

# **COMMUNICABLE DISEASE TOOLKIT FOR TSUNAMI AFFECTED AREAS**

## **EARLY WARNING SYSTEM**



**World Health Organization**  
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*Communicable Disease Working Group on Emergencies, WHO/HQ  
The WHO Regional Office for South East Asia (SEARO)*

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## **1. Health risks for communicable diseases following Asian tsunami disaster**

The communicable diseases summary below is based on data collected by available documentation from Asia tsunami disaster affected countries (Thailand, India, Sri Lanka, Myanmar, Indonesia, Maldives) and previous similar emergencies.

### **Epidemic prone diseases:**

- Cholera
- Shigellosis
- Typhoid fever
- Acute Lower Respiratory Infection
- Hepatitis A, E
- Measles
- Meningitis
- Influenza

### **Diseases with increased risk due to flooding:**

- Tetanus in adults
- Leptospirosis (rats)
- Dengue
- Malaria

### **Diseases linked to precarious conditions/overcrowding:**

- All diarrhoeas
- Acute respiratory tract infection
- Hepatitis A, E
- Influenza
- Meningitis
- Measles
- Tuberculosis

### **Vector borne diseases present in most of the tsunami affected countries:**

- Dengue
- Malaria
- Scrub Typhus
- Lymphatic Filariasis
- Japanese encephalitis

### **Zoonosis present in most of the tsunami affected countries:**

Leptospirosis	Melioidosis
Anthrax	Brucellosis
Rabies	Nipah virus
Trichinosis	

## 2. Risk factors for outbreak in emergency situation

Disease / Health event	Risk factors
Acute respiratory infections	Inadequate shelter Poor health care services Overcrowding Lack of food, malnutrition Age group under one year old Elderly people Rainy season
Diarrhea diseases/Hepatitis A, E	Overcrowding Inadequate quantity and/or quality of water Poor personal hygiene Poor washing facilities Poor sanitation Insufficient soap Inadequate health care services
Measles	Measles immunization coverage rates below 80% in area of origin Population movement Overcrowding Malnutrition
Malaria and other vector borne diseases (Japanese Encephalitis, Scrub Typhus)	Movement of people from areas of low endemicity to hyperendemic areas. Exposure to areas where vectors are more present Increased population density promoting mosquito bites Interruption of vector control measures Inadequate health care services Stagnant water (rains) Seasonal changes in weather patterns (rains)
Meningococcal meningitis	Overcrowding High rates of acute respiratory infection
Dengue hemorrhagic fever	Dengue hemorrhagic fever endemic area Vector breeding sites (water pools, water storage, pounds, etc.) Poor vector control
Zoonosis	Poor control of slaughtering Contact with infected animals due to lack of veterinary control Increased rate of diseases in animals
Neonatal Tetanus, Adult tetanus	No safe procedures for traditional births attendants Disruption of immunization program Open wounds due to trauma Poor hygiene
Leptospirosis	Contamination of water by rat urine Contact with infected domestic and other animals (dogs, pigs, rats) Inadequately treated drinking water sources Poor hygienic conditions in shelters and immediate environment.

### **3. Suggested health events for EWAR system according to major risks of communicable diseases in the affected countries**

- Acute watery diarrhoea (suspect cholera)
- Acute diarrhoea
- Acute bloody diarrhoea
- Acute Jaundice syndrome
- Suspected meningitis
- Acute Lower Respiratory Infection
- Suspected measles
- Fever of unknown origins
- Suspected malaria
- Acute hemorrhagic fever
- Unknown diseases occurring in a cluster

Additional health events could be eventually included according to specific conditions and public health control activities:

- Tetanus in adults
- NNT

### **4. Rumours**

The rumours/health events may be communicated in an informal way by people selected as key informants from affected communities based on the following symptoms/health conditions:

- Acute diarrhoea with or without blood
- Acute onset of fever with rash
- Acute onset of fever with convulsion or vomiting
- Acute onset of fever with hemorrhagic signs
- Yellow eyes
- Clusters of cases or deaths (people in the same settlement) of above health events

These rumours must be tracked according to when reported, when investigated and final classification of the rumour.

## 5. Case definitions for health events

Health event (with acronym)	Definition
Acute Watery Diarrhoea (suspect cholera) - <b>AWD</b>	Acute watery diarrhoea with severe dehydration in a patients older than five years of age
Acute Diarrhoea - <b>AD</b>	Acute diarrhoea (passage of 3 or more loose stools in the past 24 hours) with or without dehydration
Acute Bloody Diarrhoea (Dysentery) - <b>ABD</b>	Acute diarrhoea with visible blood
Acute Lower Respiratory Infection <b>ARI</b>	Fever > 38°C, cough or difficulty in breathing AND fast breath ( $\geq 50$ breaths/min) for infant aged 2 months to < 1 year fast breath ( $\geq 40$ breaths/min) for child aged 1 to 5 years
Suspected Measles - <b>MEA</b>	Rash with fever and cough, runny nose or conjunctivitis
Acute Jaundice Syndrome - <b>AJS</b>	Acute onset of yellow eyes or skin
Suspected meningitis including suspected encephalitis* (see specific case definition for Japanese encephalitis below) - <b>MEN</b>	12 months and over: sudden onset of fever (> 38° C) with one or more of the following: <ul style="list-style-type: none"> <li>• Neck stiffness</li> <li>• Altered consciousness</li> <li>• Severe unexplained headache</li> <li>• Vomiting</li> </ul> or Under 12 months: fever (> 38° C) with bulging fontanel
Acute Haemorrhagic Fever Syndrome - <b>AHF</b>	Acute onset of fever (less than 3 weeks) and any of the following. <ul style="list-style-type: none"> <li>• Hemorrhagic or purpuric rash</li> <li>• Vomiting with blood</li> <li>• Cough with blood</li> <li>• Blood in stools</li> <li>• Epistaxis</li> <li>• Other hemorrhagic symptom</li> </ul>
Suspected Malaria - <b>MAL</b>	Person with fever or history of fever >38°C within the last 48 hours with one or more of the following symptoms: such as nausea, vomiting and diarrhoea, headache, back joint pain, chills, myalgia)
Fever of Unknown Origins - <b>FUO</b>	Fever (> 38°C) for more than 48 hours and not meeting the above case definitions
Unexplained cluster of health events - <b>UCE</b>	An aggregation of cases with related symptoms and signs of unknown cause that are closely grouped in time and/or place.
Acute Flaccid Paralysis (suspected poliomyelitis) - <b>AFP</b>	Acute flaccid paralysis in a child aged < 15 years, including Guillain Barré syndrome <b>or</b> any acute paralytic illness in a person of any age.

