanzania where the disease is presently active in Lushoto and Karatu districts.

Plague is a natural infection of wild rodents and is transmitted to other rodents and human beings by the infective flea. Plague is also transmitted by direct exposure to infectious materials and respiratory droplets. Initial cases in an outbreak are usually bubonic and subsequent cases present as pneumonic. The case fatality rate (CFR) in untreated bubonic cases may exceed 50%, and in untreated pneumonic or septicaemic cases, it may approach 100%. With good management, the CFR should be <5%. The risk factors for plague include exposure to wild rodents and their fleas, and exposure to infected individuals.

### Standard case definition

**For community level**

Any person with sudden fever and painful swelling under the arms or in the groin area.

**For facility level**

Any person with sudden onset of fever and a history of exposure to rodents, their fleas, or patients with plague, and one of the following:

- painful swelling of inguinal or axillary lymph nodes (bubonic presentation), or
- cough with blood stained sputum (pneumonic presentation), or
- signs of severe bloodstream infection, such as prostration, shock (septicaemic presentation)

### Action threshold

A single case at a defined locality or health facility according to the standard case definition is considered a suspected outbreak. This is the threshold for action. Specimens should be collected immediately for laboratory confirmation.

Contact the focal person for plague at the national level to request assistance with collecting specimens.

### Sampling strategy

Collect specimen from the first 5 to 10 suspected cases.

### Specimen to be collected

Bubo aspirate for bubonic plague, sputum for pneumonic plague, or blood for septicaemic plague.

### Presumptive diagnostic tests

Wayson or Gram stain.

### Confirmatory tests

Dipstick detection of F1 antigen.

Isolation and identification of *Y. pestis*.

### Why laboratory confirmation is important

Confirmation of *Y. pestis* of one or more cases will allow health officials to declare an outbreak and to take appropriate action.

**Referral Laboratory**

**(capable of performing the confirmatory tests)**

Name of laboratory: _____

Contact person: _____

Postal address: _____

Phone: _____

email: _____

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

For each presentation of plague, there is a separate protocol for the collection and processing of specimens.

- For bubonic presentation, see Job Aid for Laboratory Confirmation: Bubonic Plague.
- For pneumonic presentation, see Job Aid for Laboratory Confirmation: Pneumonic Plague.
- For septicaemic presentation, see Job Aid for Laboratory Confirmation: Septicaemic Plague.

# JOB AID FOR LABORATORY CONFIRMATION: BUBONIC PLAGUE

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen labels
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete labels with patient name, specimen number, specimen type, date and time of collection, health facility and district. (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Gloves
- Alcohol (70%)
- Sterile gauze pads
- Sterile needle (18-22G) and syringe
- Sterile saline
- Calibrated tube (1ml)
- Sterile cotton-tipped applicators (swabs)
- One tube of Cary Blair transport medium
- Sterile tube

Note: Collect bubo aspirate during the acute stage and before antimicrobial treatment.

**Steps:**

2.1 Inject 0.1-0.5ml sterile saline into bubo. Aspirate at least 0.2ml fluid. (See Job Aid for How to Collect Bubo Aspirate).

2.2 Divide the diluted specimen as follows:

- Transfer 0.2ml into calibrated tube.
- Absorb a few drops onto the cotton-tip of the sterile swab. Insert the swab into the Cary Blair transport medium (See Job Aid for How to Use Cary Blair Transport Medium).
- Transfer the rest of the diluted specimen into the sterile tube.

2.3 Adhere a specimen label to each tube.

2.4 Keep the specimens at ambient temperature.

2.5 Safely dispose of all contaminated materials.

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Insulated box
- Triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature)
- Referral lab contact information

**Steps:**

3.1 Hand carry the calibrated tube (for dipstick test) and the tube of diluted aspirate (for staining) to the local laboratory.

Transport the tube of Cary Blair to the referrral laboratory as follows:

- Pack the specimens using a triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimens remains at ambient temperature throughout transport.

  Package reaches referral laboratory **within 24 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

## 4. TESTING

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. RECORDING & REPORTING

Laboratory should verbally communicate results to the IDSR focal person in the district within seven days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

# JOB AID FOR LABORATORY CONFIRMATION: PNEUMONIC PLAGUE

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen labels
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete labels with patient name, specimen number, specimen type, date and time of collection, health facility and district. (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Gloves
- Alcohol (70%)
- Sterile container with snap cap
- Sterile needle (18-22G) and syringe
- Sterile saline (1.0ml) in tube
- Calibrated tube (1ml)
- Sterile, cotton-tipped applicators (swabs)
- One tube of Cary Blair transport medium

Note: Collect specimens from suspected cases at the onset of disease and before antimicrobial treatment.

**Steps:**

2.1 Ask patient to spit out sputum (not saliva) into sterile plastic container.

2.2 Using the sterile needle and syringe, aspirate 0.5ml sputum. Expel the sputum into the tube of 1.0ml sterile saline. Draw liquid into syringe several times to mix.

2.3 Divide the diluted specimen as follows:

- Transfer 0.2ml into calibrated tube.
- Absorb a few drops onto the cotton-tip of the sterile swab. Insert the swab into the tube of Cary Blair transport medium (See Job Aid for How to Use Cary Blair Transport Medium).
- Transfer the rest of the diluted sputum back into the tube.

2.4 Adhere a specimen label to each tube.

2.5 Keep the specimen at ambient temperature.

2.6 Safely dispose of all contaminated materials.

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Insulated box
- Triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature)
- Referral lab contact information

**Steps:**

3.1 Hand carry the calibrated tube (for dipstick test) and tube of diluted sputum (for staining) to the local laboratory.

Transport the tube of Cary Blair to the referral laboratory as follows:

- Package the specimen using a triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at ambient temperature throughout transport.

  Package reaches referral laboratory **within 24 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

## 4. TESTING

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. RECORDING & REPORTING

Laboratory should verbally communicate results to the IDSR focal person in the district within seven days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

# JOB AID FOR LABORATORY CONFIRMATION: SEPTICAEMIC PLAGUE

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen labels
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete labels with patient name, specimen number, specimen type, date and time of collection, health facility and district. (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Gloves
- Tourniquet
- Sterile gauze pads
- Alcohol (70%)
- Sterile needle and syringe
- Two blood culture bottles
- Calibrated tube (1ml)
- Adhesive plaster

Note: Collect blood for culture at the onset of disease and before antimicrobial treatment.

