

# Guidelines for disease surveillance/ early warning and response

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## Middle East crisis

August 2006



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<sup>1</sup> *Communicable disease risk assessment and interventions. Middle East crisis - Lebanon*. July 2006. Geneva, World Health Organization, 2006 (WHO/CDS/NTD/DCE/2006.5).

# Preface

The purpose of this document is to provide health professionals in United Nations organizations, nongovernmental organizations, donor agencies and national and local authorities with technical guidance and templates for setting up a disease surveillance and early warning and response system for the current Middle East crisis.

The document is intended for use in the acute phase of the emergency and will need further adaptation at field level to complement existing national disease surveillance systems.

# 1. Overview of a disease surveillance/early warning and response system

Disease surveillance is a crucial component of an effective humanitarian response to an emergency. Following an emergency, a disease surveillance and early warning and response system<sup>1</sup> is essential to protect the health of emergency-affected populations and to reduce excess morbidity and mortality. It is crucial to inform public health decision-making.

## 1.1 Objectives

In the acute phase of an emergency, the primary objective of a surveillance/early warning system is the immediate detection of and rapid response to epidemic-prone diseases among emergency-affected populations. The monitoring of priority endemic communicable and noncommunicable diseases is also important for planning purposes.

## 1.2 Priority epidemic-prone diseases

Surveillance efforts must be prioritized to focus on epidemic-prone diseases, which, based on disease epidemiology in the country and region, have the potential to cause significant morbidity and mortality in the affected population. A comprehensive health survey is not possible in the acute phase due to limited resources and logistic challenges. Priority should be given to communicable diseases for which effective interventions are available.

The surveillance/early warning system must be simple, sensitive, and above all, must provide a stimulus for a timely response in order to prevent further morbidity and mortality (see Box 1). It is important that the system established is structured in a manner that will enable it to complement the existing national routine surveillance system.

### **Box 1 Reporting forms and case definitions**

- A sample weekly surveillance reporting form is shown in Annex 1.
- The number of diseases reported should be kept to a minimum and may be reported in terms of diseases or syndromes, such as acute lower respiratory infection or pneumonia, suspected cholera, suspected malaria, acute bloody diarrhoea and acute jaundice syndrome.
- Standard case definitions for diseases and syndromes must be provided (e.g. on the back of reporting forms).
- Additional activities related to noncommunicable diseases may be useful. These include quantifying the number of injuries or wounds and their causes resulting from the crisis, monitoring the chronic disease burden for planning purposes, as well as calculating proportional morbidity if population denominators are difficult to obtain.

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<sup>1</sup> Referred to hereafter as a surveillance/early warning system.

## 1.3 Early warning of epidemics

A surveillance/early warning system is designed for rapid detection, verification and response to epidemics. The early warning component of disease surveillance should have several methods of disease detection. An alert component should be in place for immediate reporting of priority disease events – via telephone, text message, fax or e-mail – to allow timely investigation of communicable disease alerts. Early warning of potential outbreaks should also be apparent from the continuing collection and analysis of trends of health events from routine weekly surveillance forms (see Box 2).

Data analysis methods and software used should be simple, easy to maintain and transferable between assigned surveillance officers of differing technical capabilities.

### **Box 2 Weekly health-facility reporting and immediate alert system**

- A passive, health facility-based surveillance system should be in place for collection of weekly<sup>a</sup> morbidity and mortality data as well as an alert system for immediate reporting of certain priority diseases or clusters of unusual events or deaths, for rapid investigation and action.
- Unofficial sources and media alerts should be taken seriously, since these informal sources may contain information that may not be detected by the weekly system.
- A system for tracking and verification of all alerts is essential.

<sup>a</sup> Weekly reporting will ensure compliance by health-care workers. More frequent reports will overwhelm staff at reporting levels with a large amount of unnecessary data.

## 1.4 Rapid response

Surveillance officers should be encouraged to notify public health authorities of epidemic-prone diseases or unusual trends of disease immediately, which ideally should be investigated within 24 hours, in collaboration with all relevant agencies. A sample case/cluster investigation form, with a line list, is provided in Annex 2 for use in these investigations. As outlined in Box 3, it is important that appropriate materials are available and laboratory services have been identified.

Control measures should be implemented in collaboration with all relevant humanitarian partners.

### **Box 3 Ensuring a rapid response**

#### **Pre-position stockpiles**

Sampling and transport materials for investigation, and appropriate stockpiles of drugs and other materials should be pre-positioned for rapid response to outbreaks, e.g. cholera kits, if in a cholera-endemic area.

#### **Identify a reference laboratory**

An appropriate reference laboratory should be identified and a system should be in place for tracking, storing and transporting relevant specimens<sup>a</sup> to appropriate laboratories.

<sup>a</sup> See Annexes 3– 8 for flowcharts on specimens required for laboratory confirmation of epidemic-prone diseases.

## 2. Implementation

Four steps should be taken to implement an effective surveillance/early warning system in the acute phase of an emergency: (i) data collection; (ii) reporting; (iii) data analysis and feedback; and (iv) action.

### 2.1 Data collection

The World Health Organization (WHO) and national health authorities should:

- standardize case definitions to be used in the emergency context;
- standardize and finalize reporting forms;
- specify the route of information flow and define responsibilities at each level of reporting;
- train national officers, programme coordinators and surveillance officers in data collection and reporting procedures for the surveillance/early warning system;
- provide technical supervision of the flow of information from the field;
- ensure the involvement of all health-care providers at outpatient and inpatient levels, whether they be part of national health systems or nongovernmental organizations.

### 2.2 Reporting

Reporting sites should be identified in areas containing emergency-affected populations, and wherever possible, should be staffed by trained officers.

Objectives of the reporting structure are to:

- identify or recruit disease reporters among health-care providers;
- identify or assign focal people for each reporting site;
- immediately report notifiable diseases to designated coordinators or surveillance officers;
- detect and monitor occurrence of disease outbreaks;
- identify patterns of diseases as compared with previous data;
- register the cumulative number of deaths from each reporting site;
- institute recommended control measures.

### 2.3 Data analysis and feedback

WHO staff and national counterparts should analyse the reported alerts on a daily basis and the passive surveillance information on a weekly basis. This requires analytical epidemiological capacity at the central level. Reports generated after each weekly analysis should be made available to all stakeholders.

Additionally, efforts should be made to obtain current demographic population data.

### 2.4 Action

WHO and the ministry of health should:

- provide technical guidelines to humanitarian partners on public health interventions for controlling the reported diseases and a list of supplies and essential medications for communicable and noncommunicable diseases licensed for use in the affected countries;

- develop a summary chart of the control measures needed for each reportable disease, including pharmaceutical and non-pharmaceutical measures;
- facilitate technical coordination of implementation of control measures;
- encourage stocktaking and advise on the pre-positioning of medical supplies required for implementation of recommended public health measures.

