ANNEX II

3. CASE DEFINITIONS OF COMMUNICABLE DISEASES

3.1. ANTHRAX

Clinical Criteria

Any person with at least one of the following clinical forms:

Cutaneous anthrax

At least one the following two:
- Papular or vesicular lesion;
- Depressed black eschar with surrounding oedema.

Gastrointestinal anthrax
- Fever or feverishness;

AND at least one of the following two:
- Severe abdominal pain;
- Diarrhoea.

Inhalational anthrax
- Fever or feverishness;

AND at least one of the following two:
- Acute respiratory distress;
- Radiological evidence of mediastinal widening.

Meningeal/meningoencephalitic anthrax
- Fever;

AND at least one of the following three:
- Convulsions;
- Loss of consciousness;
- Meningeal signs.

Anthrax septicaemia

Laboratory Criteria

At least one of the following two:
- Isolation of *Bacillus anthracis* from a clinical specimen
- Detection of *Bacillus anthracis* nucleic acid in a clinical specimen

Positive nasal swab without clinical symptoms does not contribute to a confirmed diagnosis of a case.

Epidemiological Criteria

At least one of the following three epidemiological links:
- Animal to human transmission;
- Exposure to a common source;
- Exposure to contaminated food/drinking water.

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.2. BOTULISM

Clinical Criteria

Any person with at least one of the following clinical forms:

Food-borne and wound botulism

At least one of the following two:

— Bilateral cranial nerve impairment (for example, diplopia, blurred vision, dysphagia, bulbar weakness);

— Peripheral symmetric paralysis.

Infant botulism

Any infant with at least one of the following six:

— Constipation;

— Lethargy;

— Difficulty in sucking or feeding;

— Ptosis;

— Dysphagia;

— General muscle weakness.

The type of botulism usually encountered in infants (< 12 months of age) can affect children also over 12 months of age and occasionally adults, with altered gastrointestinal anatomy and microflora

Laboratory Criteria

At least one of the following three:

— Isolation of BoNT-producing clostridia (for example, *Clostridium botulinum*, *C. baratii*, *C. butyricum*) for infant botulism (stool) or wound botulism (wound);

— Detection of botulinum neurotoxins in a clinical specimen;

— Detection of genes encoding for botulinum neurotoxins in a clinical specimen.

Epidemiological Criteria

At least one of the following two epidemiological links:

— Exposure to a common source (for example, food, sharing of needles or other devices);

— Exposure to contaminated food/drinking water

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

3.3. BRUCELLOSIS

Clinical Criteria

Any person with fever

And at least one of the following *seven*:

— Sweating (profuse, malodorous, specially nocturnal);
— Chills;
— Arthralgia;
— Weakness;
— Depression;
— Headache;
— Anorexia.

Laboratory Criteria

At least one of the following three:

— Isolation of human pathogenic *Brucella* spp. from a clinical specimen;
— Human pathogenic *Brucella* specific antibody response (Standard Agglutination Test, Complement Fixation, ELISA);
— Detection of human pathogenic *Brucella* spp. nucleic acid in a clinical specimen.

Epidemiological Criteria

At least one of the following five epidemiological links:

— Exposure to contaminated food/drinking water;
— Exposure to products from a contaminated animal (milk or milk products);
— Animal to human transmission (contaminated secretions or organs for example, vaginal discharge, placenta);
— Exposure to a common source;
— Laboratory exposure.

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.4. *CAMPYLOBACTER* ENTERITIS

Clinical Criteria

Any person with at least one of the following three:

— Diarrhoea;
— Abdominal pain;
— Fever.

Laboratory Criteria

At least one of the following two:

— Isolation of human pathogenic *Campylobacter* spp. from a clinical specimen;

— Detection of *Campylobacter* spp. nucleic acid in a clinical specimen.

Note: Antimicrobial susceptibility testing of *Campylobacter* spp. should be performed on a representative subset of isolates

Epidemiological Criteria

At least one of the following *five* epidemiological links:

— Animal to human transmission;

— Human to human transmission;

— Exposure to a common source;

— Exposure to contaminated food/drinking water;

— Environmental exposure.

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

Antimicrobial resistance

The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States as specified in the EU protocol for harmonised monitoring of antimicrobial resistance in human *Salmonella* and *Campylobacter* isolates[(1)].

3.5. CHIKUNGUNYA VIRUS DISEASE

Clinical Criteria[(2)]

— Fever

Laboratory Criteria[(3)]

A. Probable case

— Detection of chikungunya specific IgM antibodies in a single serum sample.

B. Confirmed case

At least one of the following four:

— Isolation of chikungunya virus from a clinical specimen;

— Detection of chikungunya viral nucleic acid from a clinical specimen;

— Detection of chikungunya specific IgM antibodies in a single serum sample AND confirmation by neutralisation;

— Seroconversion or four-fold antibody titre increase of chikungunya specific antibodies in paired serum samples.

Epidemiological Criteria

History of travel to, or residence in an area with documented on-going transmission of chikungunya, within the two-week period prior to the onset of symptoms

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical and the epidemiological criteria, and the laboratory criteria for a probable case

C. Confirmed case

Any person meeting the laboratory criteria for a confirmed case

Note: Serological results should be interpreted according to previous exposure to other flaviviral infections and the flavivirus vaccination status. Confirmed cases in such situations should be validated by serum neutralization assay or other equivalent assays.

3.6. CHLAMYDIAL INFECTION, INCLUDING CHLAMYDIAL LYMPHOGRANULOMA (VENEREUM) (LGV)

Clinical Criteria

Any person with at least one of the following clinical forms:

Chlamydial infection non-LGV

At least one of the following six:

— Urethritis;
— Epididymitis;
— Acute salpingitis;
— Acute endometritis;
— Cervicitis;
— Proctitis.

In newborn children at least one of the following two:

— Conjunctivitis;
— Pneumonia.

LGV

At least one of the following five:

— Urethritis;
— Genital ulcer;
— Inguinal lymphadenopathy;
— Cervicitis;
— Proctitis.

Laboratory Criteria

Chlamydial infection non-LGV

At least one of the following three:

— Isolation of *Chlamydia trachomatis* from a specimen of the ano-genital tract or from the conjunctiva;
— Demonstration of *Chlamydia trachomatis* by DFA test in a clinical specimen;
— Detection of *Chlamydia trachomatis* nucleic acid in a clinical specimen.

LGV

At least one of the following two:
— Isolation of *Chlamydia trachomatis* from a specimen of the ano-genital tract or from the conjunctiva;
— Detection of *Chlamydia trachomatis* nucleic acid in a clinical specimen.

AND
— Identification of serovar (genovar) L1, L2 or L3

Epidemiological Criteria

An epidemiological link by human to human transmission (sexual contact or vertical transmission)

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the laboratory criteria

3.7. CHOLERA

Clinical Criteria

Any person with at least one of the following two:
— Diarrhoea;
— Vomiting.

Laboratory Criteria

— Isolation of *Vibrio cholerae* from a clinical specimen

AND
— Demonstration of O1 or O139 antigen in the isolate

AND
— Demonstration of cholera-enterotoxin or the cholera-enterotoxin gene in the isolate

Epidemiological Criteria

At least one of the following four epidemiological links:
— Exposure to a common source;
— Human to human transmission;
— Exposure to contaminated food/drinking water;
— Environmental exposure.

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria;

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.8. CREUTZFELDT-JAKOB DISEASE (CJD)

Preconditions

— Any person with a progressive neuropsychiatric disorder with a duration of illness of at least 6 months

— Routine investigations do not suggest an alternative diagnosis

— No history of exposure to human pituitary hormones or human dura mater graft

— No evidence of a genetic form of transmissible spongiform encephalopathy

Clinical Criteria

Any person with *at least four* of the following five:

— Early psychiatric symptoms[(4)];

— Persistent painful sensory symptoms[(5)];

— Ataxia;

— Myoclonus or chorea or dystonia;

— Dementia.