**Steps:**

2.1 Collect blood by venepuncture into sterile syringe (See Job Aid for How to Collect Blood).

| Volume of blood to collect | |
|---|---|
| Adults | 5-10ml |
| Children | 2-5ml |
| Infants | 0.5-2ml |

2.2 Divide the blood as follows:

- Inoculate each blood culture bottle with blood to yield a ratio of 1 part blood to 5 parts culture broth. Consult laboratory for additional guidance.
- Transfer 0.2ml blood into calibrated tube.

2.3 Keep specimens at ambient temperature.

2.4 Adhere a specimen label to each specimen container.

2.5 Safely dispose of all contaminated materials.

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Insulated box
- Triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature)
- Referral lab contact information

**Steps:**

3.1 Hand carry the specimen (for dipstick test) to the local laboratory.

Transport the blood culture bottles to the referral laboratory as follows:

- Pack the specimen using a triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at ambient temperature throughout transport.

  Package reaches referral laboratory **within 24 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

## 4. TESTING

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. RECORDING & REPORTING

Laboratory should verbally communicate results to the IDSR focal person in the district within seven days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for referral laboratories*)**

*Petri dish containing agar with colonies of Yersinia pestis*

## PLAGUE

## Description

This job aid presents the protocol for processing and testing specimens for laboratory confirmation of plague. It is intended for referral laboratories to use upon receiving specimens from health facilities and districts. The job aid does not address the technical procedures for performing laboratory confirmation tests. It should be used in conjunction with the standard operating procedures (SOP) for confirming plague.

## Background

Plague is a zoonotic infectious disease caused by the bacterium *Yersinia pestis*. Plague is endemic in many African countries including Tanzania where the disease is presently active in Lushoto and Karatu districts.

Plague is a natural infection of wild rodents and is transmitted to other rodents and human beings by the infective flea. Plague is also transmitted by direct exposure to infectious materials and respiratory droplets. Initial cases in an outbreak are usually bubonic and subsequent cases present as pneumonic. The case fatality rate (CFR) in untreated bubonic cases may exceed 50%, and in untreated pneumonic or septicaemic cases, it may approach 100%. With good management, the CFR should be <5%. The risk factors for plague include exposure to wild rodents and their fleas, and exposure to infected individuals.

### Sampling strategy for suspected outbreaks

Health facilities or districts collect specimens from the first 5 to 10 suspected cases.

### Specimen to be tested

Bubo aspirate for bubonic plague, sputum for pneumonic plague, or blood for septicaemic plague.

### Confirmation tests to be done

Isolation and identification of *Y. pestis*.

### Why laboratory confirmation is important

Confirmation of *Y. pestis* of one or more cases will allow health officials to declare an outbreak and to take action.

Referral laboratories should keep updated contact information for the health facilities and districts in their catchment areas.

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: PLAGUE

## 1. RECEIVING

Upon receiving specimens for laboratory confirmation of plague, the laboratory must be able to start testing immediately.†

**Supplies needed:**

- Gloves
- Laboratory register
- Pen or marker

Note: Gloves should be worn when opening package and at all times when handling specimen and contaminated materials. Work should be done in the laboratory.

**Steps:**

1.1 Log in the sender's name and address in the laboratory register.

1.2 Locate the case investigation form and the specimen container.

1.3 Assess the condition of the tube blood culture bottle and the documentation as follows:

- Containers should be labeled. Information on container label and case investigation form should match.
- Container should be intact and not leaking.
- Container should be at ambient temperature.

Record the findings in the laboratory register and on the case investigation form. Reject unsuitable specimens.†

1.4 Log in the patient information, the specimen information, and the date and time of receipt in the laboratory register. File case investigation form for later use.

1.5 Keep tube at 4-8°C. Immediately prepare for testing.

## 2. TESTING

**Supplies needed:**

- Standard operating procedures (SOP), reagents, and supplies for isolation and identification of *Y. pestis.*

**Steps:**

2.1 According to SOP, perform testing for isolation and identification of *Y. pestis.*

2.2 Throughout the testing, safely dispose of all waste and contaminated materials.

†If laboratory cannot start testing immediately or if specimen is not suitable, contact the Integrated Disease Surveillance and Response (IDSR) focal person at your level.

## 3. RECORDING & REPORTING

**Supplies needed:**

- Laboratory register
- Case investigation form

Note: Results should be communicated within seven days of receiving specimen. If communication to the district level is by email or other indirect means, request confirmation that the results were received.

**Steps:**

3.1 Record isolation and identification results in the laboratory register and on the case investigation form. Communicate the results (positive or negative) immediately to the IDSR* focal person at your level.

3.2 Send the original case investigation form to the IDSR focal person at your level.

## 4. STORAGE

**Steps:**

4.1 Store one or two isolates from the outbreak.

4.2 Dispose remaining samples according to the SOP.

*Integrated Disease Surveillance and Response

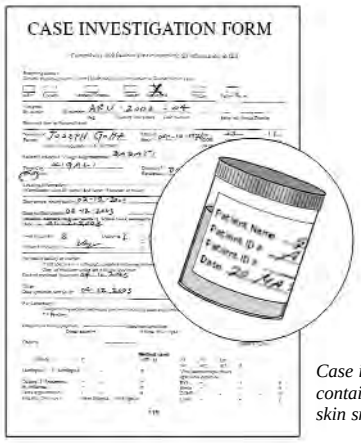
# VIRAL HEMORRHAGIC FEVERS

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for health facilities and districts*)**

## VIRAL HEMORRHAGIC FEVERS




*Case investigation form and container of formalin and skin snip*

## Description

This job aid presents the protocol for collection and processing of specimens for laboratory confirmation of viral hemorrhagic fevers (VHFs). It is primarily intended for health facilities and district-level staff to use during an outbreak investigation or when the action threshold has been reached.