## 3. Human resources needed

### 3.1 Surveillance officers

Qualification: public health experience and familiarity with the national surveillance system.

Quantity: ideally one per camp or internally displaced persons' settlement.

Tasks:

- investigate alerts in the area;
- encourage health-care providers to participate in the surveillance/early warning system;
- collect the reporting forms from reporting sites;
- ensure data are correct and complete;
- communicate the collected data as well as any alerts to the field surveillance coordinator.

Each reporting site should be operated by a trained surveillance officer who will be responsible for coordination of data collection at field level.

### 3.2 WHO field surveillance coordinators (mid-level)

Qualification: public health or epidemiology training and experience.

Quantity: one for 5–6 surveillance officers. At least one for each WHO suboffice site.

Tasks:

- provide technical support to and supervision of surveillance officers;
- collect data forms from surveillance officers weekly;
- analyse and interpret data;
- produce feedback reports and disseminate them to reporting sites weekly;
- transmit collected data and reports to the WHO central surveillance manager weekly;
- communicate rapidly with the central surveillance manager on any sudden occurrence of priority diseases for investigation;
- undertake case or cluster outbreak investigations and carry out an initial public health response as required;
- coordinate the response with local authorities, partners and related stakeholders.

Mid-level field surveillance coordinators should work closely with the relevant local authorities and the field or suboffice health coordinator, as well as the WHO central surveillance manager.

### 3.3 WHO central surveillance manager

Qualification: public health or epidemiology training and international experience.

Quantity: one, based at the central operational unit.

Tasks:

- oversee the work of all the mid-level field surveillance coordinators in support of national authorities;
- collect data and reports from all reporting sites and review data analysis and interpretation;
- supervise surveillance activities conducted by the mid-level field surveillance coordinators and surveillance officers;
- coordinate all surveillance activities with national authorities, partners and related stakeholders;

- produce feedback reports to mid-level field surveillance coordinators;
- replace any visiting WHO international experts once the surveillance system is well established and stabilized.

### 3.4 Surveillance programme assistant

Qualification: basic training in information management of surveillance/early warning response systems.

Quantity: one at the central level.

Tasks:

- track and monitor incoming and outgoing correspondence and reports;
- maintain programme records;
- provide support in administrative and financial tasks;
- assist the WHO central surveillance manager in discharge of his or her duties.

### 3.5 Data entry clerk

Qualification: proficiency with relevant computer programmes and software.

Quantity: ideally one per WHO field operational or suboffice site.

Tasks:

- support the mid-level field surveillance coordinator;
- receive the reporting forms sent to the mid-level operational unit on a weekly basis;
- enter data received from the field weekly;
- collate data received at mid-level for sending to the central operational unit.

## 4. Key communicable disease risks in the Middle East

### 4.1 Water- and foodborne diseases

- cholera
- shigellosis
- typhoid fever
- hepatitis A and E
- food poisoning (various agents)

### 4.2 Vaccine-preventable diseases

- measles
- mumps
- rubella
- pertussis
- diphtheria
- poliomyelitis
- meningococcal disease
- tetanus (neonatal and adult)
- hepatitis B
- seasonal influenza

### 4.3 Diseases linked to precarious living conditions and overcrowding

- all water- and foodborne diseases
- all vaccine-preventable diseases
- acute respiratory infections
- tuberculosis
- sexually transmitted infections, including human immunodeficiency virus infections

### 4.4 Vector-borne diseases

- borrelioses
- leishmaniasis
- Crimean–Congo haemorrhagic fever
- typhus
- malaria

### 4.5 Zoonoses

- brucellosis
- rabies
- echinococcosis
- avian influenza infection in animals or humans (including low-pathogenic avian influenza A(H9N2) and highly pathogenic avian influenza A(H5N1))

## 5. Risk factors for communicable disease transmission

Disease	Risk factors for transmission
<b>Water- and foodborne diseases</b>	<ul style="list-style-type: none"> <li>• Overcrowding</li> <li>• Inadequate quantity and/or quality of water</li> <li>• Poor personal hygiene</li> <li>• Poor washing facilities</li> <li>• Poor sanitation</li> <li>• Insufficient quantity of soap</li> <li>• Inadequate health-care services</li> </ul>
<b>Acute respiratory infections</b>	<ul style="list-style-type: none"> <li>• Inadequate shelter</li> <li>• Poor access to health-care services</li> <li>• Overcrowding</li> <li>• Lack of food, malnutrition</li> <li>• Aged under one year</li> <li>• Elderly</li> <li>• Rainy season</li> </ul>
<b>Vaccination-preventable diseases</b> Measles, mumps, rubella, pertussis, diphtheria and poliomyelitis	<ul style="list-style-type: none"> <li>• Low immunization coverage</li> <li>• Population movement</li> <li>• Overcrowding</li> <li>• Malnutrition</li> </ul>
Neonatal tetanus	<ul style="list-style-type: none"> <li>• Unsafe birthing procedures</li> <li>• Poor immunization status</li> <li>• Poor hygiene</li> </ul>
Adult tetanus	<ul style="list-style-type: none"> <li>• Poor immunization status</li> <li>• Open wounds</li> <li>• Poor hygiene</li> </ul>
Meningococcal meningitis and seasonal influenza	<ul style="list-style-type: none"> <li>• Overcrowding</li> <li>• High rates of acute respiratory infection</li> </ul>

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<b>Disease</b>	<b>Risk factors for transmission</b>
<b>Vector-borne diseases</b>	<ul style="list-style-type: none"><li>• Movement of people from areas of low endemicity to hyperendemic areas</li><li>• Exposure in areas where vectors are more present</li><li>• Lack of shelter</li><li>• Interruption of vector control measures</li><li>• Inadequate health-care services</li><li>• Stagnant water</li><li>• Rainy season</li></ul>
<b>Zoonoses</b>	<ul style="list-style-type: none"><li>• Poor control of animal slaughtering</li><li>• Contact with infected animals due to lack of veterinary control</li><li>• Increased rate of diseases in animals</li></ul>

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## 6. Suggested health events to be reported for current Middle East crisis

### 6.1 Suggested health events for weekly reporting

The following health events should be reported weekly:

1. suspected cholera\*
2. suspected measles\*
3. suspected meningitis\*
4. acute jaundice syndrome\*
5. acute haemorrhagic fever syndrome\*
6. acute flaccid paralysis (suspected poliomyelitis)\*
7. unexplained cluster of health events\*
8. acute respiratory syndrome
9. acute diarrhoea
10. acute bloody diarrhoea
11. unexplained fever
12. tetanus (neonatal and adult)
13. injury or wound
14. cardiovascular disease
15. diabetes
16. other.

**Health events 1–7, marked with an asterisk (\*), should be reported immediately for verification and investigation (using form in Annex 2).**

Acute jaundice syndrome includes diseases such as viral hepatitis, borreliosis and leptospirosis.