Diagnostic Criteria

Diagnostic criteria for case confirmation:

— Neuropathological confirmation: spongiform change and extensive prion protein deposition with florid plaques throughout the cerebrum and cerebellum

Diagnostic criteria for a probable or a possible case:

— EEG does not show the typical appearance[(6)] of sporadic CJD[(6)] in the early stages of the illness;

— Bilateral pulvinar high signal on MRI brain scan;

— A positive tonsil biopsy[(7)].

Epidemiological Criteria

An epidemiological link by human to human transmission (for example, blood transfusion)

Case Classification

A. Possible case

Any person fulfilling the preconditions

AND

— meeting the clinical criteria

AND

— a negative EEG for sporadic CJD[(6)]

B. Probable case

Any person fulfilling the preconditions

AND

— meeting the clinical criteria

AND

— a negative EEG for sporadic CJD[(8)]

AND

— a positive MRI brain scan

OR

— Any person fulfilling the preconditions

AND

— a positive tonsil biopsy

C. Confirmed case

Any person fulfilling the preconditions

AND

meeting the diagnostic criteria for case confirmation

3.9. CRYPTOSPORIDIOSIS

Clinical Criteria

Any person with at least one of the following two:

— Diarrhoea;

— Abdominal pain.

Laboratory Criteria

At least one of the following four:

— Demonstration of *Cryptosporidium* oocysts in stool;

— Demonstration of *Cryptosporidium* in intestinal fluid or small-bowel biopsy specimens;

— Detection of *Cryptosporidium* nucleic acid in stool;

— Detection of *Cryptosporidium* antigen in stool.

Epidemiological Criteria

One of the following *five* epidemiological links:

— Human to human transmission

— Exposure to a common source

— Animal to human transmission

— Exposure to contaminated food/drinking water

— Environmental exposure

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.10. DENGUE

Clinical Criteria[(9)]

— Fever

Laboratory Criteria[10]

A. Probable case

— Detection of dengue specific IgM antibodies in a single serum sample

B. Confirmed case

At least one of the following five:

— Isolation of a dengue virus from a clinical specimen;

— Detection of dengue viral nucleic acid from a clinical specimen;

— Detection of dengue viral antigen from a clinical specimen;

— Detection of dengue specific IgM antibodies in a single serum sample AND confirmation by neutralization;

— Seroconversion or four-fold antibody titre increase of dengue specific antibodies in paired serum samples

Epidemiological Criteria

History of travel to, or residence in an area with documented on-going transmission of dengue, within the two-week period prior to the onset of symptoms

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical and the epidemiological criteria, and the laboratory criteria for a probable case

C. Confirmed case

Any person meeting the laboratory criteria for a confirmed case.

3.11. DIPHTHERIA

Clinical Criteria

Any person with at least one of the following clinical forms:

Classic Respiratory Diphtheria:

An upper respiratory tract illness with laryngitis or nasopharyngitis or tonsillitis

AND

an adherent membrane/pseudomembrane

Mild Respiratory Diphtheria:

An upper respiratory tract illness with laryngitis or nasopharyngitis or tonsillitis

WITHOUT

an adherent membrane/pseudomembrane.

Cutaneous Diphtheria:

Skin lesion

Diphtheria of other sites:

Lesion of conjunctiva or mucous membranes

Laboratory Criteria

Isolation of toxin-producing *Corynebacterium diphtheriae*, *Corynebacterium ulcerans* or *Corynebacterium pseudotuberculosis* from a clinical specimen.

Epidemiological Criteria

At least one of the following epidemiological links:

— Human to human transmission

— Animal to human transmission

Case Classification

A. Possible case

Any person meeting the clinical criteria for classical respiratory diphtheria

B. Probable case

Any person meeting the clinical criteria for diphtheria (*Classic Respiratory Diphtheria*, *Mild Respiratory Diphtheria*, *Cutaneous Diphtheria*, *Diphtheria of other sites*) with an epidemiological link to a human confirmed case or with an epidemiological link to animal to human transmission

C. Confirmed case

Any person meeting the laboratory criteria AND at least one of the clinical forms

3.12. ECHINOCOCCOSIS

Clinical Criteria

Not relevant for surveillance purposes

Diagnostic Criteria

At least one of the following five:

— Histopathology or parasitology compatible with *Echinococcus multilocularis* or *granulosus* (for example, direct visualization of the protoscolex in cyst fluid)

— Detection of *Echinoccocus granulosus* pathognomonic macroscopic morphology of cyst(s) in surgical specimens

— Typical organ lesions detected by imaging techniques (for example, computerized tomography, sonography, MRI) AND confirmed by a serological test

— *Echinococcus* spp. specific serum antibodies by high-sensitivity serological test AND confirmed by a high specificity serological test

— Detection of *Echinococcus multilocularis* or *granulosus* nucleic acid in a clinical specimen

Epidemiological Criteria NA

Case Classification

A. Possible case NA

B. Probable case NA

C. Confirmed case

Any person meeting the diagnostic criteria

3.13. GIARDIASIS (LAMBLIASIS)

Clinical Criteria

Any person with at least one of the following four:

— Diarrhoea
— Abdominal pain
— Bloating
— Signs of malabsorption (for example, steatorrhoea, weight loss)

Laboratory Criteria

At least one of the following three:
— Demonstration of *Giardia lamblia* cysts or trophozoites in stool, duodenal fluid or small-bowel biopsy
— Demonstration of *Giardia lamblia* antigen in stool, duodenal fluid or small-bowel biopsy
— Detection of *Giardia lamblia* nucleic acid in stool, duodenal fluid or small-bowel biopsy

Epidemiological Criteria

At least one of the following *four* epidemiological links:
— Exposure to contaminated food/drinking water
— Human to human transmission
— Exposure to a common source
— Environmental exposure

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.14. GONOCOCCAL INFECTION

Clinical Criteria

Any person with at least one of the following eight:
— Urethritis
— Acute salpingitis
— Pelvic inflammatory disease
— Cervicitis
— Epididymitis
— Proctitis
— Pharyngitis
— Arthritis

OR

Any newborn child with conjunctivitis

Laboratory Criteria

At least one of the following four:

— Isolation of *Neisseria gonorrhoeae* from a clinical specimen
— Detection of *Neisseria gonorrhoeae* nucleic acid in a clinical specimen
— Demonstration of *Neisseria gonorrhoeae* by a non-amplified nucleic acid probe test in a clinical specimen
— Microscopic detection of intracellular Gram-negative diploccocci in an urethral male specimen

Epidemiological Criteria

An epidemiological link by human to human transmission (sexual contact or vertical transmission)

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the laboratory criteria

Antimicrobial resistance

For cases ascertained by culture, the results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States as specified in the ECDC standard protocol for gonococcal antimicrobial resistance surveillance[11].

3.15. *HAEMOPHILUS INFLUENZAE* INFECTION, INVASIVE DISEASE

Clinical Criteria

Not relevant for surveillance purposes

Laboratory Criteria

At least one of the following two:
— Isolation of *Haemophilus influenzae* from a normally sterile site
— Detection of *Haemophilus influenzae* nucleic acid from a normally sterile site

Epidemiological Criteria NA

Case Classification

A. Possible case NA

B. Probable case NA

C. Confirmed case

Any person meeting the laboratory criteria

3.16. ACUTE HEPATITIS A

Clinical Criteria

Any person with a discrete onset of symptoms (for example, fatigue, abdominal pain, loss of appetite, intermittent nausea and vomiting)

AND

At least one of the following three:
— Fever

— Jaundice
— Elevated serum aminotransferase levels

Laboratory Criteria

At least one of the following three:
— Detection of hepatitis A virus nucleic acid in serum or stool
— Hepatitis A virus specific antibody response
— Detection of hepatitis A virus antigen in stool

Epidemiological Criteria

At least one of the following four:
— Human to human transmission
— Exposure to a common source
— Exposure to contaminated food/drinking water
— Environmental exposure

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.17. HEPATITIS B[12]