\*Case definition for Japanese Encephalitis

Sudden onset of fever, chills, aches, including headaches and sometimes meningismus, particularly in adults. In children, gastrointestinal pain and dysfunction may dominate initial stage of the disease and convulsions are common.

## 6. Second level health events

Additional syndromes or health events to be eventually included in the EWAR according to local condition and public health programs.

Neonatal Tetanus - <b>NNT</b>	<b>Suspected case</b> : any neonatal death between 3-28 days of age in which the cause of death is unknown or suffered from neonatal tetanus not investigated.  <b>Confirmed case:</b> Any neonate with a normal ability to suck and cry during the first two days of life, and who between 3 and 28 days of age cannot suck normally and become stiff or has spasms.
Tetanus in adult - <b>AT</b>	One or more of the following signs: Trismus of the facial muscles (masseter and neck)/ <i>risus sardonicus</i> Painful muscular contractions.

## 7. Suggested alert threshold to trigger further investigation

Health event	Alert threshold	Action suggested
<b>Acute watery diarrhoea (suspect cholera)</b>	<b>One death</b> for acute watery diarrhoea in patients 5 years of age or older  <b>A cluster</b> of 5 cases in one week of watery diarrhoea in patients 5 years of age or older	Active case finding and immediate specimen collection for laboratory confirmation.
<b>Acute diarrhoea</b>	<b>1.5 times</b> the mean of cases calculated over the last three weeks	Active case finding and immediate specimen collection for laboratory confirmation
<b>Acute bloody diarrhoea</b>	<b>A cluster</b> of 3-5 cases of acute bloody diarrhoea in the same settlement in one week, or the doubling of cases in two consecutive weeks	active case finding and immediate specimen collection for laboratory confirmation
<b>Acute Lower Respiratory Infections</b>	<b>1.5 times</b> the mean of cases calculated over the last three weeks	Active case finding and immediate specimen collection for laboratory confirmation Clinical tests Confirmation of clinical diagnosis
<b>Suspected Measles</b>	<b>One case</b> of suspected measles detected in settlements should be considered as the beginning of an outbreak	Immediate active case finding and immediate response in coordination with the national immunization programme
<b>Acute Jaundice syndrome</b>	<b>A cluster</b> of 3-5 cases of acute jaundice syndrome in the same settlement	Active case finding and immediate specimen collection for laboratory confirmation
<b>Suspected meningitis Including suspected encephalitis</b>	<b>Two suspected cases</b> of meningitis in the same week in a settlement	An investigation for the active case finding should be triggered and the collection of CSF should immediately ensured to confirm the cases.
<b>Acute hemorrhagic fever syndrome</b>	<b>One case</b> of acute hemorrhagic fever	Active case finding and specimen collection for laboratory confirmation.

Suggested Alert threshold to trigger further investigation (continued)

<b>Health event</b>	<b>Alert threshold</b>	<b>Action suggested</b>
<b>Suspected malaria</b>	<b>1.5 times</b> the mean of cases calculated over the last three weeks	Active case finding and specimen collection for laboratory confirmation
<b>Fever of unknown origin</b>	<p><b>Abnormal increase</b> of fever of unknown origin associated with an unusual increase of specific mortality</p> <p><b>1.5 times</b> the mean of cases calculated over the last three weeks should be considered as an alert</p>	Active case finding and specimen collection for laboratory confirmation
<b>Unknown diseases occurring in cluster</b>	An <b>aggregation of cases</b> with related symptoms and signs of unknown cause that are closely grouped in <b>time</b> and/or <b>place</b>	Active case finding and specimen collection for laboratory diagnosis
<b>Acute Flaccid Paralysis (suspected poliomyelitis)</b>	<b>One case</b> of acute flaccid paralysis	Active case finding and specimen collection for laboratory diagnosis
<b>Neonatal Tetanus</b>	<b>One case</b> of neonatal tetanus	Investigate hygienic practices used for deliveries
<b>Adult tetanus</b>	<b>One case</b> of adult tetanus	Immediate active case finding