Acute haemorrhagic fever includes diseases such as Crimean–Congo haemorrhagic fever, dengue haemorrhagic fever, leptospirosis and relapsing fever.

Acute respiratory syndrome includes diseases such as acute lower respiratory infection or pneumonia, seasonal influenza, diphtheria and pertussis. An acute respiratory syndrome of unknown etiology will include suspicion of human infection with avian influenza viruses, regardless of the severity of symptoms.

Meningitis, poliomyelitis, tetanus and rabies are considered as acute neurological conditions for which laboratory confirmation is outlined in Annex 8.

Unexplained fever includes diseases such as malaria, typhoid fever, dengue and leptospirosis.

## 6. 2 Community alert system

Alerts may also be communicated in an informal way by people selected as key informants from affected communities, based on the following suggested symptoms or health events:

- acute bloody diarrhoea
- suspected cholera
- typhoid fever
- acute onset of fever with rash
- acute onset of fever with neck stiffness or convulsion or vomiting
- acute onset of fever with haemorrhagic signs
- yellow eyes, jaundice or hepatitis
- meningitis
- acute flaccid paralysis
- tetanus
- cluster of unexplained cases or deaths (among people in the same settlement)

These alerts must be tracked according to when reported, when verified and investigated, outcome and final classification of the alert.

## 7. Case definitions and alert thresholds for investigation of reportable health events

Health event (with abbreviations) <sup>a</sup>	Case definition	Alert threshold for investigation
Suspected cholera – CHO	Person aged over 5 years with severe dehydration or death from acute watery diarrhoea  Person aged over 2 years with acute watery diarrhoea <i>in an area where there is a cholera outbreak</i>	<b>One case or one death</b>
Suspected measles – MEA	Rash with fever and cough, runny nose or conjunctivitis	<b>One case</b> detected should be considered as the beginning of an outbreak
Suspected meningitis – MEN	Fever of acute onset (38.5 °C rectal temperature or 38.0 °C axillary temperature) and stiff neck  For patients under 1 year of age, meningitis is suspected when fever is accompanied by a bulging fontanelle, altered consciousness or irritability	<b>One case</b>
Acute jaundice syndrome – AJS	Acute onset of yellow eyes or skin AND absence of known predisposing factors	<b>One case</b>
Acute haemorrhagic fever syndrome – AHF	Acute onset of fever (less than 3 weeks' duration) and any of the following: <ul style="list-style-type: none"> <li>• haemorrhagic or purpuric rash</li> <li>• vomiting with blood</li> <li>• cough with blood</li> <li>• blood in stools</li> <li>• epistaxis</li> <li>• other haemorrhagic symptoms</li> </ul>	<b>One case</b>
Acute flaccid paralysis (suspected poliomyelitis) – AFP	Acute flaccid paralysis in a child aged under 15 years, including Guillain–Barré syndrome, <sup>a</sup> or any acute paralytic illness in a person of any age in whom poliomyelitis is suspected.	<b>One case</b>
Unexplained cluster of health events – UCE	An aggregation of cases with similar symptoms and signs of unknown cause that are closely grouped in time and/or place.	<b>Aggregation of cases</b> with related symptoms and signs of unknown cause that are closely grouped in time and/or place
Acute respiratory syndrome – ARS	Acute onset of cough OR respiratory distress AND severe illness AND absence of predisposing factors.	<b>Unusual increase</b> in cases or <b>a cluster of cases</b> in the same settlement in one week.

<b>Health event (with abbreviation)</b>	<b>Case definition</b>	<b>Alert threshold for investigation</b>
Acute diarrhoea – AD	Passage of 3 or more loose stools in the past 24 hours, with or without dehydration	<b>Unexpected increase</b> in the number of cases of acute diarrhoea
Acute bloody diarrhoea – ABD	Passage of 3 or more loose stools in the past 24 hours, with or without dehydration, and with visible blood	<b>A cluster</b> of acute bloody diarrhoea cases in the same settlement in one week
Unexplained fever – UF	Fever (body temperature >38.5 °C) for more than 48 hours and without other known etiology	<b>Unexpected increase</b> in the number of unexplained fever cases
Adult tetanus – AT	Either of the following signs 3–21 days following an injury or wound: <ul style="list-style-type: none"> <li>• trismus of the facial muscles or risus sardonicus</li> <li>• painful muscular contractions</li> </ul>	<b>One case</b>
Neonatal tetanus – NT	Any neonate with a normal ability to suck and cry during the first 2 days of life, who between day 3 and day 28 cannot suck normally, or any neonate who becomes stiff or has spasms or both	—
Trauma or injury – TRA	Any person who has sustained, either directly or indirectly, a fatal or non-fatal injury which may be: <ul style="list-style-type: none"> <li>• war-related – caused by any weapons or explosion of a landmine or other unexploded ordnance<sup>c</sup></li> <li>• other – road traffic accidents, domestic violence and burns</li> </ul>	—

<sup>a</sup> The suggested abbreviations may be used as field codes when entering information in an epidemiological database.

<sup>b</sup> For practical reasons, Guillain–Barré syndrome is considered as poliomyelitis until proven otherwise.

<sup>c</sup> Landmine injuries relate to buried mines (e.g. antipersonnel and/or antivehicle mines). Unexploded ordnance injuries arise from explosive objects or devices that are typically above ground at the time of detonation, such as cluster munitions that did not detonate on impact.

# Annex 1

## Sample weekly surveillance reporting form

<b>Province:</b>		<b>Town/village/settlement/camp:</b>		
<b>District:</b>		<b>Name of health facility/clinic:</b>		
<b>Estimated population under surveillance:</b>		<b>Population under surveillance aged &lt;5 years:</b>		
<b>Reporting agency (e.g. nongovernmental organization):</b>		<b>Surveillance officer</b>		
		<b>Name:</b>		
		<b>Telephone number:</b>		
<b>Start of week from Saturday: ...../...../2006 to end of week Friday: ...../...../2006</b>				
<b>Week number:</b>		<b>Date of report: ...../...../2006</b>		
<b>Health events<sup>a, b</sup></b>	<b>No. of cases (morbidity)<sup>c, d</sup></b>		<b>No. of deaths (mortality)<sup>e, f</sup></b>	
	<b>&lt;5 years</b>	<b>≥5 years</b>	<b>&lt;5 years</b>	<b>≥5 years</b>
1. Suspected cholera*				
2. Suspected measles*				
3. Suspected meningitis*				
4. Acute jaundice syndrome*				
5. Acute hemorrhagic fever syndrome*				
6. Acute flaccid paralysis (suspected poliomyelitis)*				
7. Unexplained cluster of health events*				
8. Acute respiratory syndrome				
9. Acute diarrhoea				
10. Acute bloody diarrhoea				
11. Unexplained fever				
12. Tetanus				
13. Trauma or injury				
14. Cardiovascular disease				
15. Diabetes				
Other (specify): _____				
<b>Total</b>				

<sup>a</sup> All health events 1–7 marked with an asterisk (\*) should be reported immediately to your next level supervisor or health coordinator, with maximum information on time, place and number of cases and deaths. Report by the fastest means available (e.g. telephone, text message, fax, e-mail or radio). A case/cluster investigation form for the event should then be completed.