## Background

The term viral hemorrhagic fever (VHF) refers to a syndrome that affects multiple organ systems in the body and causes damage to the vascular system. Several different viruses can cause the VHF syndrome in Africa, including Ebola-Marburg, Lassa, Rift Valley and Congo-Crimean hemorrhagic fever viruses. An outbreak of Rift Valley Fever occurred in Tanzania and neighboring countries in the late 1990s. Although no cases of Ebola have been reported in Tanzania, outbreaks of this disease have occurred in neighboring countries since 2000.

VHF is transmitted through direct exposure to infectious material and respiratory droplets. Many of the VHF viruses cause severe, life-threatening disease, while some cause relatively mild illness. Only a minority of cases have hemorrhage or bleeding. Among those with hemorrhage, the case fatality rate is from 15% to 90%. Risk factors for VHF include touching ill or deceased infected persons or their secretions, or having direct contact with infected animals. Health care workers are at risk when standard barrier precautions are not taken.

## Standard case definition

**For community level**

Any person who has an unexplained illness with fever and bleeding or who died after an unexplained severe illness with fever and bleeding.

**For facility level**

Any person with severe illness, fever, and at least one of the following signs: bloody stools, vomiting blood, or unexplained bleeding from gums, nose, vagina, skin, or eyes.

## Action threshold

A single suspected case according to standard case definition is considered a suspected outbreak.

The district should immediately report any suspected case to the regional and national levels and request assistance for collection of specimens and management of the situation.

## Sampling strategy

Because of the potential for explosive outbreaks of some VHFs, it is not recommended that health facility and district staff collect specimens from live cases. If the suspected case is deceased, district staff may collect a skin snip, provided blunt instruments are used.

## Specimen to be collected

Skin snip from nape of the neck of deceased case.

## Confirmatory tests

Immunohistochemistry

## Why laboratory confirmation is important

A skin snip testing positive for VHF virus on one or more cases will allow health officials to declare an epidemic and to take appropriate action.

### Referral laboratory

**(designated by the MOH for confirmation of VHFs)**

National Health Laboratory Services
National Institute for Comminicable Diseases
1 Modderfontein Road
Sandringham, South Africa
Attention: Dr. J. Paweska
email: nicdmail@nicd.ac.za

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: VIRAL HEMORRHAGIC FEVERS

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen label
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete a label with patient name, specimen number, specimen type, date and time of collection, health facility and district. (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Bucket for disinfectant
- 10 litres of water
- Liquid bleach (3 - 5% active chlorine)
- Punch biopsy tool
- Tweezers
- Blunt scissors
- Vial of formalin (20ml)
- Plastic bag
- Hand soap

**Additional supplies** for personal protection†

- Boots
- Latex gloves
- Gown
- Plastic apron
- Heavy-duty gloves
- Mask
- Goggles

Note: Collect specimens as soon as possible following death of patient.

**Steps:**

2.1 Collect a skin snip from the nape of the neck of the deceased patient (See Job Aid for How to Perform a Skin Snip). Place the skin snip in a vial of formalin.

2.2 Adhere a label to the vial.

2.3 Keep the specimen at ambient temperature. Do not freeze.

2.4 Safely dispose of all contaminated materials.

†Refer to the manual *Infection Control for Viral Haemorrhagic Fevers in the African Health Care Setting* (WHO/EMC/ESR/98.2) for information about using protective clothing.

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Triple packaging system (See Job Aid for Triple Packaging System to maintain ambient temperature)
- Referral lab contact information

**Steps:**

3.1 Transport the specimen to the referral laboratory as follows:

- Pack the specimen using a triple packaging system. (See Job Aid for Triple Packaging System to maintain ambient temperature).
- Contact the referral laboratory for guidance on labeling package as "Dangerous Goods in Excepted Quantities."
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at ambient temperature throughout transport.

  Package reaches referral laboratory **within 24 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district.

## 4. TESTING & DOCUMENTATION

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. RECORDING & REPORTING

Referral laboratory should verbally communicate results to the IDSR focal person in the district within seven days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

# YELLOW FEVER

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for health facilities and districts*)**

## YELLOW FEVER

*Case investigation form and tube of serum*

### Description

This job aid presents the protocol for the collection and processing of specimens for laboratory confirmation of yellow fever. It is primarily intended for health facilities and district-level staff to use during an outbreak investigation or when the action threshold has been reached.

### Background

Yellow fever is an acute infectious disease caused by an arthropod-borne flavivirus. Sporadic cases can occur regularly in endemic areas. Large scale outbreaks occur every 3 to 10 years in villages or cities where yellow fever is prevalent. Since the mid-1980's, there has been a resurgence of yellow fever in Africa; however, no new cases have been reported in Tanzania since 1954. Due to reports of yellow fever in neighboring countries, Tanzania remains a potential transmission area and active surveillance is conducted.

Yellow fever is transmitted from person-to-person by *Aedes* mosquitoes (in urban cycle) or by forest mosquito species or forest primate reservoirs (in sylvatic cycle). True incidence far exceeds reported cases. While only a minority of the cases is severe, case fatality rates may be 25-50% among patients with the syndrome of hemorrhage, jaundice, and renal disease. Risk factors for yellow fever include non-vaccination, or living or working in a location near woods or where monkeys are numerous.

### Standard case definition

**For community level**

Any person with fever and yellowing of eyes or skin.

**For facility level**

Any person with sudden onset of fever, followed by jaundice within two weeks of first symptoms with a history of traveling from an endemic area.

### Action threshold

A single suspected case according to standard case definition is considered a suspected outbreak. Specimens should be collected immediately for laboratory confirmation.

### Sampling strategy

Collect specimens from all sylvatic cases. In urban epidemics, collect specimens from the first 5 to 10 suspected cases, then from every tenth case.

### Specimen to be collected

Blood

### Confirmatory tests

Serology for yellow fever IgM antibodies.

### Why laboratory confirmation is important

Confirmation of yellow fever IgM antibodies in the serum of one or more cases will allow health officials to declare an outbreak and to take appropriate action. Health officials can decide if a vaccination campaign is needed to prevent further cases.

### Referral laboratory

**(designated laboratory for confirmation of yellow fever)**

National Virology Laboratory
Department of Microbiology/Immunology
Muhimbili University College of Health Sciences
P.O. Box 65001
Dar es Salaam, Tanzania
Phone: 022 2 15 0304

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: YELLOW FEVER

## 1. DOCUMENTATION

**Supplies needed:**

- Specimen labels
- Case investigation form
- Patient register book
- Marker (water resistant)
- Pen

**Steps:**

1.1 Complete labels with patient name, specimen number, specimen type, date and time of collection, health facility and district. (See Job Aid for Labeling Specimens).