## 8. Sample weekly data reporting form

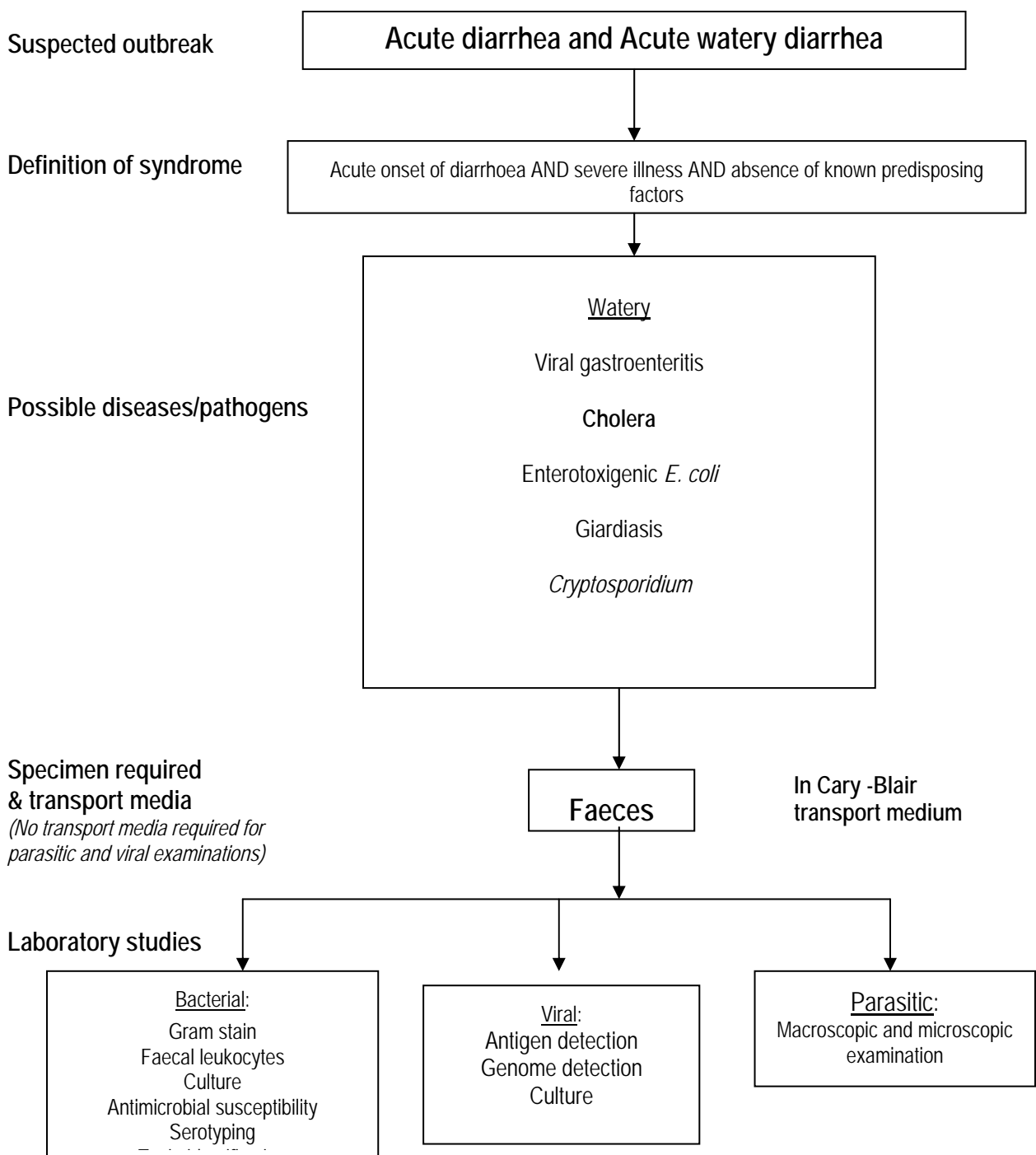
Record N° \_\_\_\_\_

District.....Camp or Settlement ..... Health unit.....

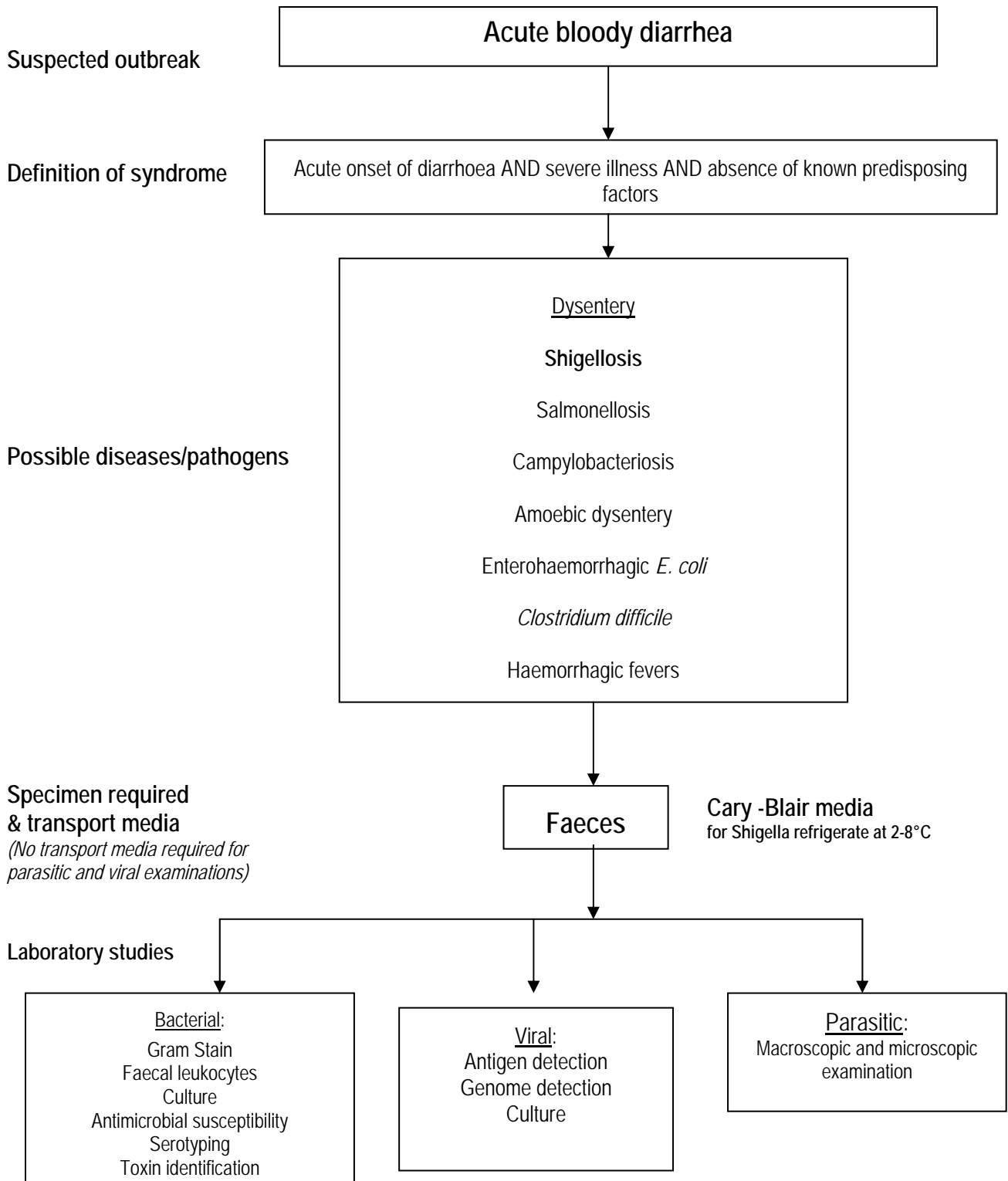
Week : from Monday ...../...../..... to Sunday...../...../..... Week N° \_\_\_\_\_