<sup>b</sup> Case definitions are presented on the back of the form.

<sup>c</sup> Write “0” (zero) for each of the health events if there was no case or death during the surveillance week.

<sup>d</sup> Include only those cases that were seen during the surveillance week. Each case should be counted once only.

<sup>e</sup> Ensure that only the deaths that occurred during the surveillance week are reported.

<sup>f</sup> Deaths should be reported only in the Deaths (mortality) section, not in the Cases (morbidity) section.

## Annex 2

### Sample case/cluster investigation form and line list

#### A2.1 Sample case/cluster investigation form

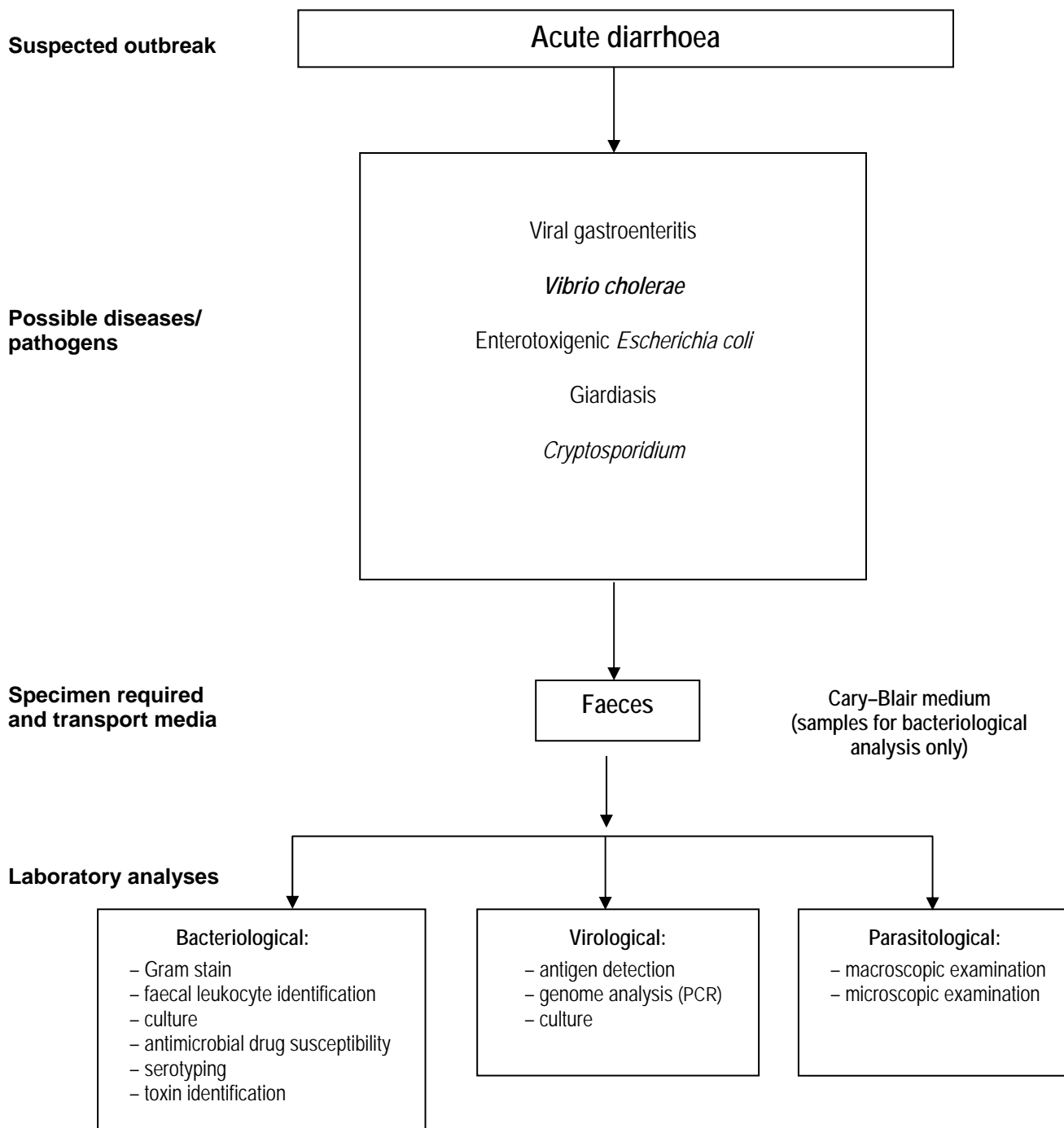
<b>Province:</b>	<b>Town/village/settlement/camp:</b>
<b>District:</b>	<b>Name of health facility/clinic:</b>
<b>Health agency:</b>	<b>Date of investigation:</b>
<b>Investigator</b>	
<b>Name:</b>	
<b>Telephone number:</b>	

<b>Health event/suspected disease (tick one box only)</b>	<b>Symptoms and signs (several boxes can be ticked)</b>
<input type="checkbox"/> Acute diarrhoea <input type="checkbox"/> Acute bloody diarrhoea <input type="checkbox"/> Suspected cholera <input type="checkbox"/> Suspected measles <input type="checkbox"/> Suspected rubella <input type="checkbox"/> Suspected pertussis <input type="checkbox"/> Suspected diphtheria <input type="checkbox"/> Suspected meningitis <input type="checkbox"/> Acute lower respiratory infection <input type="checkbox"/> Acute jaundice syndrome <input type="checkbox"/> Hepatitis <input type="checkbox"/> Acute hemorrhagic fever syndrome <input type="checkbox"/> Acute flaccid paralysis (suspected poliomyelitis) <input type="checkbox"/> Suspected malaria <input type="checkbox"/> Adult tetanus <input type="checkbox"/> Typhoid fever <input type="checkbox"/> Unexplained fever <input type="checkbox"/> Unexplained cluster of health events <input type="checkbox"/> Other (specify): _____ _____	<input type="checkbox"/> 3 or more loose stools per 24 hours <input type="checkbox"/> loose stools with blood <input type="checkbox"/> fever <input type="checkbox"/> rash <input type="checkbox"/> other skin lesion <input type="checkbox"/> cough <input type="checkbox"/> vomiting <input type="checkbox"/> yellow eyes and/or skin <input type="checkbox"/> neck stiffness <input type="checkbox"/> convulsions or seizures <input type="checkbox"/> muscle weakness <input type="checkbox"/> increased secretions (e.g. sweating or drooling) <input type="checkbox"/> altered level of consciousness <input type="checkbox"/> other (specify): _____
	<b>Total number of cases reported:</b>