1.2 Fill in a case investigation form completely with the patient information. Include the date of disease onset and the date of specimen collection. Make a duplicate form.

1.3 Locate the patient entry in the register book, and record the date and specimen type to be collected.

## 2. COLLECTION & HANDLING

**Supplies needed:**

- Gloves
- Tourniquet
- Sterile gauze pads
- Alcohol (70%)
- Sterile needle and vacutainer *or* sterile needle and syringe
- Sterile, ordinary test tube (5-10ml), if a sterile needle and syringe are used
- Adhesive plaster
- Sterile pipette
- Sterile, screw-capped tube (glass or plastic)

**Additional supplies** if health facility has a centrifuge:

- Sterile centrifuge tubes for balancing

Note: Collect a specimen as soon as the patient is admitted to the health facility or is suspected as having yellow fever. Collect another specimen from the same patient 7 to 10 days later.

**Steps:**

2.1 Collect blood by venepuncture into sterile syringe or tube (See Job Aid for How to Collect Blood).

2.2 Adhere a specimen label to tube of blood.

2.3 Keep the blood at ambient temperature. Do not freeze.

2.4 Separate the serum from the blood clot (See Job Aid for How to Obtain Serum from Whole Blood ).

2.5 Adhere a specimen label to tube of serum.

2.6 Keep the serum at 4-8°C.

2.7 Safely dispose of all contaminated materials.

| Volume of blood to collect | |
|---|---|
| Adults | 5-10ml |
| Children | 2-5ml |
| Infants | 0.5-2ml |

## 3. TRANSPORTATION

**Supplies needed:**

- Gloves
- Triple packaging system to maintain cold chain (See Job Aid for Triple Packaging System to maintain cold chain)
- Four ice packs
- Referral lab contact information

**Steps:**

3.1 Transport the specimen to the National Virology Laboratory as follows:

- Package the specimen using a triple packaging system with a solid cold box and ice packs (See Job Aid for Triple Packaging System to maintain cold chain).
- Contact the IDSR* focal person in the district to arrange transport of the package. Ensure that:

  National and international regulations for shipping diagnostic specimens are strictly followed.

  Specimen remains at 4-8°Cthroughout transport.

  Package reaches referral laboratory **within 72 hours** of specimen collection.

3.2 Keep the duplicate case investigation form at the district with the IDSR focal person.

## 4. TESTING

Testing and documentation are done by laboratory staff according to standard operating procedures.

## 5. RECORDING & REPORTING

Referral laboratory should verbally communicate results to the IDSR focal person in the district within seven days after receiving the specimen. Written communication should follow.

**Steps:**

5.1 IDSR focal person at the district should communicate results to clinician and the local laboratory staff.

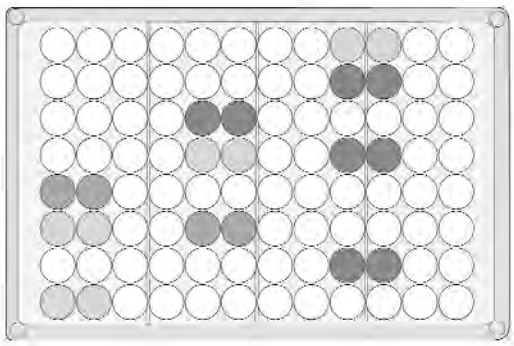
5.2 Clinician and local laboratory staff should record results in their register book. Also record the date and time the results were received and by whom.

*Integrated Disease Surveillance and Response

**United Republic of Tanzania**
**Ministry of Health**

# Job Aid for Laboratory Confirmation

**(*for referral laboratories*)**



*ELISA plate*

## YELLOW FEVER

### Description

This job aid presents the protocol for processing and testing specimens for laboratory confirmation of yellow fever. It is intended for referral laboratories designated by the ministry of health for confirmation of yellow fever. Referral laboratories should use this job aid upon receiving specimens from health facilities and districts. The job aid does not address the technical procedures for performing laboratory confirmation tests. It should be used in conjunction with the standard operating procedures (SOP) for confirming yellow fever.

### Background

Yellow fever is an acute infectious disease caused by an arthropod-borne flavivirus. Sporadic cases can occur regularly in endemic areas. Large scale outbreaks occur every 3 to 10 years in villages or cities where yellow fever is prevalent. Since the mid-1980's, there has been a resurgence of yellow fever in Africa; however, no new cases have been reported in Tanzania since 1954. Due to reports of yellow fever in neighboring countries, Tanzania remains a potential transmission area and active surveillance is conducted.

Yellow fever is transmitted from person-to-person by *Aedes* mosquitoes (in urban cycle) or by forest mosquito species or forest primate reservoirs (in sylvatic cycle). True incidence far exceeds reported cases. While only a minority of the cases is severe, case fatality rates may be 25-50% among patients with the syndrome of hemorrhage, jaundice, and renal disease. Risk factors for yellow fever include non-vaccination, or living or working in a location near woods or where monkeys are numerous.

### Sampling strategy for suspected outbreaks

Health facilities and districts collect specimens from all sylvatic cases. In urban epidemics, specimens will be collected from the first 5 to 10 suspected cases, then from every tenth case.

### Specimen to be tested

Serum

### Confirmatory tests to be done

Serology for yellow fever IgM antibodies

### Why laboratory confirmation is important

Confirmation of yellow fever IgM antibodies in serum of one or more cases will allow health officials to declare an outbreak and to take appropriate action. Health officials can decide if a vaccination campaign is needed to prevent further cases.

Referral laboratories should keep updated contact information for the health facilities and districts in their catchment areas.

***This job aid was prepared through a partnership of the Tanzania MOH, NIMR, MUCHS, PHRPlus, AFRO, and CDC.***

# JOB AID FOR LABORATORY CONFIRMATION: YELLOW FEVER

## 1. RECEIVING

Upon receiving specimens for laboratory confirmation of yellow fever, the laboratory must be able to start testing immediately.†

**Supplies needed:**

- Gloves
- Laboratory register
- Pen or marker

Note: Gloves should be worn when opening package and at all times when handling specimen and contaminated materials. Work should be done in the laboratory.