Health Events	0- 4 years		≥5 years	
	Cases	Deaths	Cases	Deaths
Acute Watery Diarrhoea (suspected cholera)				
Acute Diarrhoea				
Bloody Diarrhoea (Dysentery)				
Acute Lower Respiratory Infection				
Suspected measles				
Acute Jaundice Syndrome				
Suspected meningitis				
Acute Hemorrhagic Fever Syndrome				
Suspected malaria				
Fever of unknown origin				
Unknown diseases occurring in cluster/s				
Acute Flaccid Paralysis (suspected poliomyelitis)				
Others ( <i>Specify</i> ): -----				

## 9. Flowchart for the laboratory confirmation of acute watery diarrhoea

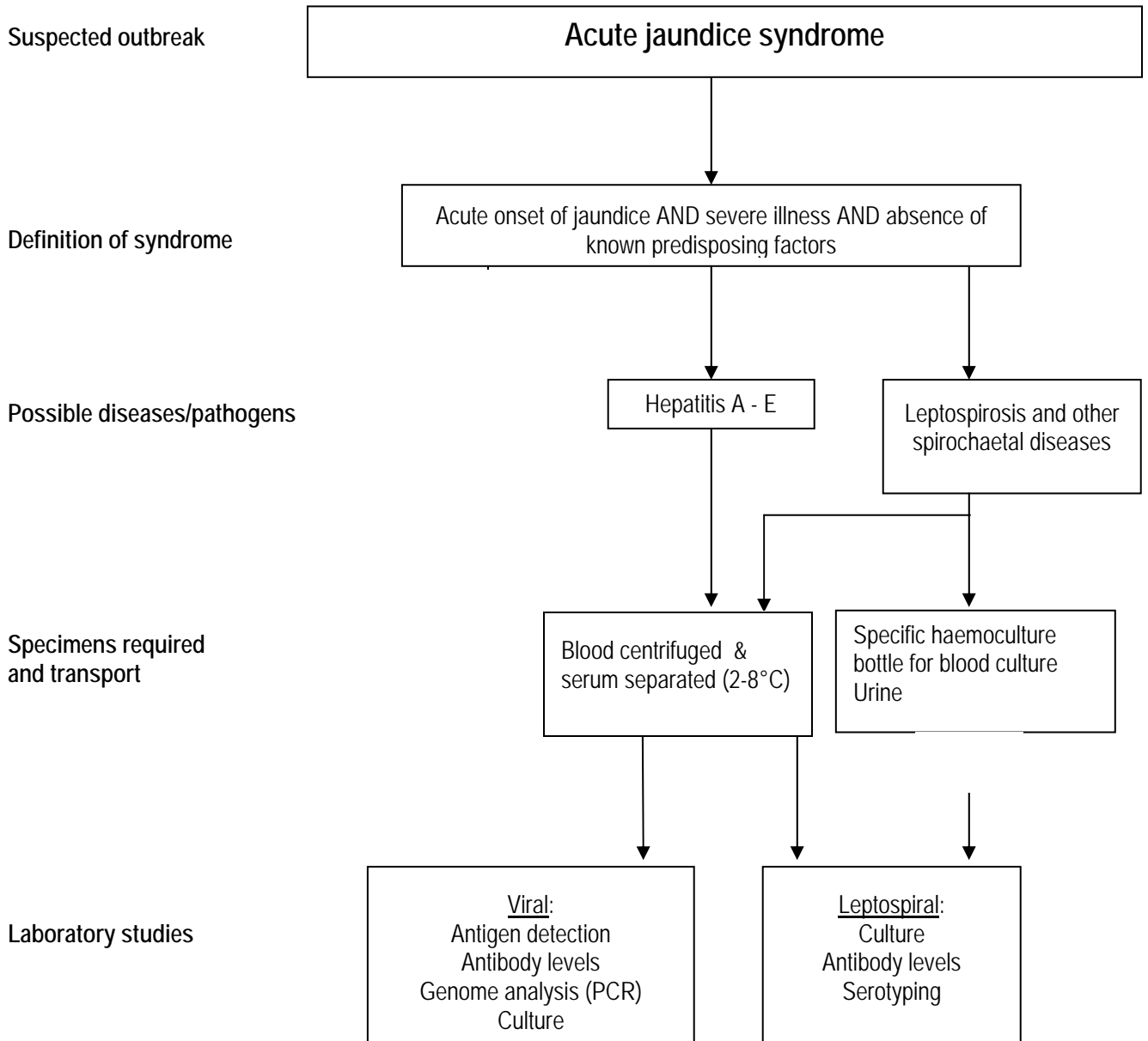


## 10. Flowcharts for the laboratory confirmation of acute bloody diarrhoea



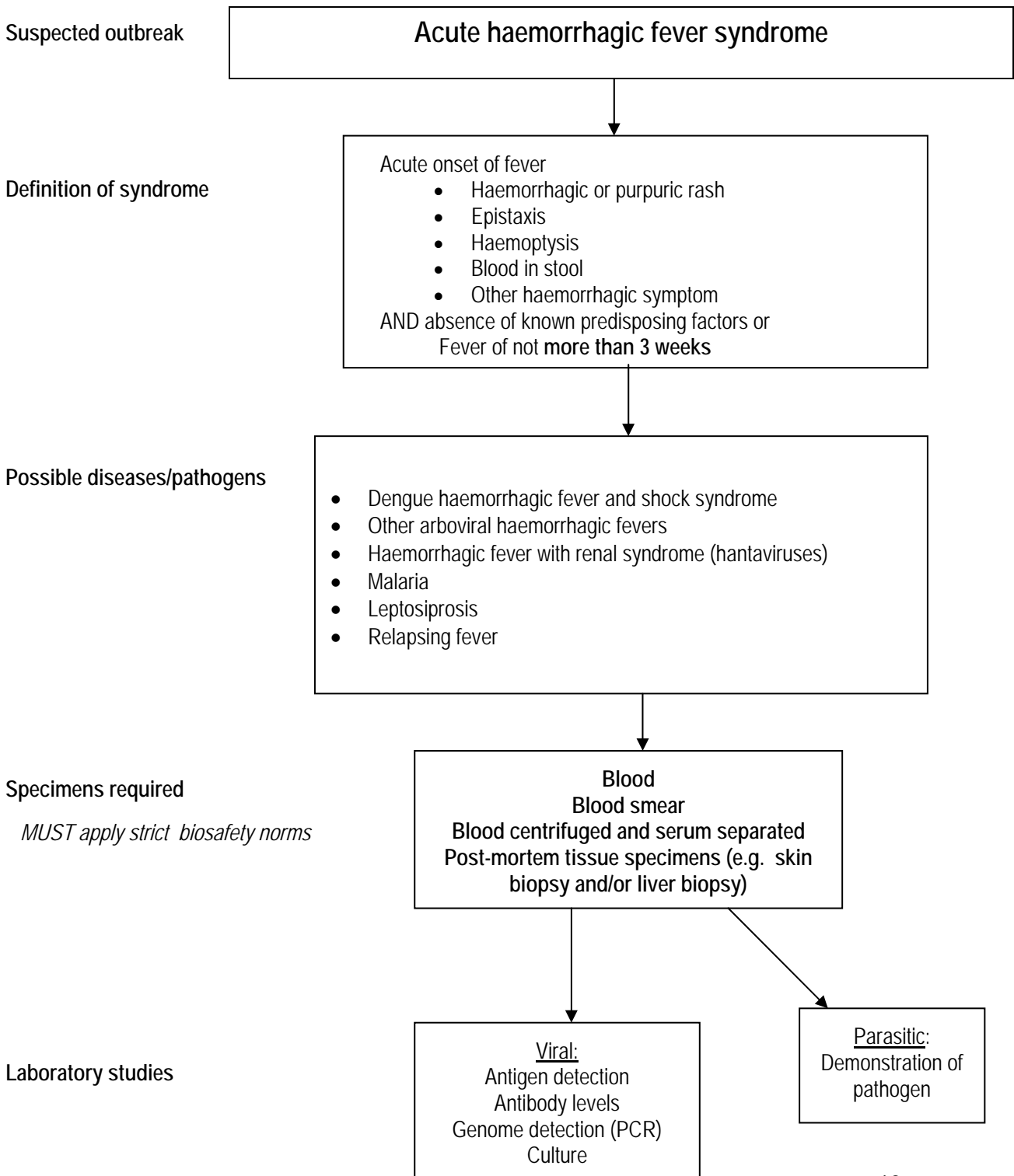
## 11. Flowcharts for the laboratory confirmation of acute jaundice syndrome