# Annex 3

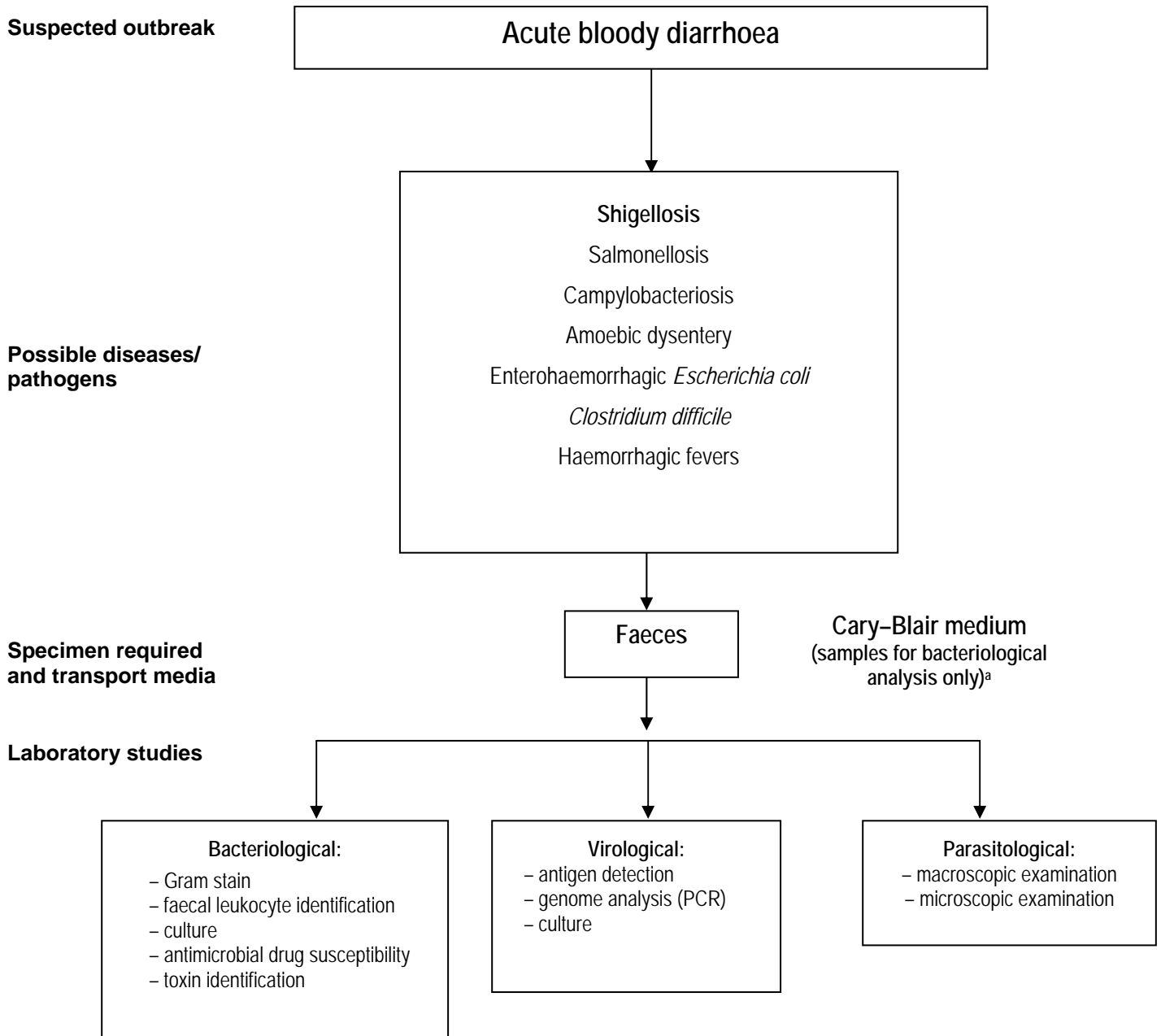
## Flowchart for laboratory confirmation of acute diarrhoea



PCR, polymerase chain reaction.