Clinical Criteria

Not relevant for surveillance purposes

Laboratory Criteria

Positive results of at least one or more of the following tests or combination of tests:
— IgM hepatitis B core antibody (anti-HBc IgM)
— Hepatitis B surface antigen (HBsAg)
— Hepatitis B e antigen (HBeAg)
— Hepatitis B nucleic acid (HBV-DNA)

Epidemiological Criteria

Not relevant for surveillance purposes

Case Classification

A. Possible case NA

B. Probable case NA

C. Confirmed case

Any person meeting the laboratory criteria

3.18. HEPATITIS C[13]

Clinical Criteria

Not relevant for surveillance purposes
Laboratory Criteria

At least one of the following three:
— Detection of hepatitis C virus nucleic acid (HCV RNA)
— Detection of hepatitis C virus core antigen (HCV-core)
— Hepatitis C virus specific antibody (anti-HCV) response confirmed by a confirmatory (for example, immunoblot) antibody test in persons older than 18 months without evidence of resolved infection)

Epidemiological Criteria NA
Case Classification

A. Possible case NA

B. Probable case NA

C. Confirmed case

Any person meeting the laboratory criteria

3.19. HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION AND ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)
Clinical Criteria (AIDS)

Any person who has any of the clinical conditions as defined in the European AIDS case definition for:
— Adults and adolescents ≥ 15 years
— Children < 15 years of age
Laboratory Criteria (HIV)
— Adults, adolescents and children aged ≥ 18 months

At least one of the following three:
— Positive result of a HIV screening antibody test or a combined screening test (HIV antibody and HIV p24 antigen) confirmed by a more specific antibody test (for example, Western blot);
— Positive result of 2 EIA antibody test confirmed by a positive result of a further EIA test;
— Positive results on two separate specimens from at least one of the following three:
  — Detection of HIV nucleic acid (HIV-RNA, HIV-DNA);
  — Demonstration of HIV by HIV p24 antigen test, including neutralisation assay;
  — Isolation of HIV.

— Children aged < 18 months

Positive results on two separate specimens (excluding cord blood) from at least one of the following three:
— Isolation of HIV;
— Detection of HIV nucleic acid (HIV-RNA, HIV-DNA);
— Demonstration of HIV by HIV p24 antigen test, including neutralisation assay in a child ≥ 1 month of age.

Epidemiological Criteria NA

Case Classification

A. Possible case NA

B. Probable case NA

C. Confirmed case

— HIV infection:

Any person meeting the laboratory criteria for HIV infection.

— AIDS:

Any person meeting the clinical criteria for AIDS and the laboratory criteria for HIV infection.

3.20. INFLUENZA

Clinical Criteria

Any person with at least one of the following clinical forms:

Influenza-like illness (ILI)

— Sudden onset of symptoms

AND

— at least one of the following four systemic symptoms:
— Fever or feverishness
— Malaise
— Headache
— Myalgia

AND

— At least one of the following three respiratory symptoms:
  — Cough
  — Sore throat
  — Shortness of breath

Acute respiratory infection (ARI)

— Sudden onset of symptoms

AND

— At least one of the following four respiratory symptoms:
  — Cough
  — Sore throat
  — Shortness of breath
  — Coryza

AND

— A clinician's judgement that the illness is due to an infection

Laboratory Criteria

At least one the following four:

— Isolation of influenza virus from a clinical specimen
— Detection of influenza virus nucleic acid in a clinical specimen
— Identification of influenza virus antigen by DFA test in a clinical specimen
— Influenza specific antibody response

Sub typing of the influenza isolate should be performed, if possible

Epidemiological Criteria

An epidemiological link by human to human transmission

Case Classification

A. Possible case

Any person meeting the clinical criteria (ILI or ARI)

B. Probable case

Any person meeting the clinical criteria (ILI or ARI) with an epidemiological link

C. Confirmed case

Any person meeting the clinical (ILI or ARI) and the laboratory criteria

3.21. INFLUENZA A/H5N1

Clinical Criteria

Any person with one of the following two:

— Fever AND signs and symptoms of acute respiratory infection;

— Death from an unexplained acute respiratory illness.

Laboratory Criteria

At least one of the following three:

— Isolation of influenza A/H5N1 from a clinical specimen;

— Detection of influenza A/H5 nucleic acid in a clinical specimen;

— Influenza A/H5 specific antibody response (four-fold or greater rise or single high titre).

Epidemiological Criteria

At least one of the following four:

— Human to human transmission by having been in close contact (within 1 metre) to a person reported as probable or confirmed case;

— Laboratory exposure: where there is a potential exposure to influenza A/H5N1;

— Close contact (within 1 metre) with an animal with confirmed A/H5N1 infection other than poultry or wild birds (for example, cat or pig);

— Reside in or have visited an area where influenza A/H5N1 is currently suspected or confirmed AND at least one of the following two:

  — Having been in close contact (within 1 metre) with sick or dead domestic poultry or wild birds in the affected area;

  — Having been in a home or a farm where sick or dead domestic poultry have been reported in the previous month in the affected area.

Case Classification

A. Possible case

Any person meeting the clinical and the epidemiological criteria

B. Probable case

Any person with a positive test for influenza A/H5 or A/H5N1 performed by a laboratory which is not a National Reference Laboratory participating in the EU Community Network of Reference Laboratories for human influenza (CNRL)

C. Nationally confirmed case

Any person with a positive test for influenza A/H5 or A/H5N1 performed by a National Reference Laboratory participating in the EU Community Network of Reference Laboratories for human influenza (CNRL)

D. WHO confirmed case

Any person with a laboratory confirmation by a WHO Collaborating Centre for H5

3.22. LEGIONNAIRES' DISEASE

Clinical Criteria

Any person with pneumonia

Laboratory Criteria

Laboratory criteria for case confirmation

At least one of the following three:

— Isolation of *Legionella* spp. from respiratory secretions or any normally sterile site

— Detection of *Legionella pneumophila* antigen in urine

— Significant rise in specific antibody level to *Legionella pneumophila* serogroup 1 in paired serum samples

Laboratory criteria for a probable case

At least one of the following four:

— Detection of *Legionella pneumophila* antigen in respiratory secretions or lung tissue for example, by DFA staining using monoclonal-antibody derived reagents

— Detection of *Legionella* spp. nucleic acid in respiratory secretions, lung tissue or any normally sterile site

— Significant rise in specific antibody level to *Legionella pneumophila* other than serogroup 1 or other *Legionella* spp. in paired serum samples

— Single high level of specific antibody to *Legionella pneumophila* serogroup 1 in serum

Epidemiological Criteria NA

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criterion AND at least one laboratory criterion for a probable case

C. Confirmed case

Any person meeting the clinical criterion AND at least one laboratory criterion for a confirmed case

3.23. LEPTOSPIROSIS

Clinical Criteria

Any person with

— Fever

OR

At least *two* of the following eleven:

— Chills
— Headache
— Myalgia
— Conjunctival suffusion
— Haemorrhages into skin and mucous membranes
— Rash
— Jaundice
— Myocarditis
— Meningitis
— Renal impairment
— Respiratory symptoms such as haemoptysis

Laboratory Criteria

At least one of the following four:

— Isolation of *Leptospira interrogans* or any other pathogenic *Leptospira* spp. from a clinical specimen
— Detection of *Leptospira interrogans* or any other pathogenic *Leptospira* spp. nucleic acid in a clinical specimen
— Demonstration of *Leptospira interrogans* or any other pathogenic *Leptospira* spp. by immunofluorescence in a clinical specimen
— *Leptospira interrogans* or any other pathogenic *Leptospira* spp. specific antibody response

Epidemiological Criteria

At least one of the following three epidemiological links:

— Animal to human transmission
— Environmental exposure
— Exposure to a common source

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.24. LISTERIOSIS

Clinical Criteria

Any person with at least one of the following five:

— Fever
— Meningitis, meningoencephalitis, or encephalitis
— Influenza-like symptoms
— Septicaemia
— Localized infections such as arthritis, endocarditis, endophthalmitis, and abscesses

Listeriosis in pregnancy:

— Pregnancy-related consequences of *Listeria* infection defined as: miscarriage, stillbirth or premature birth during the pregnancy

— Listeriosis of newborns defined as one of the following

  — Stillbirth (fetal death after 20 weeks of gestation)

  — Premature birth (before 37 gestational weeks)

OR

At least one of the following five in the first month of life (neonatal listeriosis):

— Meningitis or meningoencephalitis

— Septicaemia

— Dyspnoea

— Granulomatosis infantiseptica

— Lesions on skin, mucosal membranes or conjunctivae

Laboratory Criteria

At least one of the following *two*:

— Isolation of *Listeria monocytogenes* or detection of nucleic acid of *Listeria monocytogenes* from a normally sterile site

— In a pregnancy-associated case also: Isolation of *Listeria monocytogenes* or detection of nucleic acid from *Listeria monocytogenes* in a normally non-sterile site (for example, placental tissue, amniotic fluid, meconium, vaginal swab) or from a foetus, stillborn, newborn or the mother

Epidemiological Criteria

At least one of the following four epidemiological links:

— Exposure to a common source

— Human to human transmission (vertical transmission)

— Exposure to contaminated food

— Animal to human transmission

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the laboratory criteria for a normal sterile site

OR

In a pregnancy-associated case (mother or newborn in the first month of life) meeting the laboratory criteria, only the mother is to be reported as a case.

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.25. LYME NEUROBORRELIOSIS

Clinical Criteria

— Neurological symptoms according to European Federation of Neurological Societies (EFNS) suggested case definition[14], without other obvious reasons

Laboratory Criteria

A. Confirmed case

— Pleocytosis in cerebrospinal fluid, AND
  — Evidence of intrathecal production of Lyme borreliosis antibodies, OR
  — *Borrelia burdgorferi* s.l. isolation, OR
  — nucleic acid detection in cerebrospinal fluid

OR

— Detection of IgG Lyme borreliosis antibodies in blood specimen only for children (age under 18) with facial palsy or other cranial neuritis and a recent (< 2 months) history of erythema migrans

B. Probable case

— Pleocytosis in cerebrospinal fluid AND positive Lyme borreliosis serology in cerebrospinal fluid

OR

— Specific intrathecal Lyme borreliosis antibody production

Epidemiological Criteria

Not applicable

Case Classification

A. Possible case

Not applicable

B. Probable case

Any person meeting the clinical criteria and at least one of the laboratory criteria for probable cases

C. Confirmed case

Any person meeting the clinical criteria and at least one of the laboratory criteria for confirmed cases

3.26. MALARIA

Clinical Criteria

Any person with fever OR a history of fever

Laboratory Criteria

At least one of the following three:

— Demonstration of malaria parasites by light microscopy in blood films
— Detection of *Plasmodium* nucleic acid in blood
— Detection of *Plasmodium* antigen

Differentiation of *Plasmodium* spp. should be performed if possible

Epidemiological Criteria NA

Case Classification

A. Possible case NA

B. Probable case NA

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.27. MEASLES

Clinical Criteria

Any person with fever

AND

— Maculo-papular rash

AND at least one of the following *three*:

— Cough

— Coryza

— Conjunctivitis

Laboratory Criteria

At least one of the following *four*:

— Isolation of measles virus from a clinical specimen

— Detection of measles virus nucleic acid in a clinical specimen

— Measles virus specific antibody response characteristic for acute infection in serum or saliva

— Detection of measles virus antigen by DFA in a clinical specimen using measles specific monoclonal antibodies

Laboratory results need to be interpreted according to the vaccination status. If recently vaccinated, investigate for wild virus

Epidemiological criteria

An epidemiological link by human to human transmission

Case Classification

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person not recently vaccinated and meeting the clinical and the laboratory criteria

3.28. *MENINGOCOCCAL* INFECTION, INVASIVE DISEASE

Clinical Criteria

Any person with at least one of the following symptoms:

— Meningeal signs

— Haemorrhagic rash

— Septic shock

— Septic arthritis

Laboratory Criteria

At least one of the following four:

— Isolation of *Neisseria meningitidis* from a normally sterile site, or from purpuric skin lesions

— Detection of *Neisseria meningitidis* nucleic acid from a normally sterile site, or from purpuric skin lesions

— Detection of *Neisseria meningitidis* antigen in CSF

— Detection of Gram-negative stained diplococcus in CSF

Epidemiological Criteria

An epidemiological link by human to human transmission

Case Classification

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the laboratory criteria

3.29. MUMPS

Clinical Criteria

Any person with

— Fever

AND

At least one of the following three:

— Sudden onset of unilateral or bilateral tender swelling of the parotid or other salivary glands without other apparent cause

— Orchitis

— Meningitis

Laboratory Criteria

At least one of the following three:

— Isolation of mumps virus from a clinical specimen

— Detection of mumps virus nucleic acid

— Mumps virus specific antibody response characteristic for acute infection in serum or Saliva

Laboratory results need to be interpreted according to the vaccination status

Epidemiological Criteria

An epidemiological link by human to human transmission

Case Classification

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person not recently vaccinated and meeting the laboratory criteria

In case of recent vaccination: any person with detection of wild-type mumps virus strain

3.30. PERTUSSIS

Clinical Criteria

Any person with a cough lasting at least two weeks AND

— at least one of the following three:
  — Paroxysms of coughing
  — Inspiratory ‘whooping’
  — Post-tussive vomiting

OR

Any person diagnosed as pertussis by a physician

OR

Apnoeic episodes in infants

Notes:

All individuals including adults, adolescents or vaccinated children can present with atypical symptoms. Characteristics of cough should be investigated, particularly whether the cough is paroxysmal in nature, increases during the night and occurs in the absence of fever.

Laboratory Criteria

At least one of the following three:

(i) Isolation of *Bordetella pertussis* from a clinical specimen

(ii) Detection of *Bordetella pertussis* nucleic acid in a clinical specimen

(iii) *Bordetella pertussis* specific antibody response

Direct diagnosis (i)-(ii): *Bordetella pertussis* and its nucleic acid are best isolated/detected from nasopharyngeal samples.

Indirect diagnosis (iii): if possible ELISA should be performed using highly purified Pertussis Toxin and WHO reference sera as a standard. Results need to interpreted according to pertussis vaccination status. If vaccinated within the last few years before specimen collection, the titre of specific antibodies against *Bordetella pertussis* toxin may be a consequence of, or modified by, previous vaccination.

Epidemiological Criteria

An epidemiological link by human to human transmission

Case Classification

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

3.31. PLAGUE

Clinical Criteria

Any person with at least one of the following clinical forms:

Bubonic plague:

— Fever

AND

— Sudden onset of painful lymphadenitis

Septicaemic plague:

— Fever

Pneumonic plague:

— Fever

AND

At least one of the following three:

— Cough

— Chest pain

— Haemoptysis

Laboratory Criteria

At least one of the following three:

— Isolation of *Yersinia pestis* from a clinical specimen

— Detection of *Yersinia pestis* nucleic acid from a clinical specimen

— *Yersinia pestis* anti-F1 antigen specific antibody response

Epidemiological Criteria

At least one of the following four epidemiological links:

— Human to human transmission

— Animal to human transmission

— Laboratory exposure (where there is a potential exposure to plague)

— Exposure to a common source

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the laboratory criteria

3.32. *STREPTOCOCCUS PNEUMONIAE* INFECTION, INVASIVE DISEASE

Clinical Criteria

Not relevant for surveillance purposes
Laboratory Criteria

At least one of the following three:
— Isolation of *Streptococcus pneumoniae* from a normally sterile site
— Detection of *Streptococcus pneumoniae* nucleic acid from a normally sterile site
— Detection of *Streptococcus pneumoniae* antigen from a normally sterile site

Epidemiological Criteria NA
Case Classification

A. Possible case NA

B. Probable case NA

C. Confirmed case

Any person meeting the laboratory criteria
Antimicrobial resistance:

The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States as specified by ECDC's European Antimicrobial Resistance Surveillance Network (EARS-Net)[15].