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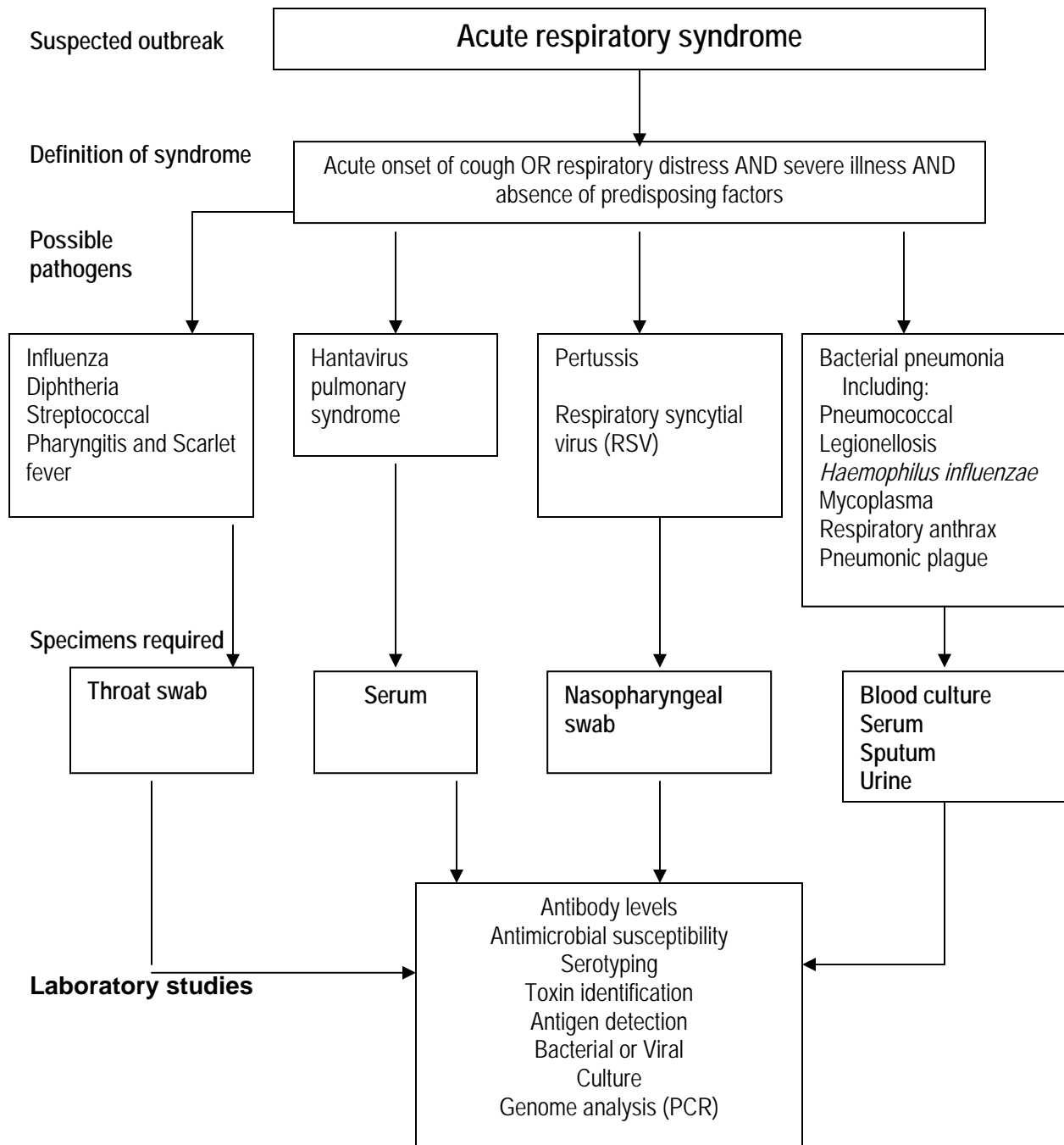


## 12. Flowcharts for the laboratory confirmation of acute hemorrhagic fever syndrome

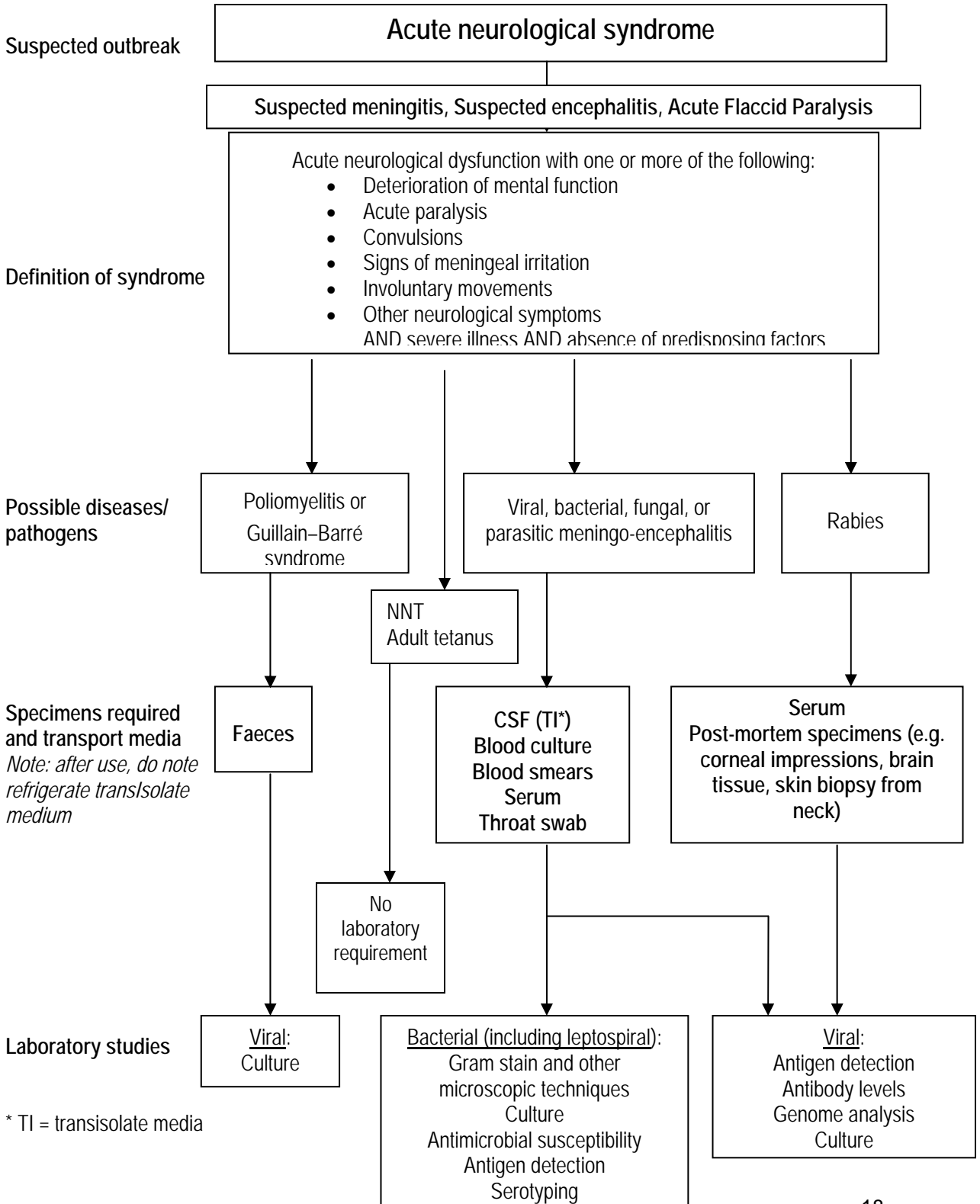
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### 13. Flowcharts for the laboratory confirmation of acute lower respiratory infection