## Annex 4

# Flowchart for laboratory confirmation of acute bloody diarrhoea

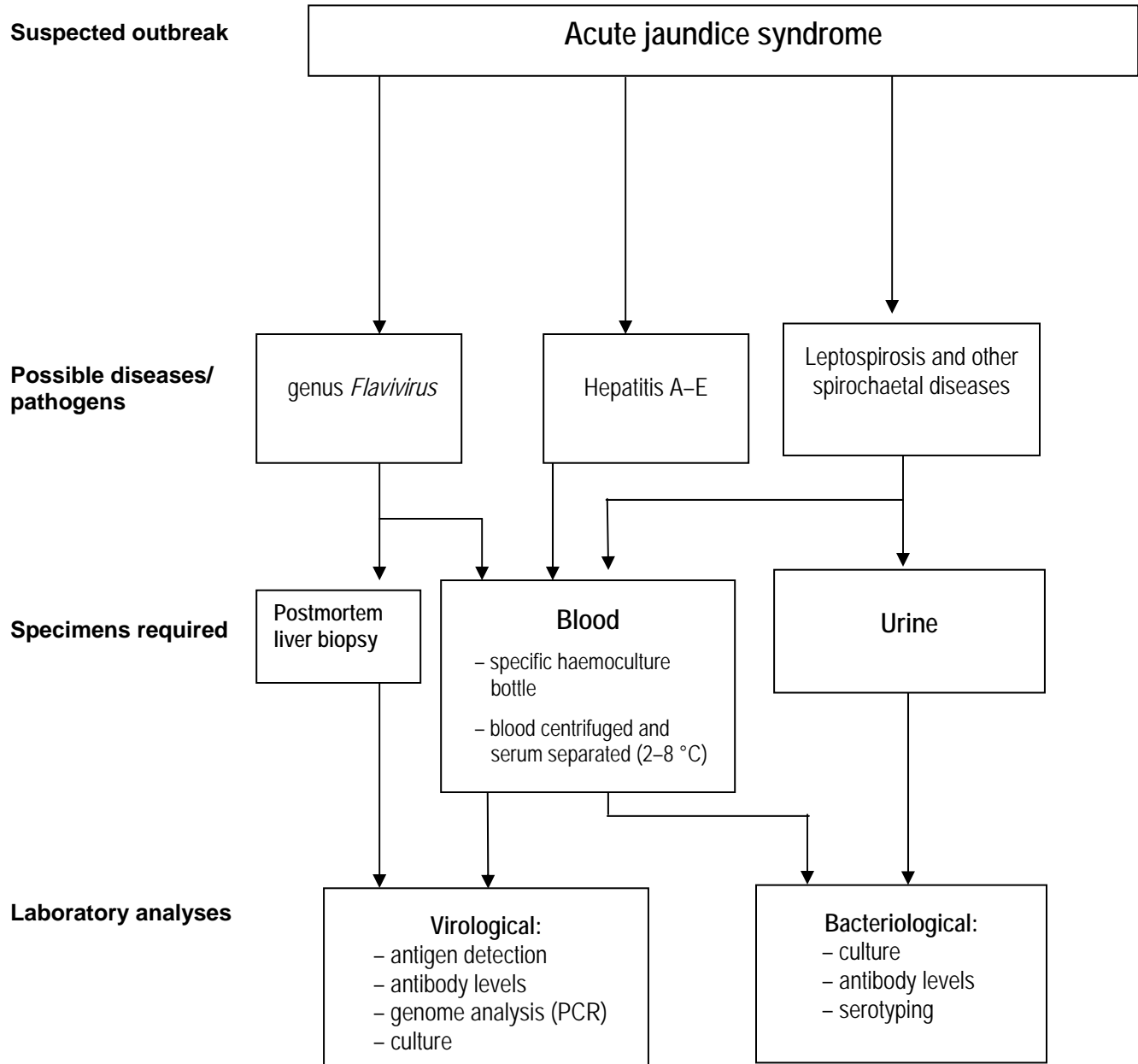


PCR, polymerase chain reaction.

<sup>a</sup> Store samples for identification of *Shigella* at 2–8 °C.

# Annex 5

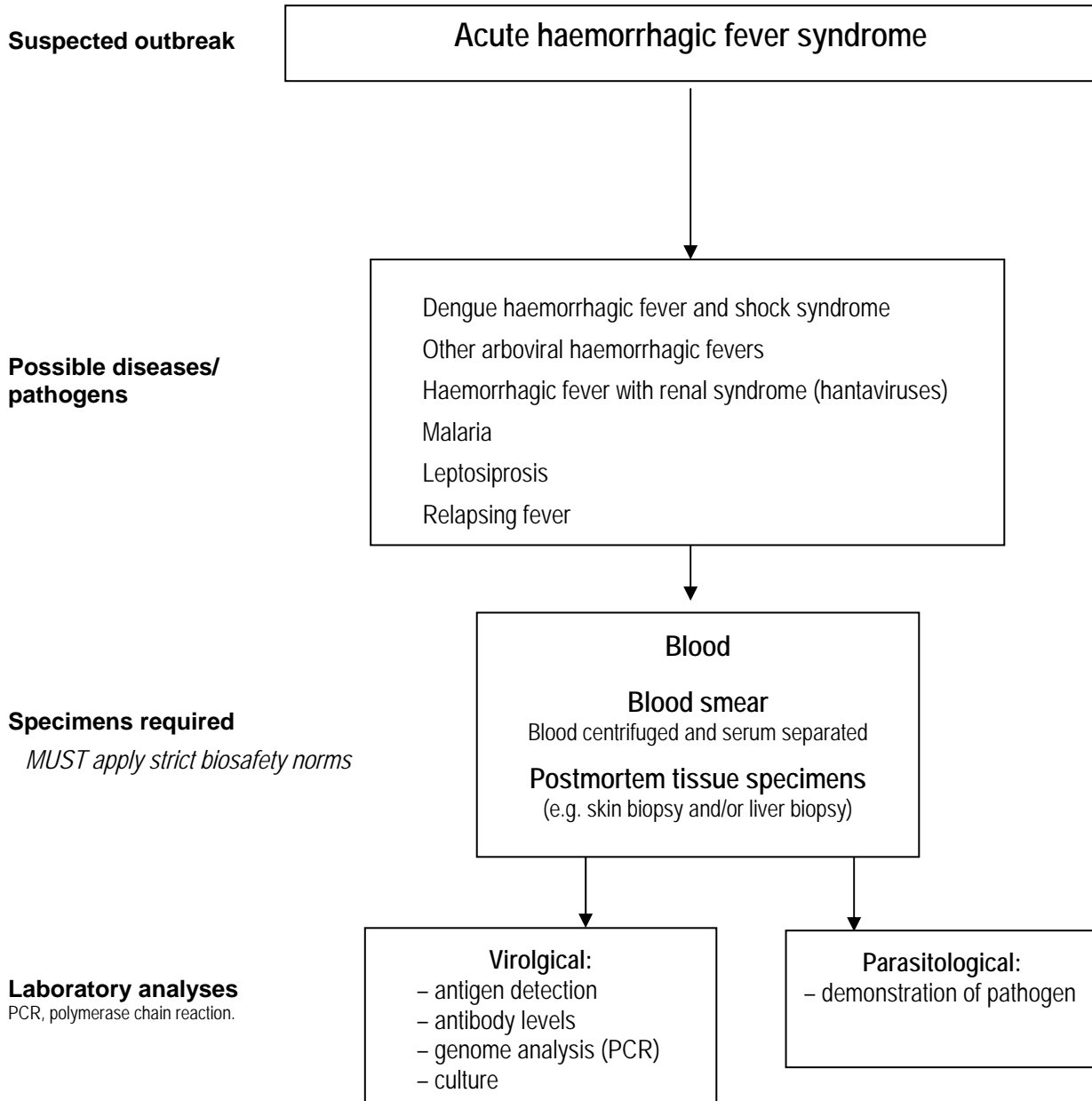
## Flowchart for laboratory confirmation of acute jaundice syndrome



PCR, polymerase chain reaction.