3.33. ACUTE POLIOMYELITIS
Clinical Criteria

Any person < 15 years of age with Acute flaccid paralysis (AFP)

OR

Any person in whom polio is suspected by a physician
Laboratory Criteria

At least one of the following three:
— Isolation of a polio virus and intratypic differentiation — Wild polio virus (WPV)
— Vaccine derived poliovirus (VDPV) (for the VDPV at least 85 % similarity with vaccine virus in the nucleotide sequences in the VP1 section)
— Sabin-like poliovirus: intratypic differentiation performed by a WHO-accredited polio laboratory (for the VDPV a > 1 % up to 15 % VP1 sequence difference compared with vaccine virus of the same serotype)

Epidemiological Criteria

At least one of the following two epidemiological links:
— Human to human transmission
— An history of travel to a polio-endemic area or an area with suspected or confirmed circulation of poliovirus

Case Classification

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

3.34. Q FEVER

Clinical Criteria

Any person with at least one of the following three:

— Fever

— Pneumonia

— Hepatitis

Laboratory Criteria

At least one of the following three:

— Isolation of *Coxiella burnetii* from a clinical specimen

— Detection of *Coxiella burnetii* nucleic acid in a clinical specimen

— *Coxiella burnetii* specific antibody response (IgG or IgM phase II)

Epidemiological Criteria

At least one of the following two epidemiological links:

— Exposure to a common source

— Animal to human transmission

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

3.35. RABIES

Clinical Criteria

Any person with an acute encephalomyelitis

AND

At least *two* of the following seven:

— Sensory changes referred to the site of a preceding animal bite

— Paresis or paralysis

— Spasms of swallowing muscles

— Hydrophobia

— Delirium

— Convulsions

— Anxiety

Laboratory Criteria

At least one of the following four:

— Isolation of Lyssa virus from a clinical specimen

— Detection of Lyssa virus nucleic acid in a clinical specimen (for example, saliva or brain tissue)

— Detection of viral antigens by a DFA in a clinical specimen
— Lyssa virus specific antibody response by virus neutralization assay in serum or CSF

Laboratory results need to be interpreted according to the vaccination or immunization status

Epidemiological Criteria

At least one of the following three epidemiological links:
— Animal to human transmission (animal with suspected or confirmed infection)
— Exposure to a common source (same animal)
— Human to human transmission (for example, transplantation of organs)

Case Classification

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

3.36. RUBELLA

Clinical Criteria

Any person with sudden onset of generalised maculo-papular rash

AND

At least one of the following five:
— Cervical adenopathy
— Sub-occipital adenopathy
— Post-auricular adenopathy
— Arthralgia
— Arthritis

Laboratory Criteria

At least one of the following four:
— Isolation of rubella virus from a clinical specimen
— Detection of rubella virus nucleic acid in a clinical specimen
— Rubella IgM antibody detection[16]
— Rubella IgG seroconversion or significant rise in rubella IgG antibody titre in paired specimens tested in parallel.

Laboratory results need to be interpreted according to the vaccination status (possible persistence of IgM antibodies upon vaccination).

Epidemiological Criteria

An epidemiological link to a confirmed case

Case Classification

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria who has not been recently vaccinated.

In case of recent vaccination, a person meeting the clinical criteria with detection of wild-type rubella virus strain is considered as a confirmed case.

Note: When rubella in pregnancy is suspected, further confirmation of a positive rubella IgM results is required for case management (for example, a rubella specific IgG avidity test, rubella IgM and comparison of rubella IgG levels on paired sera conducted in a reference laboratory).

3.37. CONGENITAL RUBELLA SYNDROME

Clinical Criteria

Congenital rubella infection (CRI)

No clinical criteria can be defined for CRI

Congenital rubella syndrome (CRS)

Any infant < 1 year of age or any stillborn with:

At least two of the conditions listed in (A)

OR

One in category (A) and one in category (B)

(A)

— Cataract(s)
— Congenital glaucoma
— Congenital heart disease
— Loss of hearing
— Pigmentary retinopathy

(B)

— Purpura
— Splenomegaly
— Microcephaly
— Developmental delay
— Meningo-encephalitis
— Radiolucent bone disease
— Jaundice that begins within 24 hours after birth

Laboratory Criteria

At least one of the following four:

— Isolation of rubella virus from a clinical specimen
— Detection of Rubella virus nucleic acid
— Rubella virus specific antibody response (IgM)
— Persistence of rubella IgG between 6 and 12 months of age (at least two samples with similar concentration of rubella IgG)

Laboratory results need to be interpreted according to the vaccination status
Epidemiological Criteria

Any infant or any stillborn born to a woman with a laboratory confirmed rubella infection during pregnancy by human to human transmission vertical transmission)
Case Classification Congenital Rubella

A. Possible case NA

B. Probable case

Any stillborn or infant either not tested OR with negative laboratory results with at least one of the following two:

— An epidemiological link AND at least one of the conditions listed in the category 'A' CRS clinical criteria
— Meeting the clinical criteria for CRS

C. Confirmed case

Any stillborn meeting the laboratory criteria

OR

Any infant meeting the laboratory criteria AND at least one of the following two:

— An epidemiological link
— At least one of the conditions listed in the category 'A' CRS clinical criteria

3.38. *SALMONELLA* ENTERITIS
Clinical Criteria

Any person with at least one of the following four:
— Diarrhoea
— Fever
— Abdominal pain
— Vomiting
Laboratory Criteria

At least one of the following two:
— Isolation of *Salmonella* (other than *S*. Typhi or *S*. Paratyphi) in a clinical specimen
— Detection of nucleic acid from *Salmonella* (other than *S*. Typhi or *S*. Paratyphi) in a clinical specimen

Note: Antimicrobial susceptibility testing of *Salmonella enterica* should be performed on a representative subset of isolates
Epidemiological Criteria

At least one of the following five epidemiological links:
— Human to human transmission
— Exposure to a common source
— Animal to human transmission
— Exposure to contaminated food/drinking water
— Environmental exposure
Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

Antimicrobial resistance

The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States as specified in the EU protocol for harmonised monitoring of antimicrobial resistance in human *Salmonella* and *Campylobacter* isolates[17].

3.39. SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

Clinical Criteria

Any person with fever or a history of fever

AND

At least one of the following three:

— Cough
— Difficulty in breathing
— Shortness of breath

AND

At least one of the following four:

— Radiographic evidence of pneumonia
— Radiographic evidence of acute respiratory distress syndrome
— Autopsy findings of pneumonia
— Autopsy findings of acute respiratory distress syndrome

AND

No alternative diagnosis which can fully explain the illness

Laboratory Criteria

Laboratory criteria for case confirmation

At least one of the following three:

— Isolation of virus in cell culture from any clinical specimen and identification of SARS-CoV using method such as RT-PCR
— Detection SARS-CoV nucleic acid in at least one of the following three:
  — At least *two* different clinical specimens (for example, nasopharyngeal swab and stool)
  — The same clinical specimen collected on *two* or more occasions during the course of the illness (for example, sequential nasopharyngeal aspirates)
  — *Two* different assays or repeat RT-PCR using a new RNA extract from the original clinical sample on each occasion of testing
— SARS-CoV specific antibody response by one of the following two:

- Seroconversion by ELISA or IFA in acute and convalescent phase serum tested in parallel
- Four-fold or greater rise in antibody titre between acute and convalescent phase sera tested in parallel

Laboratory criteria for a probable case

At least one of the following two:

- A single positive antibody test for SARS-CoV
- A positive PCR result for SARS-CoV on a single clinical specimen and assay

Epidemiological Criteria

At least one of the following three:

- Any person with at least one of the following three:
  - Employed in an occupation associated with an increased risk of SARS-CoV exposure (for example, staff in a laboratory working with live SARS-CoV/SARS-CoV-like viruses or storing clinical specimens infected with SARS-CoV; persons with exposure to wildlife or other animals considered a reservoir of SARS-CoV, their excretions or secretions, etc.)
  - Close contact[18] of one or more persons with confirmed SARS or under investigation for SARS
  - History of travel to, or residence in, an area experiencing an outbreak of SARS
- Two or more health-care workers[19] with clinical evidence of SARS in the same health-care unit with onset of illness in the same 10-day period
- Three or more persons (health-care workers and/or patients and/or visitors) with clinical evidence of SARS with onset of illness in the same 10-day period and epidemiologically linked to a healthcare facility