**Steps:**

1.1 Log in the sender's name and address in the laboratory register.

1.2 Locate the case investigation form and the tube of serum.

1.3 Assess the condition of the tube and the documentation.

- Tube should be labeled. Information on tube label and case investigation form should match.
- Tube should be intact and not leaking.
- Tube should be cold.

Record the findings in the laboratory register and on the case investigation form. Reject unsuitable specimens.†

1.4 Log in the patient information, the specimen information, and the date and time of receipt in the laboratory register. File case investigation form for later use.

1.5 Keep tube at 4-8°C. Immediately prepare for testing.

†If laboratory cannot start testing immediately or if specimen is not suitable, contact the Integrated Disease Surveillance and Response (IDSR) focal person at your level.

## 2. TESTING

**Supplies needed:**

- Standard operating procedures (SOP), reagents, and supplies for serologic testing for yellow fever IgM antibodies

**Steps:**

2.1 According to SOP, perform testing for yellow fever IgM antibodies.

2.2 Throughout the testing, safely dispose of all waste and contaminated materials.

## 3. RECORDING & REPORTING

**Supplies needed:**

- Laboratory register
- Case investigation form

Note: Results should be communicated within seven days of receiving specimen. If communication to the district level is by email or other indirect means, request confirmation that the results were received.

**Steps:**

3.1 Record results in the laboratory register and on the case investigation form. Communicate the results (positive or negative) immediately to the IDSR* focal person at the district and at your level.

*If results are negative on specimens collected within seven days of disease onset, ensure that a convalescent specimen is sent.*

3.2 Send the original case investigation form to the IDSR focal person at the district.

## 4. STORAGE

**Steps:**

4.1 Store one or two representative samples from the outbreak.

4.2 Dispose remaining samples according to the SOP.

*Integrated Disease Surveillance and Response

# SUPPLEMENTAL JOB AIDS

# JOB AID: HOW TO COLLECT BLOOD

This provides guidance on how to collect blood by venepuncture.

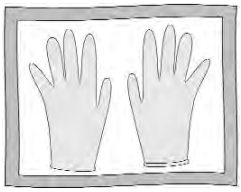
For safety, all of the supplies used to collect the blood are for single use only. Do not reuse.

**Supplies needed:**

- Gloves
- Tourniquet
- Sterile gauze pads
- Alcohol (70%)
- Sterile needle and vacutainer *or* sterile needle and syringe
- Sterile test tube (5-10ml), if a sterile needle and syringe are used
- Adhesive plaster
- Safe box for sharps

**Before beginning the procedure, obtain consent from the patient.**

1 Sterile gloves should be worn when performing venepuncture and when handling the specimen.



2 Place a tourniquet above the venepuncture site. Palpate and locate the vein.

3 Disinfect the skin at the puncture site with alcohol (70%). Allow the area to dry.

4 Do not touch the disinfected puncture site with ungloved hands.

5 Perform venepuncture using a sterile vacutainer or sterile needle and syringe.

If using a needle and syringe, transfer the blood to sterile test tube.

| Volume of blood to collect | |
|---|---|
| Adults | 5-10ml |
| Children | 2-5ml |
| Infants | 0.5-2ml |

6 Remove the tourniquet. Apply pressure to site with sterile gauze pad until the bleeding stops. Apply adhesive plaster, if desired.

7 Adhere a specimen label to tube of blood.

8 Safely dispose of all contaminated materials.

9 Do not recap used sharps. Discard directly into a safe box for sharps.

# JOB AID: HOW TO COLLECT BUBO ASPIRATE

This provides guidance on how to collect aspirate from suspected buboes. It should be performed under sterile conditions by a medical officer or clinician experienced in the procedure.

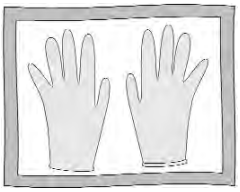
For safety, all of the supplies used to collect the bubo aspirate are for single use only. Do not reuse.

**Supplies needed:**

- Gloves
- Alcohol (70%)
- Sterile gauze pads
- Sterile saline
- Sterile needle (18-22G) and syringe
- Safe box for sharps

**Before beginning the procedure, obtain consent from the patient.**

1 Sterile gloves should be worn when performing the bubo aspiration and when handling the specimen.



2 Disinfect the skin at the bubo site with alcohol (70%). Allow the area to dry.

3 Do not touch the disinfected bubo site with ungloved hands.

4 Inject a small amount of (0.1-0.5ml) of sterile saline into the bubo site using a sterile syringe with a wide bore needle (18-22G). Aspirate at least 0.2ml of fluid from the bubo.

5 Safely dispose of all contaminated materials.

6 Do not recap used sharps. Discard directly into a safe box for sharps.

# JOB AID: HOW TO COLLECT CSF

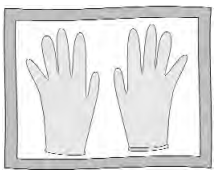
This provides guidance on how to collect cerebrospinal fluid (CSF) by lumbar puncture. Lumbar puncture is an invasive technique. It should be performed under sterile conditions by a medical officer or clinician experienced in the procedure. For instructions on performing lumbar puncture, consult the *Oxford Handbook of Clinical Medicine*.

**Supplies needed:**

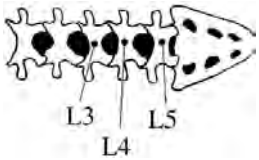
- Sterile gloves
- Sterile gown
- Sterile towels
- Sterile swabs
- Povidone iodine (10%)
- Local anesthetic
- Sterile needle and syringe
- Alcohol (70%)
- Sterile lumbar puncture needle
- Small, sterile, screw-capped tube
- Adhesive plaster
- Safe box for sharps

**Before beginning the procedure, obtain consent from the patient.**

1 Sterile gloves and gown should be worn when performing lumbar puncture and when handling the specimen.



2 Locate the space between L3,4 or L4,5 vertebrae. Follow the practice of your health facility in giving local anesthetic.