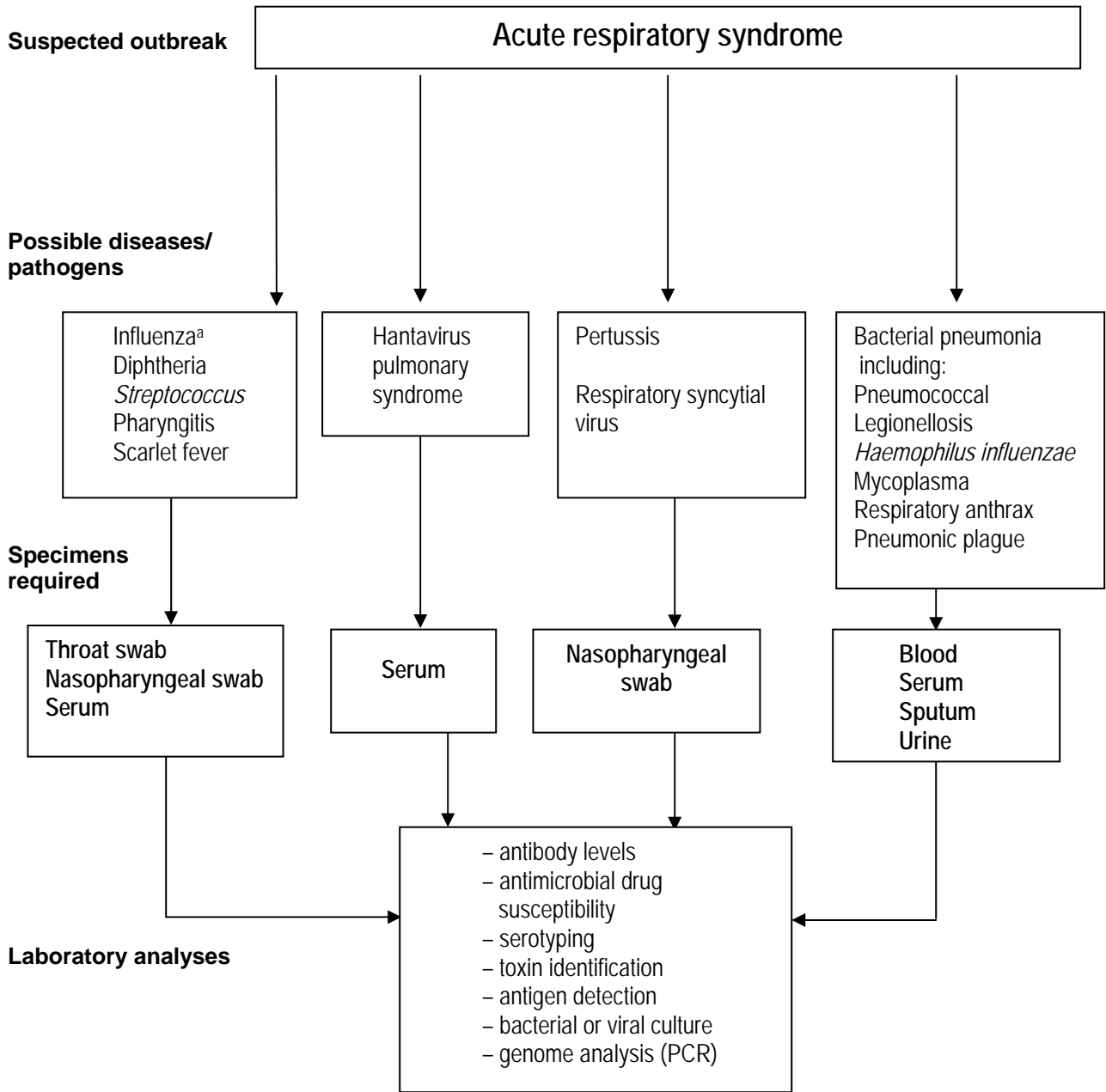
## Annex 6

### Flowchart for laboratory confirmation of acute hemorrhagic fever syndrome



# Annex 7

## Flowchart for laboratory confirmation of acute respiratory syndrome

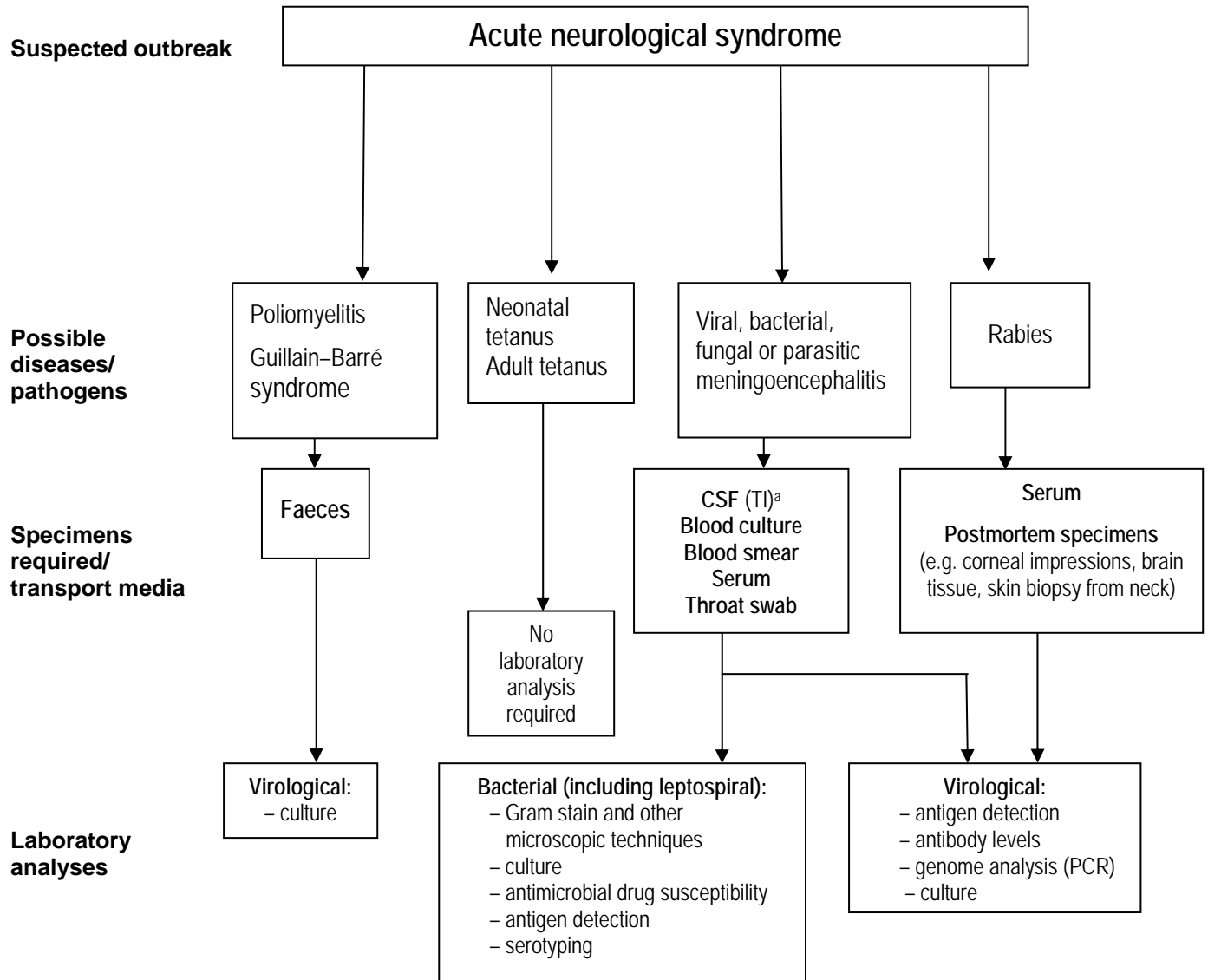


PCR, polymerase chain reaction.

<sup>a</sup> For specific information on influenza specimen collection, transport, testing and biosafety procedures, refer to the WHO guidelines at [http://www.who.int/csr/disease/avian\\_influenza/guidelines/en/index.html](http://www.who.int/csr/disease/avian_influenza/guidelines/en/index.html) (accessed 1 August 2006).

# Annex 8

## Flowchart for laboratory confirmation of acute neurological syndrome



CSF, cerebrospinal fluid; TI, transisolate medium; PCR, polymerase chain reaction.

<sup>a</sup> Do not refrigerate transisolate medium after use.

## Annex 9

# Kits for collection of specimens in emergency conditions

### A9.1 Laboratory sampling kit

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

- outbreak investigation, for use by mobile teams;
- disease confirmation, for use by staff working in health centres.