## 14. Flowcharts for the laboratory confirmation of acute neurological syndrome



## 15. Diseases under EWAR surveillance which require laboratory confirmation

Health event	Case definition	Laboratory Suspicion (Field level screening)	Laboratory confirmation (Definitive diagnosis)
Acute Watery Diarrhoea	Acute watery diarrhoea with severe dehydration in a patient older than five years.	Presumptive diagnosis using microscopy: <ul style="list-style-type: none"> <li>• Motile Gram negative bacilli (<i>Vibrio</i>)</li> <li>• Gram negative rod, RBC and altered WBC (<i>Shigella</i>)</li> <li>• Vegetative or cystic forms (amoebes, <i>Giardia</i>, <i>Trichimonas</i>)</li> <li>• Positive agglutination of the stools for rotavirus or adenovirus using RDT</li> </ul>	Identification of the causative micro-organism using culture techniques  OR fine microscopy in a reference parasitology laboratory  OR ELISA/viral culture for viral aetiologies
Diarrhoea with blood (Dysentery)	More than 3 loose stools per day (24 hours) with visible blood		
Acute respiratory infection	Fever and at least one of the following : rhinitis, cough, redness or soreness of throat  OR Fever and fast breath ( $\geq 50$ breaths/min) and at least one of the following : cough, difficulty in breathing	Presumptive diagnosis using microscopy: <ul style="list-style-type: none"> <li>• Monomorphic flora using Gram stain</li> <li>• Presence of AFB using the Ziehl Nielsen stain</li> <li>• Positive agglutination using a RDT<sup>1</sup></li> </ul>	Identification of the causative micro-organism using culture techniques (standard culture techniques as well as mycobacterium culture techniques) or PCR (TB)  Viral infections such as influenza can be diagnosed by: <ul style="list-style-type: none"> <li>• Serology or hemagglutination inhibition</li> <li>• Viral culture or PCR</li> </ul>
Suspected Measles	Rash with fever and cough, runny nose or conjunctivitis	none	Identification of specific IgM in a serum  OR ideally
Acute Jaundice syndrome <sup>2</sup>	Acute onset of yellows eyes or skin		Increase of IgM rate in paired sera (early & late)
Acute Hemorrhagic	Acute onset of fever (less than 3 weeks) and any of the following:		

<sup>1</sup> Remember that RDT remain screening tests. In the specific context of meningitis, no large Public Health response should be performed before a definitive laboratory confirmation of the agent, including serotyping on a culture (not directly on the CSF) and antimicrobial susceptibility

<sup>2</sup> Leptospirosis can be diagnosed by serology, culture and immuno-fluorescence. Molecular techniques can also be used for confirmation. There is no real screening test available.

fever syndrome	Hemorrhagic or purpuric rash, Vomiting with blood, Cough with blood, Blood in stools (Epistaxis is an uncommon clinical presentation)		
Suspected meningitis	<ul style="list-style-type: none"> <li>12 months and over: sudden onset of fever (&gt; 38° C) with stiff neck</li> <li>Under 12 months: fever with bulging fontanel</li> </ul>	Presence of characteristic micro-organism at the Gram stain microscopy  OR  Positive agglutination using a RDT <sup>3</sup>	Identification of the causative micro-organism using culture techniques and including serotyping and AST
Acute Flaccid Paralysis	Acute flaccid paralysis in a child aged < 15 years, including Guillain Barré syndrome or any acute paralytic illness in a person of any age.	none	Identification of the poliovirus in a reference viral culture laboratory using WHO recommended methods
Malaria	Person with fever or history of fever >38°C within the last 48 hours with one or more of the following symptoms: such as nausea, vomiting and diarrhoea, headache, back joint pain, chills, myalgia)		Presences of characteristic micro-organism at the Giemsa stain microscopy (thick or thin smear) or rapid diagnostic test <sup>4</sup> .  Giemsa stain microscopy can be used to differentiate between species of <i>plasmodia</i> .  Most RDT detect an antigen (histidine rich protein 2) of plasmodium falciparum but the new cassette Combo test Pf /pan RDT (HRP2-aldolase) detect HRP2 and other antigens.
Unexplained fever	Fever (> 38°C) for more than 48 hours and not meeting the above case definitions	Positive agglutination for Brucella on a serum, using a RDT	Identification of the causative micro-organism <sup>5</sup> using culture techniques

Other diseases under surveillance which do not require laboratory confirmation:

- Neonatal tetanus
- Adult tetanus

<sup>3</sup> Remember that RDT remain screening tests. In the specific context of meningitis, no large Public Health response should be performed before a definitive laboratory confirmation of the agent, including serotyping on a culture (not directly on the CSF) and antimicrobial susceptibility

<sup>4</sup> RDT detecting several antigens (HRP2 and other antigens) are recommended

<sup>5</sup> Are included *Brucella* spp., *Salmonella* spp., *Leptospira* spp., viral diseases.