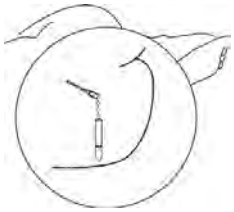



3 Disinfect the skin at the puncture site with povidone iodine (10%). Wipe off excess iodine with alcohol (70%). Allow the area to dry.

4 Do not touch the disinfected puncture site with ungloved hands or nonsterile items.

5 Perform lumbar puncture using a sterile spinal needle. Collect CSF by allowing the fluid to flow directly into the sterile tube. *Do not aspirate CSF*. Recap the tubes tightly.

*If CSF will be used for microscopy, biochemistry, and culture, collect 1 ml for each of these tests in separate tubes.*



6 Aseptically recap the tube tightly.

7 Safely dispose of all contaminated materials.

8 Do not recap used sharps. Discard directly into a safe box for sharps.

# JOB AID: HOW TO OBTAIN SERUM FROM WHOLE BLOOD

This provides guidance on how to process whole blood to separate the serum from the blood clot.

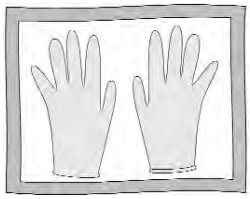
**Supplies needed:**

- Gloves
- Sterile pipette
- Sterile, screw-capped tube (glass or plastic)
- Specimen label

**Additional supplies** if health facility has a centrifuge:

- Centrifuge tubes for balancing

1 Gloves should be worn at all times when handling the specimen.



2 Keep the whole blood at room temperature until there is complete retraction of the clot from the serum.

*If the health facility or district has a centrifuge, spin the whole blood at 1000xg for 10 minutes to separate the serum. Follow the standard operating procedures for centrifuging.*

3 Remove the serum using a sterile pipette. Avoid extracting red cells.

4 Transfer the serum aseptically to a sterile, screw-capped tube. Secure cap tightly.

5 Adhere a specimen label to the tube of serum.

6 Safely dispose of all contaminated materials and the remaining clot.

7 Keep the tube of serum at 4-8°C.

# JOB AID: HOW TO PERFORM A SKIN SNIP

This provides guidance on how to perform a skin snip from a deceased patient. It should be performed under sterile conditions by a medical officer or clinician experienced in the procedure.

For safety, all of the supplies used to perform the skin snip are for single use only. Do not reuse.

**Supplies needed:**

- Bucket for disinfectant
- 10 litres of water
- Liquid bleach (3 - 5% active chlorine)
- Punch biopsy tool
- Tweezers
- Blunt scissors
- Vial with formalin (20ml)
- Plastic bag
- Hand soap

**Additional supplies** for personal protection

- Boots
- Latex gloves
- Gown
- Plastic apron
- Heavy-duty gloves
- Mask
- Goggles

**Before beginning the procedure, obtain consent from the family of deceased patient.**

1 Prepare disinfectant solution immediately before starting procedure. Using liquid bleach, make 10 litres of disinfectant solution. The final concentration should be approximately 0.05 to 0.5%.

2 Put on the protective clothing in this order:

boots, latex gloves, gown, plastic apron, heavy-duty gloves, mask, and goggles.

3 Arrange the scissors, tweezers, and biopsy tool for use near the cadaver. Open the vial of formalin. Take the cover off the biopsy tool.

4 Gently turn the head of the cadaver to expose the nape of the neck. Place the biopsy tool perpendicular to the neck and press down into the skin up to the guard. Rotate gently. Remove the biopsy tool.

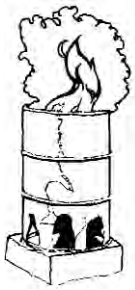
5 With the tweezers, gently lift out the core you cut in the skin and use the scissors to cut the piece away, if necessary.

6 Place the sample in the vial of formalin. Close the cap tightly to prevent leaks.

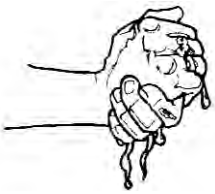
7 Dip the vial of formalin in the disinfectant for one minute. Set it aside to dry.

8 Place the rest of the equipment in the disinfectant. If you need to move the cadaver, do so while you are still wearing the protective clothing. When you are finished, rinse your exterior gloves in the disinfectant, remove them and drop them in the disinfectant bucket.

9 Still wearing the interior gloves, remove all of the disinfected material from the bucket and place in the plastic bag. Burn the bag in the incinerator. Remove your gloves and burn them.



10 Wash your hands with soap and water. The specimen is not infectious after it is placed in formalin and the outside of the vial is disinfected.



Adapted from the reference manual *Infection Control for Viral Haemorrhagic Fevers in the African Health Care Setting* (WHO/EMC/ESR/98.2).

# JOB AID: HOW TO TAKE A RECTAL SWAB AND TRANSFER TO TRANSPORT MEDIUM

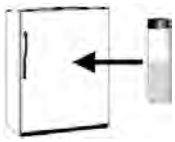
This provides guidance on how to take a rectal swab for diagnosis of acute bacterial diarrheal disease. Rectal swabs must be transported in Cary Blair transport medium. Transport medium is used to preserve specimens for bacteriology testing.

**Supplies needed:**

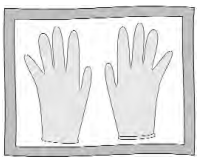
- Gloves
- Sterile cotton-tipped applicators (swabs)
- One tube of Cary Blair transport medium
- Adhesive tape
- Specimen label

**Before beginning the procedure, obtain consent from the patient.**

1 Chill the tube of Cary Blair transport medium by placing it on ice packs or in the refrigerator 1 - 2 hours before collecting the specimen.



2 Gloves should be worn at all times when handling the specimen.



3 Remove the wrapper from the handle end of the sterile swab. Do not touch the tip of the swab.

4 Moisten the swab in chilled Cary Blair transport medium.

5 Insert the swab through the rectal sphincter 2 to 3 cm and gently rotate.

6 Withdraw and examine the swab to make sure faecal material is visible on the tip.

7 Push the swab completely to the bottom of the tube of Cary Blair transport medium.

8 Break off the top portion of the stick so the cap can be tightly screwed onto the tube.

9 After screwing cap tightly onto the Cary Blair tube, seal the tube with tape to prevent leakage.

10 Adhere specimen label to the container.

11 Keep the specimen at 4-8°C.

12 Safely dispose all contaminated materials. Do not reuse.

# JOB AID: HOW TO USE CARY BLAIR TRANSPORT MEDIUM

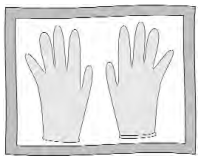
This provides guidance on how to transfer a specimen into a tube of Cary Blair transport medium. Transport medium is used to preserve specimens for bacteriology testing. The specimen should be transferred to the transport medium immediately after the specimen has been collected.