It is important to note that this kit is for sampling, not analysis. It cannot be used for rapid diagnosis. To obtain results, the samples must be analysed at a laboratory.

This sampling kit allows the user to:

- collect 4 cerebrospinal fluid specimens
- collect 20 stool specimens
- take 12 specimens for serology
- take 6 specimens for blood cell counting
- prepare 50 malaria smears
- take 10 urine or sputum specimens
- take 4 haemoculture specimens
- take 10 throat swabs.

It is possible to change the number of samples that can be collected. The prototype is illustrated in Figure A9.1 and the contents are listed in Tables A9.1 and A9.2.

**Figure A9.1 Laboratory sampling kit prototype**



**Table A9.1 Contents of laboratory sampling kit**

<b>Item</b>	<b>Quantity</b>
Adhesive tape	1
Alcohol 70%, 30 ml	1
Ballpoint pens, 3 different colours	3
Cary–Blair transport medium in glass tubes	20
Distilled water, 30 ml	1
Dressing tape, 6 cm x 1 m	1
Glass coverslips, 22 x 22 mm, pack of 50	2
Glass slides, 22 x 40 mm, pack of 50	2
Gloves, non-sterile, box of 20 each	1
Guidelines on sampling	2
Haemoculture bottles	4
Hydrophilic cotton, 100g	1
Iodine, 30 ml	1
Cerebrospinal fluid sampling kit, adult	2
Cerebrospinal fluid sampling kit, children	2
Laboratory request forms	40
Lancets, set of 200	1
Marker pen	1
Plastic bags with zip	5
Protective glasses	1
Protective masks	3
Rigid plastic case containing all equipment	1
Small metallic forceps	1
Sterile collection swabs	20
Sterile plastic pipettes for blood and serum separation	12
Sterile saline, 5 ml in glass tubes	5
Tourniquet	1
Urine or stool collection boxes	10
VACUTAINER blood collection kit	1
Safe waste disposal boxes	5

**Table A9.2 Contents of blood collection kit**

<b>Item</b>	<b>Quantity</b>
Orange-capped tubes, 10ml	12
Purple-capped tubes, 5 ml	6
VACUTAINER adaptors	6
Needles/butterfly needles	20

## A9.2 Cerebrospinal fluid sampling kit

The contents of a cerebrospinal fluid sampling kit are described in Table A9.3 and are shown in Figure A9.2.

**Table A9.3 Contents of cerebrospinal fluid sampling kit for one adult**

Item	Quantity
Pair of sterile gloves	1
Iodine applicator	1
Plastic sterile tubes and lids	2
Mini hand soap	1
Ventilated adhesive composite bandage, 72 mm x 19 mm	1
Labels	3
Alcohol swabs	2
Gauze sponge	1
Hypodermic needle, 21 gauge	1
Plastic syringe, 3 ml	1
Spinal needle, 20 gauge 91 mm x 8.89 cm <sup>a</sup>	1
Insulated container for triple packaging	1

<sup>a</sup> In the cerebrospinal fluid sampling kit for children, this item is replaced by spinal needle 22 gauge 2-1/2, 72 mm x 6.35 cm.

**Figure A9.2 Cerebrospinal fluid sampling kit<sup>a</sup>**



<sup>a</sup> Developed by the United States Centers for Disease Control and Prevention Meningitis Branch for meningitis-belt countries.

## Annex 10

### Additional WHO recommended case definitions for priority communicable diseases

Disease	Case definition	Alert threshold for investigation
Acute lower respiratory infection – ALRI	<p><b>In cases under 5 years of age:<sup>a</sup></b>            Fever (body temperature &gt;38 °C), cough or difficult breathing            AND</p> <ul style="list-style-type: none"> <li>• fast breathing (≥50 breaths/min) for infant aged 2 months to &lt;1 year.</li> <li>• fast breathing (≥40 breaths/min) for child aged 1 to &lt;5 years.</li> </ul> <p><b>In cases aged 5 years and over:<sup>a</sup></b>            Fever (body temperature &gt;38 °C), cough or difficult breathing            AND</p> <ul style="list-style-type: none"> <li>• fast breathing (≥30 breaths/min) for cases aged 5–12 years</li> <li>• fast breathing (≥20 breaths/min) for cases aged ≥13 years</li> </ul>	<b>Unexpected increase</b> in the number of cases
Confirmed malaria – MAL	Person with fever or history of fever within the past 48 hours (with or without other symptoms such as nausea, vomiting, diarrhoea, headache, back pain, chills and myalgia) with positive laboratory test for malaria parasites (blood film (thick or thin smear) or rapid diagnostic test)	<b>Increasing number</b> of malaria cases
Pertussis – PER	A case diagnosed as pertussis by a physician OR a cough illness lasting at least 2 weeks with at least one of the following, without other apparent cause: <ul style="list-style-type: none"> <li>• paroxysms of coughing</li> <li>• inspiratory “whooping”</li> </ul> post-tussive vomiting	<b>One case</b>
Poliomyelitis – POL	Acute flaccid paralysis (AFP) in a child aged <15 years, including Guillain–Barré syndrome, <sup>b</sup> OR any paralytic illness in a person of any age in whom poliomyelitis is suspected.	<b>One case</b>
Rubella – RUB	Any maculopapular rash with fever and with one of the following symptoms: <ul style="list-style-type: none"> <li>• cervical, suboccipital, or postauricular adenopathy</li> <li>• arthralgia or arthritis</li> </ul> OR any case diagnosed by physician as rubella	<b>One case</b>

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 Division of Communicable Disease Control, WHO Regional Office for the Eastern Mediterranean

<b>Disease</b>	<b>Case definition</b>	<b>Alert threshold for investigation</b>
Tuberculosis – TB	Productive cough lasting >2 weeks, and/or haemoptysis and significant weight loss (or someone currently on treatment)	—
Typhoid fever – TF	In the absence of laboratory confirmation, any case with fever (body temperature of at least 38 °C) for 3 or more days is considered a suspected case if the epidemiological context is conducive	<b>Unexpected increase</b> in the number of cases
Typhus – TYP	Any person presenting with fever, shivers, headaches, generalized joint pain and living in poor hygiene conditions or in a camp setting	<b>Cluster of cases</b>

<sup>a</sup> Source: *Acute care. Integrated management of adolescent and adult illness. Interim guidelines for first-level facility health workers at health centre and district outpatient clinic*. Geneva, World Health Organization (WHO/CDS/IMAI/2004.1 Rev. 2). Available at: [http://www.who.int/hiv/pub/imai/en/acutecarerev2\\_e.pdf](http://www.who.int/hiv/pub/imai/en/acutecarerev2_e.pdf) (accessed 1 August 2006).

<sup>b</sup> For practical reasons, Guillain–Barré syndrome is considered as poliomyelitis until proven otherwise.