Case Classification for the inter-epidemic period

Also applies during an outbreak in a non-affected country or area

A. Possible case

Any person meeting the clinical criteria with an epidemiological link

B. Probable case

Any person meeting the clinical criteria with an epidemiological link and meeting the laboratory criteria for a probable case

C. Nationally confirmed case

Any person meeting the clinical and the laboratory criteria for case confirmation where the testing has been performed at a national reference laboratory

D. Confirmed case

Any person meeting the clinical and the laboratory criteria for case confirmation where the testing has been performed at a WHO SARS verification and reference laboratory

Case Classification during an outbreak

Applies during an outbreak in a country/area where at least one person has been laboratory confirmed by a WHO SARS verification and reference laboratory

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria with an epidemiological link to a nationally confirmed or a confirmed case

C. Nationally confirmed case

Any person meeting the clinical and the laboratory criteria for case confirmation where the testing has been performed at a national reference laboratory

D. Confirmed case

One of the following three:

— Any person meeting the clinical and the laboratory criteria for case confirmation where the testing has been performed at a WHO SARS verification and reference laboratory

— Any nationally confirmed case with an epidemiological link to a chain of transmission where at least one case has been independently verified by a WHO SARS Reference and Verification Laboratory

— Any person meeting the clinical criteria and with laboratory criteria for probable case with an epidemiological link to a chain of transmission where at least one case has been independently verified by a WHO SARS Reference and Verification Laboratory

3.40. SHIGA TOXIN/VEROCYTOTOXIN-PRODUCING *E. COLI* INFECTION (STEC/VTEC), INCLUDING HAEMOLYTIC-URAEMIC SYNDROME (HUS)

Clinical Criteria

STEC/VTEC diarrhoea

Any person with at least one of the following two:

— Diarrhoea

— Abdominal pain

HUS

Any person with acute renal failure and at least one of the following two:

— Microangiopatic haemolytic anaemia

— Thrombocytopenia

Laboratory Criteria

At least one of the following four:

— Isolation/cultivation of *Escherichia coli* that produces Shiga toxin/verocytotoxin or harbours *stx1/vtx1* or *stx2/vtx2* gene(s)

— Isolation of non-sorbitol-fermenting (NSF) *Escherichia coli* O157 (without testing for the toxin or toxin-producing genes)

— Direct detection of *stx1/vtx1* or *stx2/vtx2* gene(s) nucleic acid

— Direct detection of free Shiga toxin/verocytotoxin in faeces

Only for HUS the following can be used as a laboratory criterion to confirm STEC/VTEC:

— *Escherichia coli* serogroup-specific (LPS) antibody response

Epidemiological Criteria

At least one of the following five epidemiological links:

— Human to human transmission
— Exposure to a common source
— Animal to human transmission
— Exposure to contaminated food/drinking water
— Environmental exposure

Case Classification

A. Possible case of STEC-associated HUS

Any person meeting the clinical criteria for HUS

B. Probable case of STEC/VTEC

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case of STEC/VTEC

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.41. SHIGELLOSIS

Clinical Criteria

Any person with at least one of the following four:
— Diarrhoea
— Fever
— Vomiting
— Abdominal pain

Laboratory Criteria

For a confirmed case:
— Isolation of *Shigella* spp. from a clinical specimen

For a probable case:
— Detection of *Shigella* spp. nucleic acid in a clinical specimen

Note: Antimicrobial susceptibility testing of *Shigella* should be performed, if possible

Epidemiological Criteria

At least one of the following four *epidemiological* links:
— Human to human transmission
— Exposure to a common source
— Exposure to contaminated food/drinking water
— Environmental exposure

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

OR

Any person meeting the clinical criteria and laboratory criteria for a probable case

C. Confirmed case

Any person meeting the clinical and the laboratory criteria for a confirmed case

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

Antimicrobial resistance

The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States.

3.42. SMALLPOX

Clinical Criteria

Any person with at least one of the following two:

— Fever

AND

Vesicles or firm pustules rash at the same stage of development with a centrifugal distribution

— Atypical presentations defined as at least one of the following *four*:
  - Haemorrhagic lesions
  - Flat velvety lesions not progressing to vesicles
  - Variola sine eruptione
  - Milder type

Laboratory Criteria

Laboratory criteria for case confirmation

At least one of the following two laboratory tests:

— Isolation of smallpox (Variola virus) from a clinical specimen followed by sequencing (designated P4 laboratories only)

— Detection of Variola virus nucleic acid in a clinical specimen followed by sequencing

Laboratory results need to be interpreted according to the vaccination status

Laboratory criteria for a probable case

— Identification of orthopox virus particles by EM

Epidemiological Criteria

At least one of the following two epidemiological links:

— Human to human transmission

— Laboratory exposure (where there is a potential exposure to Variola virus)

Case Classification

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria and with at least one of the following two:
  - An epidemiological link to a confirmed human case by human to human transmission
  - Meeting the laboratory criteria for a probable case

C. Confirmed case

Any person meeting the laboratory criteria for case confirmation

During an outbreak: any person meeting the clinical criteria with an epidemiological link

3.43. SYPHILIS

Clinical Criteria

Primary syphilis

Any person with one or several (usually painless) chancres in the genital, perineal, anal area or mouth or pharyngeal mucosa or elsewhere extragenitally

Secondary syphilis

Any person with at least one of the following five:

— Diffuse maculo-papular rash often involving palms and soles
— Generalized lymphadenopathy
— Condyloma lata
— Enanthema
— Diffuse alopecia

Early latent syphilis (< 1 year)

No symptoms and a history of symptoms compatible with those of the earlier stages of syphilis within the previous 12 months

Note that ocular and neurological manifestations may occur at any stage of syphilis.

Note that cases of late latent syphilis (> 1 year) are not under EU/EEA surveillance.

Laboratory Criteria

At least one of the following:

— Demonstration of *Treponema pallidum* in lesion exudates or tissues by dark-field microscopic examination
— Demonstration of *Treponema pallidum* in lesion exudates or tissues by DFA test
— Demonstration of *Treponema* in lesion exudates or tissues by nuclear acid amplification techniques (NAAT)
— Detection of *Treponema pallidum* antibodies by screening test (TPHA, TPPA or EIA) AND additionally detection of either TP-IgM antibodies (for example, IgM-ELISA or immunoblot or 19S-IgM-FTA-abs) OR non-TP antibodies (for example, RPR, VDRL).

Epidemiological Criteria

Primary/secondary syphilis

An epidemiological link by human to human (sexual contact)

Early latent syphilis

An epidemiological link by human to human (sexual contact) within the 12 previous months

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the laboratory criteria for case confirmation

3.44. CONGENITAL SYPHILIS

Clinical Criteria

Any infant < 2 years of age with at least one of the following ten:

— Hepatospenomegaly
— Mucocutaneous lesions
— Condyloma lata
— Persistent rhinitis
— Jaundice
— Pseudoparalysis (due to periostitis and osteochondritis)
— Central nervous involvement
— Anaemia
— Nephrotic syndrome
— Malnutrition

Laboratory Criteria

Laboratory criteria for case confirmation

At least one of the following three:

— Demonstration of *Treponema pallidum* by dark field microscopy in the umbilical cord, the placenta, a nasal discharge or skin lesion material
— Demonstration of *Treponema pallidum* by DFA-TP in the umbilical cord, the placenta, a nasal discharge or skin lesion material
— Detection of *Treponema pallidum*-specific IgM (FTA-abs, EIA)

AND a reactive non-treponemal test (VDRL, RPR) in the child's serum

Laboratory criteria for a probable case

At least one of the following three:

— Reactive VDRL-CSF test result
— Reactive non-treponemal and treponemal serologic tests in the mother's serum
— Infant's non-treponemal antibody titre is four-fold or greater than the antibody titre in the mother's serum

Epidemiological Criteria

Any infant with an epidemiological link by human to human transmission (vertical transmission)

Case Classification

A. Possible case NA

B. Probable case

Any infant or child meeting the clinical criteria and with at least one of the following two:

— An epidemiological link
— Meeting the laboratory criteria for a probable case

C. Confirmed case

Any infant meeting the laboratory criteria for case confirmation

3.45. TETANUS
Clinical Criteria

Any person with acute onset of at least *two* of the following three:
— Painful muscular contractions primarily of the masseter and neck muscles leading to facial spasms known as trismus and 'risus sardonicus'
— Painful muscular contractions of trunk muscles
— Generalized spasms, frequently position of opisthotonus

Laboratory Criteria NA

Epidemiological Criteria NA
Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria in the absense of a more likely diagnosis

C. Confirmed case NA

3.46. TICK-BORNE VIRAL ENCEPHALITIS
Clinical Criteria

Any person with symptoms of inflammation of the CNS (for example, meningitis, meningo-encephalitis, encephalomyelitis, encephaloradiculitis)
Laboratory Criteria[(20)]
Laboratory criteria for case confirmation:

At least one of the following five:
— TBE specific IgM AND IgG antibodies in blood
— TBE specific IgM antibodies in CSF
— Seroconversion or four-fold increase of TBE-specific antibodies in paired serum samples
— Detection of TBE viral nucleic acid in a clinical specimen,
— Isolation of TBE virus from clinical specimen
Laboratory criteria for a probable case:

Detection of TBE-specific IgM-antibodies in a unique serum sample
Epidemiological Criteria

Exposure to a common source (unpasteurised dairy products)
Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria and the laboratory criteria for a probable case,

OR

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and laboratory criteria for case confirmation

Note: Serological results should be interpreted according to previous exposure to other flaviviral infections and the flavivirus vaccination status. Confirmed cases in such situations should be validated by serum neutralization assay or other equivalent assays.

3.47. CONGENITAL TOXOPLASMOSIS

Clinical Criteria

Not relevant for surveillance purposes

Laboratory Criteria

At least one of the following four:

— Demonstration of *Toxoplasma gondii* in body tissues or fluids

— Detection of *Toxoplasma gondii* nucleic acid in a clinical specimen

— Toxoplasma gondii specific antibody response (IgM, IgG, IgA) in a newborn

— Persistently stable IgG *Toxoplasma gondii* titres in an infant (< 12 months of age)

Epidemiological Criteria NA

Case Classification

A. Possible case NA

B. Probable case NA

C. Confirmed case

Any infant meeting the laboratory criteria

3.48. TRICHINELLOSIS

Clinical Criteria

Any person with at least *three* of the following six:

— Fever

— Muscle soreness and pain

— Diarrhoea

— Facial oedema

— Eosinophilia

— Subconjunctival, subungual and retinal haemorrhages

Laboratory Criteria

At least one of the following two:

— Demonstration of *Trichinella* larvae in tissue obtained by muscle biopsy

— *Trichinella* specific antibody response (IFA test, ELISA or Western Blot)

Epidemiological Criteria

At least one of the following two epidemiological links:

— Exposure to contaminated food (meat)

— Exposure to a common source

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical criteria and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.49. TUBERCULOSIS

Clinical Criteria

Any person with the following two:

— Signs, symptoms and/or radiological findings consistent with active tuberculosis in any site

AND

— A clinician's decision to treat the person with a full course of anti-tuberculosis therapy

OR

A case discovered post-mortem with pathological findings consistent with active tuberculosis that would have indicated anti-tuberculosis antibiotic treatment had the patient been diagnosed before dying

Laboratory Criteria

Laboratory criteria for case confirmation

At least one of the following two:

— Isolation of *Mycobacterium tuberculosis* complex (excluding *Mycobacterium bovis*-BCG) from a clinical specimen

— Detection of *Mycobacterium tuberculosis* complex nucleic acid in a clinical specimen AND positive microscopy for acid-fast bacilli or equivalent fluorescent staining bacilli on light microscopy

Laboratory criteria for a probable case

At least one of the following three:

— Microscopy for acid-fast bacilli or equivalent fluorescent staining bacilli on light microscopy

— Detection of *Mycobacterium tuberculosis* complex nucleic acid in a clinical specimen

— Histological appearance of granulomata

Epidemiological Criteria NA

Case Classification

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria and the laboratory criteria for a probable case

C. Confirmed case

Any person meeting the clinical and the laboratory criteria for case confirmation

Antimicrobial resistance

The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States as specified by the European Reference Laboratory Network for Tuberculosis and the European Tuberculosis Surveillance Network[21].

3.50. TULARAEMIA

Clinical Criteria

Any person with at least one of the following clinical forms:

Ulceroglandular tularaemia

— Cutaneous ulcer

AND

— Regional lymphadenopathy

Glandular tularaemia

— Enlarged and painful lymph nodes without apparent ulcer

Oculoglandular tularaemia

— Conjunctivitis

AND

— Regional lymphadenopathy

Oropharyngeal tularaemia

— Cervical lymphadenopathy

AND at least one of the following three:

— Stomatitis

— Pharyngitis

— Tonsillitis

Intestinal tularaemia

At least one of the following three:

— Abdominal pain

— Vomiting

— Diarrhoea

Pneumonic tularaemia

— Pneumonia

Typhoidal tularaemia

At least one of the following two:

— Fever without early localising signs and symptoms

— Septicaemia

Laboratory Criteria

At least one of the following three:

— Isolation of *Francisella tularensis* from a clinical specimen

— Detection of *Francisella tularensis* nucleic acid in a clinical specimen

— *Francisella tularensis* specific antibody response

Epidemiological Criteria

At least one of the following three epidemiological links:

— Exposure to a common source

— Animal to human transmission

— Exposure to contaminated food/drinking water

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

3.51. TYPHOID AND PARATYPHOID FEVERS

Clinical Criteria

Any person with at least one of the following two:

— Onset of sustained fever

OR

— At least two of the following four:
  — Headache
  — Relative bradycardia
  — Non-productive cough
  — Diarrhoea, constipation, malaise or abdominal pain

Laboratory Criteria

At least one of the following two:

— Isolation of *Salmonella* Typhi or Paratyphi from a clinical specimen

— Detection of *Salmonella* Typhi or Paratyphi nucleic acid in a clinical specimen

Epidemiological Criteria

At least one of the following three epidemiological links:

— Exposure to a common source

— Human to human transmission

— Exposure to contaminated food/drinking water

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.52. VIRAL HAEMORRHAGIC FEVERS (VHF)

Clinical Criteria

Any person with at least one of the following two:

— Fever

— Haemorrhagic manifestations in various forms that may lead to multi-organ failure

Laboratory Criteria

At least one of the following two:

— Isolation of specific virus from a clinical specimen

— Detection of specific virus nucleic acid in a clinical specimen and genotyping

Epidemiological Criteria

At least one of the following:

— Travel in the last 21 days to a region where VHF cases are known or believed to have occurred

— Exposure within the last 21 days to a probable or confirmed case of a VHF whose onset of illness was within the last 6 months

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

3.53. WEST NILE VIRUS INFECTION (WNV)

Clinical Criteria

At least one of the following three:

— Any person with fever

— Encephalitis

— Meningitis

Laboratory Criteria

Laboratory test for case confirmation

At least one of the following four:

— Isolation of WNV from blood or CSF

— Detection of WNV nucleic acid in blood or CSF

— WNV specific antibody response (IgM) in CSF

— WNV IgM high titre AND detection of WNV IgG, AND confirmation by neutralisation

Laboratory test for a probable case

WNV specific antibody response in serum

Laboratory results need to be interpreted according to flavivirus vaccination status

Epidemiological Criteria

At least one of the following two epidemiological links:

— Animal to human transmission (residing, having visited or having been exposed to mosquito bites in an area where WNV is endemic in horses or birds)

— Human to human transmission (vertical transmission, blood transfusion, transplants)

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria AND with at least one of the following two:
— an epidemiological link
— a laboratory test for a probable case

C. Confirmed case

Any person meeting the laboratory criteria for case confirmation

Note: Serological results should be interpreted according to previous exposure to other flaviviral infections and the flavivirus vaccination status. Confirmed cases in such situations should be validated by serum neutralization assay or other equivalent assays.