**Supplies needed:**

- Gloves
- Sterile cotton-tipped applicators (swabs)
- One tube of Cary Blair transport medium*
- Adhesive tape
- Specimen label

*For stool specimens, the Cary Blair tube should be chilled 1 - 2 hours before using it.

1 Gloves should be worn at all times when handling the specimen.



2 Remove the wrapper from the handle end of the sterile swab. Do not touch the cotton tip of the swab.

3 Insert the cotton tip of the swab into the specimen. Make sure the cotton tip of the swab is completely coated with specimen.

If the specimen is in a syringe, slowly release some of the contents to completely soak the cotton tip of the swab.

4 Push the swab completely to the bottom of the tube of Cary Blair transport medium.

5 Break off the top portion of the stick so the cap can be tightly screwed onto the tube.

6 After screwing cap tightly onto the Cary Blair tube, seal the tube with tape to prevent leakage.

7 Adhere specimen label to the Cary Blair tube.

8 Keep the specimen at 4-8°C.

9 Safely dispose all contaminated materials. Do not reuse.

# JOB AID: LABELING SPECIMENS

This provides guidance on labeling specimens. Each specimen should be labeled. The information on the label should correspond with the patient information in the register book and on the case investigation form. Adequate labeling ensures that the laboratory results can be linked to the correct patient.

The label may be a piece of paper attached to the specimen container. Alternatively, the information may be written directly on the specimen container.

1 Using this sample label as a guide, fill in the information on a label for the specimen to be collected. Obtain the patient's information from the patient register book. Make sure your writing is legible.

*Sample label*

**Patient name:** _____

**Specimen #:** _____

**Specimen type:** _____ **Date:** _____ **Time:** _____

**Health facility:** _____ **District:** _____

**Specimen #**

When filling in the specimen number, use this format:

| ___ ___ ___ | ___ ___ ___ | ___ ___ | ___ ___ ___ |
|---|---|---|---|
| Region | District | Year of onset | Case # |

- Use the standard abbreviations as designated by the ministry of health to indicate the Region (3 letter code), District (3 letter code), and Year of onset (2 digit code).
- Use the unique case number (3 digit number) designated by the district.

*Sample specimen #*

| A R U | B A B | 0 5 | 0 0 1 |
|---|---|---|---|
| Region | District | Year of onset | Region |

2 Adhere the label to the specimen container. Do not attach the label to the top of the specimen container.

# JOB AID: TRIPLE PACKAGING SYSTEM to maintain ambient temperature

This provides guidance for packaging diagnotic specimens in three layers for transport to the referral laboratory. Follow specific national and international regulations for shipping diagnostic specimens.

Gloves should be worn at all times when handling the specimen.

## PRIMARY CONTAINER

The primary container contains your specimen.

**Ensure the following:**

- Container cap should be tightly closed and sealed to prevent leakage.
- Container should be labeled with the patient name and identification number, specimen number, and date and time.
- Label should be adhered to the container.

**Steps:**

- Wrap absorbent material such as cotton wool around the container. Use additional absorbent material to cushion multiple containers.

## SECONDARY CONTAINER

The secondary container holds the primary container.

**Steps:**

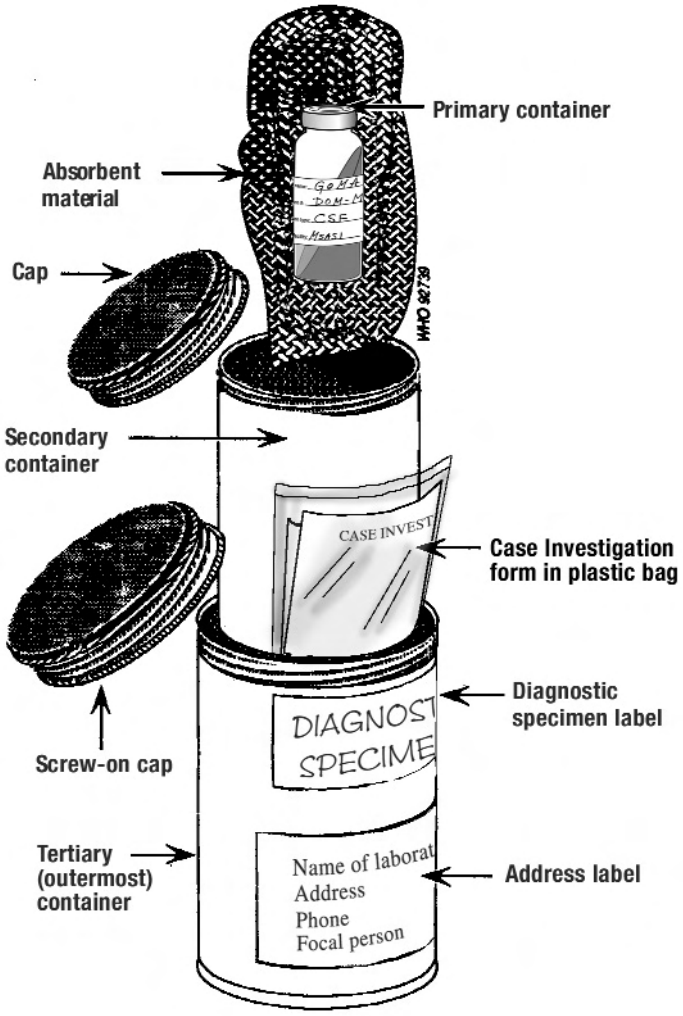
- Use a container that is durable, watertight, and leak proof. If this is not available, use a sealable plastic bag.
- Seal the case investigation form in a plastic bag. Tape the bag to the outside of the secondary container.

## TERTIARY (OUTERMOST) CONTAINER

The tertiary container holds the secondary container and protects it from physical damage and water. The tertiary container also serves as the outer shipping container.