## 16. Sample Outbreak alert / line listing form

District/Area: ..... Town/Village/Settlement/Camp: .....

Health Facility: ..... Agency: .....

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

Name of reporting officer: .....

Suspected disease/syndrome: (tick one box only)	Symptoms and signs: (you can tick several boxes)
<ul style="list-style-type: none"> <li><input type="radio"/> Acute watery diarrhoea (suspected cholera)</li> <li><input type="radio"/> Acute diarrhoea</li> <li><input type="radio"/> Bloody diarrhoea</li> <li><input type="radio"/> Acute Jaundice Syndrome</li> <li><input type="radio"/> Suspected meningitis</li> <li><input type="radio"/> Acute Lower Respiratory Infection</li> <li><input type="radio"/> Suspected measles</li> <li><input type="radio"/> Fever of unknown origins</li> <li><input type="radio"/> Suspect malaria</li> <li><input type="radio"/> Acute Haemorrhagic Fever Syndrome</li> <li><input type="radio"/> Cluster of cases or deaths of unknown origin</li> <li><input type="radio"/> Acute flaccid paralysis /suspected poliomyelitis (AFP)</li> <li><input type="radio"/> Tetanus in adults</li> <li><input type="radio"/> Neonatal tetanus (NNT)</li> <li><input type="radio"/> Other</li> </ul>	<ul style="list-style-type: none"> <li><input type="radio"/> Acute watery diarrhoea</li> <li><input type="radio"/> Acute diarrhoea</li> <li><input type="radio"/> Bloody diarrhoea</li> <li><input type="radio"/> Fever</li> <li><input type="radio"/> Rash</li> <li><input type="radio"/> Other skin lesion</li> <li><input type="radio"/> Cough</li> <li><input type="radio"/> Vomiting</li> <li><input type="radio"/> Jaundice</li> <li><input type="radio"/> Neck stiffness</li> <li><input type="radio"/> Convulsions/Seizures</li> <li><input type="radio"/> Muscle weakness</li> <li><input type="radio"/> Increased secretions (e.g. sweating, drooling)</li> <li><input type="radio"/> Altered level of consciousness</li> <li><input type="radio"/> Other (<i>specify</i>): _____</li> </ul>
	<b>TOTAL NUMBER OF CASES REPORTED:</b>

### Line listing

Case No.	Age	Location	Sex (M/F)	Date of onset (dd/mm/YY)	Lab specimen taken*	Treatment given (Yes/No)	Outcome**	Final diagnosis

\* Laboratory specimens: B=Blood, S=Stool, C=CSF, U=Urine, O = other

\*\*Outcome: I = Currently ill, R= Recovering or recovered, D = died

## **Annex 1 : Kit for collection of specimens in emergency conditions**

### **Laboratory sampling kit**

This sampling kit is to be used for two different purposes:

- **Outbreak investigation**, used by mobile teams
- **Disease confirmation**, used by staff working in health centres

**Important note:** this kit is a **SAMPLING kit, not an ANALYSIS kit**, no RDT or rapid diagnosis can be made through it. To obtain results, samples must reach a laboratory.

This sampling kit allows the user to take:

- 4 CSF specimens
- 20 stool specimens
- 12 serology specimens
- 6 blood cell counting specimens
- 50 malaria smears
- 10 urine/sputum specimens
- 4 haemoculture specimens
- 10 throat swabs

It is possible to change the number of samples to be collected.

## Contents of laboratory sampling kit

Item	Quantity
Adhesive tape	1
Alcohol 90, 30 ml	1
Bic pens, 3 different colours	3
Cary Blair transport media in glass tubes	20
Distilled water, 30 ml	1
Dressing tape 6cm*1 m	1
Empty plastic bag with zip	5
Glass slides 22*40 mm, pack of 50	2
Gloves, non sterile, by 20	1
Guideline on sampling	2
Haemoculture bottles and slides (BBL)	4
Hydrophilic cotton, 100g	1
Iodine, 30 ml	1
Kit CSF adult	2
Kit CSF children	2
Lancets, set of 200	1
Marker	1
One rigid plastic case containing all equipment	1
Protective glasses	1
Protective masks	3
Request forms	40
Rubbers	10
Small metallic forceps	1
Sterile collection swab	20
Sterile plastic pipettes for blood/serum separation	12
Sterile saline 5 ml in glass tube	5
Tourniquet	1
Urine/stool collection box	10
Vacutainer blood collection kit	1
Safe waste disposal boxes	5

### Details about CSF sampling kits

Pair of sterile gloves	1
Iodine applicator	1
Plastic sterile tubes and lid	2
Mini hand soap	1
Band aid	1
Labels	3
Alcohol swab	2
Gauze sponge	1
Hypodermic needle 21 G 1 1/2	1
3 ml plastic syringe	1
Spinal needle, 20G *3-1/2, 91mm*8,89cm **	1
Insulated container for triple package	1

**Vacutainer blood collection kit**

Orange capped tube, 10ml	12
Purple capped tube, 5 ml	6
Vacutainer adaptor	6
Needles/butterfly needles	20

\*\* for children, this item is replaced by spinal needle 22G \* 2-1/2 , 72 mm\*6,35cm

**Figure 1: CSF collection kit\***



*\*Developed by CDC meningitis branch for meningitis belt countries.*

**Figure 2: Sampling kit prototype**