3.54. YELLOW FEVER

Clinical Criteria

Any person with fever

AND

At least one of the following two:
— Jaundice
— Generalised haemorrhage

Laboratory Criteria

At least one of the following five:
— Isolation of yellow fever virus from a clinical specimen
— Detection of yellow fever virus nucleic acid
— Detection of yellow fever antigen
— Yellow fever specific antibody response
— Demonstration of typical lesions in post mortem liver histopathology

Epidemiological Criteria

Travel in the last 1 week to a region where yellow fever cases are known or believed to have occurred

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person not recently vaccinated meeting the clinical and the laboratory criteria

In case of recent vaccination, a person with detection of wild-type yellow fever virus strain

Note: Serological results should be interpreted according to previous exposure to other flaviviral infections and the flavivirus vaccination status. Confirmed cases in such situations should be validated by serum neutralization assay or other equivalent assays.

3.55. ENTERITIS DUE TO YERSINIA ENTEROCOLITICA OR *YERSINIA PSEUDOTUBERCULOSIS*

Clinical Criteria

Any person with at least one of the following five:
— Fever
— Diarrhoea
— Vomiting
— Abdominal pain (pseudoappendicitis)
— Rectal tenesmus

Laboratory Criteria

At least one of the following two:
— Isolation of human pathogenic *Yersinia enterocolitica* or *Yersinia pseudotuberculosis* from a clinical specimen
— Detection of *Y. enterocolitica* or *Y. pseudotuberculosis* virulence genes in a clinical specimen

Epidemiological Criteria

At least one of the following four epidemiological links:
— Human to human transmission
— Exposure to a common source
— Animal to human transmission
— Exposure to contaminated food

Case Classification

A. Possible case NA

B. Probable case

Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case

Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

3.56. ZIKA VIRUS DISEASE

Clinical Criteria

— A person presenting with a rash

Laboratory Criteria

A. Confirmed case

At least one of the following:
— Detection of Zika virus nucleic acid in a clinical specimen;
— Detection of Zika virus antigen in a clinical specimen;
— Isolation of Zika virus from a clinical specimen;
— Detection of Zika virus specific IgM antibodies in serum sample(s) AND confirmation by neutralization test;
— Seroconversion or four-fold increase in the titre of Zika specific antibodies in paired serum samples.

B. Probable case
— Detection of Zika specific IgM antibodies in a serum sample.

Epidemiological Criteria

History of travel to, or residence in an area with documented on-going transmission of Zika virus, within the two-week period prior to the onset of symptoms

OR

Sexual contact with a person recently exposed to or confirmed with Zika virus infection

Case Classification

A. Possible case NA

B. Probable case

A person meeting the clinical and the epidemiological criteria, and the laboratory criteria for a probable case.

C. Confirmed case

A person meeting the laboratory criteria for a confirmed case.

Note: Serological results should be interpreted according to previous exposure to other flaviviral infections and the flavivirus vaccination status. Confirmed cases in such situations should be validated by serum neutralization assay or other equivalent assays.

3.57. CONGENITAL ZIKA VIRUS DISEASE

Clinical Criteria

— An infant or foetus with microcephaly or intracranial calcifications or other central nervous system abnormalities.

Laboratory Criteria

A. Confirmed case

— Detection of Zika virus nucleic acid in a clinical specimen;

— Detection of Zika virus antigen in a clinical specimen;

— Isolation of Zika virus from a clinical specimen;

— Detection of Zika specific IgM antibodies in serum, cerebrospinal fluid (CSF) or amniotic fluid.

Epidemiological Criteria

Mother having had confirmed Zika virus infection during pregnancy.

Case Classification

A. Probable case

An infant or foetus that meets the clinical criteria with an epidemiological link.

B. Confirmed case

An infant or foetus that meets the clinical criteria and the laboratory criteria.

(**1**) The EU protocols, including future updates, can be found at the following ECDC webpage: https://ecdc.europa.eu/en/publications-data/eu-protocol-harmonised-monitoring-antimicrobial-resistance-human-salmonella-and-0

(**2**) Clinical criteria should be interpreted by taking into account the presence of an alternative diagnosis that can fully explain the illness.

(**3**) Serological results should be interpreted according to previous exposure to other alphaviral infections.

(**4**) Depression, anxiety, apathy, withdrawal, delusions

(**5**) This includes both frank pain and/or dysaesthesia

(**6**) The typical appearance of the EEG in sporadic CJD consists of generalised periodic complexes at approximately one per second. These may occasionally be seen in the late stages of vCJD

(**7**) Tonsil biopsy is not recommended routinely nor in cases with EEG appearances typical of sporadic CJD, but may be useful in suspect cases in which the clinical features are compatible with vCJD and MRI does not show pulvinar high signal

(**8**) The typical appearance of the EEG in sporadic CJD consists of generalised periodic complexes at approximately one per second. These may occasionally be seen in the late stages of vCJD

(**9**) Clinical criteria should be interpreted by taking into account the presence of an alternative diagnosis that can fully explain the illness.

(**10**) Serological results should be interpreted according to previous exposure to other flaviviral infections and the flavivirus vaccination status. Confirmed cases in such situations should be validated by serum neutralization assay or other equivalent assays.

(**11**) The ECDC standard protocol for gonococcal antimicrobial resistance surveillance is published yearly as part of the annexes of the annual report on Gonococcal antimicrobial susceptibility surveillance in Europe.
See: European Centre for Disease Prevention and Control. Gonococcal antimicrobial susceptibility surveillance in Europe, www.ecdc.europa.eu

(**12**) When reporting cases of Hepatitis B, the Member States should distinguish between acute and chronic disease, according to ECDC requirements.

(**13**) When reporting cases of Hepatitis C, the Member States should distinguish between acute and chronic disease, according to ECDC requirements.

(**14**) EFNS guidelines on the diagnosis and management of European Lyme neuroborreliosis, European Journal of Neurology 17, 8-16: doi:10.1111/j.1468-1331.2009.02862.x

(**15**) The criteria for reporting are published each year as part of the Antimicrobial resistance (AMR) reporting protocol. See: The European Surveillance system. Antimicrobial resistance (AMR) reporting protocol. European Antimicrobial Resistance Surveillance Network (EARS-Net). www.ecdc.europa.eu

(**16**) In elimination settings, additional testing may be considered in certain situations to exclude false-positive IgM results (WHO Manual for the Laboratory Surveillance of Measles and Rubella Viruses, 2017).

(**17**) The EU protocols, including future updates, can be found at the following ECDC webpage: https://ecdc.europa.eu/en/publications-data/eu-protocol-harmonised-monitoring-antimicrobial-resistance-human-salmonella-and-0

(**18**) A close contact is a person who has cared for, lived with, or having had direct contact with the respiratory secretions, body fluids and/or excretions (e.g. faeces) of cases of SARS.

(**19**) In this context the term ‘health-care worker’ includes all hospital staff. The definition of the health care unit in which the cluster occurs will depend on the local situation. Unit size may range from an entire health care facility if small, to a single department or ward of a large tertiary hospital.

(**20**) Serological results should be interpreted according to the vaccination status and previous exposure to other flaviviral infections. Confirmed cases in such situations should be validated by serum neutralization assay or other equivalent assays.

(**21**) The criteria for reporting are included each year in the European Centre for Disease Prevention and Control/WHO Regional Office for Europe report on Tuberculosis surveillance and monitoring in Europe. www.ecdc.europa.eu.

Changes to legislation:
There are currently no known outstanding effects for the Commission Implementing Decision (EU) 2018/945, Division 3..