**Steps:**

- Use a container made of corrugated fibreboard, cardboard, wood or other material strong enough to withstand the weight and shock of handling and shipment.
- Pack tertiary container as shown in diagram.
- Label the tertiary container “Diagnostic specimen.” As appropriate, use additional labels (Do not freeze. Do not expose to heat. This side up.).*




*Specimens in formalin require a “Dangerous Goods in Excepted Quantities” label on the tertiary (outermost) container. Contact the referral laboratory for guidance on labeling the container.

# JOB AID: TRIPLE PACKAGING SYSTEM to maintain cold chain

This provides guidance for packaging specimens in three layers to maintain cold chain during transport to the referral laboratory. Follow specific national and international regulations for shipping diagnostic specimens.

Gloves should be worn at all times when handling the specimen.

## PRIMARY CONTAINER

The primary container contains your specimen.

**Ensure the following:**

- Container cap should be tightly closed and sealed to prevent leakage.
- Container should be labeled with the patient name and identification number, specimen number, and date and time.
- Label should be adhered to the container.

**Steps:**

- Wrap absorbent material such as cotton wool around the container. Use additional absorbent material to cushion multiple containers.

## SECONDARY CONTAINER

The secondary container holds the primary container.

**Steps:**

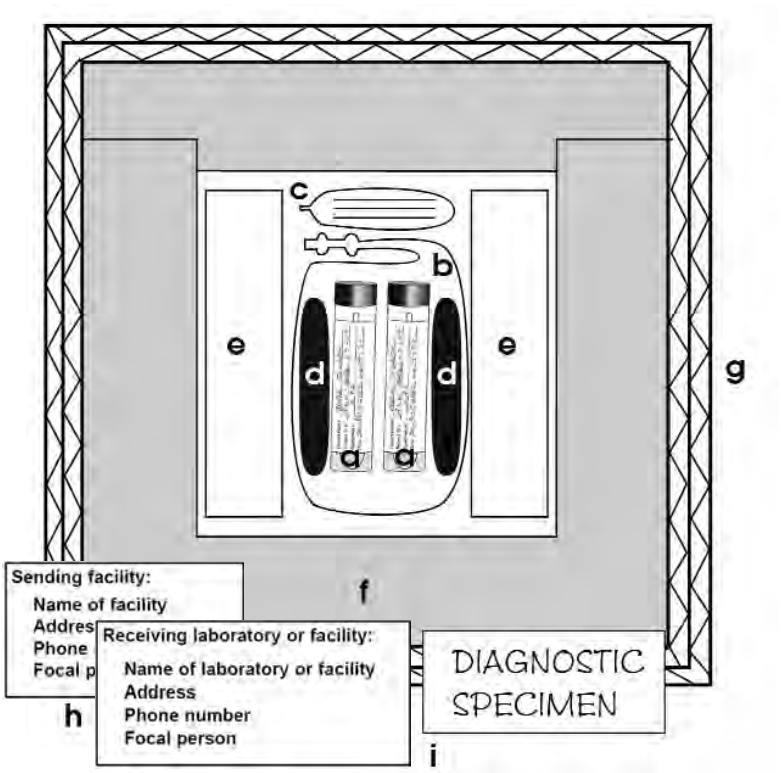
- Use a sealable plastic bag that is watertight and leak proof.

## TERTIARY (OUTERMOST) CONTAINER

The tertiary container holds the secondary container and protects it from physical damage and water. The tertiary container also serves as the outer shipping container.

**Steps:**

- Use an insulated carrier or carton of double-ply corrugated cardboard or plastic. Use insulating material such as high density (30-35kgs/m3) polystyrene (small bubbles and firm when squeezed).
- Seal the case investigation form in a separate plastic bag.
- Pack tertiary container as shown in diagram. Four cold packs will maintain cold chain for 2 to 3 days.
- Label the tertiary container “Diagnostic specimen.” As appropriate, use additional labels (Do not freeze. Do not expose to heat. This side up.)




a) Primary container
b) Secondary container (sealed plastic bag holding primary container)
c) Sealed plastic bag holding case investigation form
d) Absorbent material such as cotton wool
e) Four ice packs.

   Place ice packs at the bottom of the box and along the sides. Then place an ice pack on top of the specimen.

   If the specimen should remain cold, but not frozen, wrap the specimen in paper or cardboard to prevent direct contact with ice packs.
f) Insulating material
g) Tertiary container (outer carton of double-ply corrugated cardboard or plastic)
h) Address labels on tertiary container.
i) Diagnostic specimen label on tertiary container.

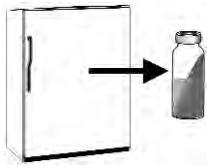
# JOB AID: USING TRANS-ISOLATE TRANSPORT MEDIUM FOR CSF

This provides guidance on how to inoculate a vial of trans-isolate (T-I) transport medium with cerebrospinal fluid (CSF). T-I transport medium should be used to preserve the specimen for bacteriology testing.

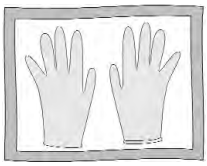
**Supplies needed:**

- Gloves
- Alcohol (70%) sponge
- Sterile gauze pad
- Sterile needle and syringe
- One vial of trans-isolate (T-I) transport medium
- Specimen label
- Safe box for sharps

1 Remove a vial of T-I transport medium from the refrigerator at least 30 minutes before collecting the specimen. Allow the vial to warm to room temperature and the gelatin in the broth phase to liquefy.



2 Gloves should be worn at all times when handling the specimen.



3 Check to see if there is any visible growth or turbidity in the broth. Discard any vial showing visible growth or turbidity.

4 From the top of the vial, lift off the small lid in the middle of the metal cap.

5 Disinfect the exposed rubber stopper on the top of the vial with alcohol (70%). Allow to air dry (usually 30 to 60 seconds).

6 Remove 1ml of CSF from the tube using a new, sterile needle and syringe.

7 Inject the CSF through the rubber stopper into the vial.

8 Adhere a specimen label to the vial.

9 Keep the vial at room temperature. If there is a delay in transport, incubate the vial at 37°C.

10 Safely dispose of all contaminated materials.

11 Do not recap used sharps. Discard directly into a safe box for sharps.

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