



Sample collection, storage and transport from field to reference laboratory

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July 2008

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Introduction

This guide should make it easier and faster to obtain laboratory results that will help in the diagnosis of diseases that either have epidemic potential or are severe/lethal, and for which curative and/or preventive intervention is possible. The majority are infectious diseases.

These diseases require specialized diagnostic techniques usually unavailable in countries where MSF works. Sample collection, storage and transport must be carefully conducted and monitored prior to arrival at the reference laboratory. Laws on the transport of biological substances have become stricter, change rapidly and need to be respected to avoid the blocking of samples at border crossings or their rejection upon arrival at the laboratory. The laboratory will process the sample appropriately only if it is given the relevant patient data. Results will be obtained more quickly if the Medical Department acts as an intermediary between the field and the lab.

Because these various parameters change quickly, this document will need frequent updating. We would your comments and any criticisms you might wish to share with us.

The guide is divided into six chapters

1. Suspected diagnoses: This chapter provides key information on eleven points for each disease, and refers to the following chapters for details regarding each suspected diagnosis.

2. Collection procedures for diagnostic specimens: This chapter gives detailed instructions on the procedure, the equipment needed, how to store the sample, and for how long it can be stored.

3. Lab test request forms: These vary according to the diagnosis, and must be sent along with the sample to the lab.

4. International transport procedures: Transport is fairly straightforward, by DHL, for diagnostic samples, but more complicated for infectious substances.

5. Sample shipment registers: Provides one example for the field, for tracking the samples it sends and reporting the results, and another for the capital, which—because it is often a necessary stop in terms of transport—needs to be in the communication loop.

6. Laboratory contact information: Reference laboratories are listed by disease. You can add the contact information for the national labs you use.

Reminders

Justification

Laboratory tests can be requested for the following reasons:

- to confirm the existence of an epidemic, by identifying the causative agent;
- to precisely identify the pathogen (serotype, genotype, etc.)
- for drug susceptibility testing (antibiogram);
- to diagnose a rare disease having high mortality and/or morbidity.

When on-site diagnosis is unavailable, samples are sent to reference laboratories. Local and regional options may, of course, be considered (WHO collaborating centres, CDC labs, Pasteur Institutes, etc.).

For cholera and shigellosis epidemics, a few samples taken early in the epidemic suffice to confirm the diagnosis. Take samples again at the end of the epidemic to make sure it is over. For meningitis epidemics, samples should be taken regularly.

Pre-positioning of collection and protection materials

Missions should always have sample collection equipment and shipping boxes on hand, along with personal protective equipment.

Diagnostic method, sample to collect, storage and transport conditions.

Each laboratory confirmation test requires a particular sample; see the corresponding chapters (choice of appropriate transport medium, recommended storage temperature).

Sample identification, data collection, and follow-up

All samples must be labelled and accompanied by a form with the clinical and epidemiological description. The origin of each sample must be clearly identified with the name of the person responsible for sending it, and the name of the person to whom the results should be sent. Every sample should be entered in a register with the date it was collected, the place where it was collected, its identification number, the date it was sent, its destination, the result, and the date of the result.

International regulations for shipping samples

Samples must be transported in triple packaging boxes, in accordance with IATA (International Air Transport Association) Packing Instruction 650 for the Transport of Dangerous Goods. Samples must be transported by an authorized carrier. Transporting samples in personal baggage is strictly forbidden.

There are two different transport procedures, depending on the category of the sample:

- Category A: infectious substance, UN 2814. Declaration of infectious substances is mandatory (see Chapter 4 for a list of Category A micro organisms).
- Category B: diagnostic specimen, UN 3373. No declaration of infectious substance

See Chapter 4 for international transport procedures.

NB: While samples for diagnosis are category B, all cultures are category A. It is therefore important to know the regulations in each country and the available transport options (DHL, airlines, etc.).

Notify

Always notify the capital, the desk, the Medical Department and the laboratory before shipping samples. This will help ensure appropriate and rapid handling (for example, allows the laboratory to prepare for diagnostic tests). The Medical Department is responsible for notifying the laboratory.

After discussing with the desk, the local authorities and Ministry of Health must be notified and informed.

Reference laboratory

Only contact information for international reference laboratories is given here. In some countries, there are a number of national or regional laboratories that can also confirm diagnoses. The appropriateness of using these laboratories must be discussed with headquarters (desk, Medical Department).

If the samples absolutely must be sent to a WHO —or Ministry of Health— required laboratory, try to send two: one to the reference lab validated by Paris, the other to the lab chosen by the WHO or the MoH. With some of these laboratories, results can be very slow, diagnoses can be incomplete due to a lack of reagents, and results are not always reliable.

Reminder about diagnostic methods

There are two ways to establish a diagnosis:

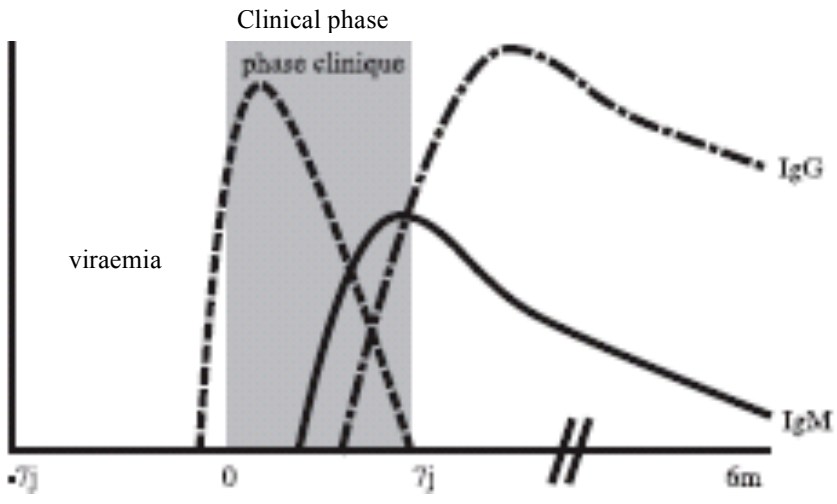
- Direct diagnosis by demonstrating the causative agent, or by direct detection of the pathogen's structural components, including molecular biology.
- Serological diagnosis, by demonstrating the presence of antibodies.

Immunological reminders and implications for sample handling

Viruses, bacteria, parasites, and fungi all provoke a classic immune response with IgM followed by IgA and IgG.

The presence of IgM indicates a recent infection. To find antibodies in the blood, collect a sample 5 to 8 days after the first symptoms appear. For many viral infections, IgM appears somewhere between eight days and three weeks, whereas for reasons of feasibility the sample is often taken at admission. This time delay for seroconversion must be taken into account when interpreting results.

The presence of IgG alone does not indicate ongoing infection. It can be due to past infection or to vaccination. To demonstrate a seroconversion in progress, the antibody titre must increase between two samples. The first sample should be done at admission, and the second 2 to 3 weeks later (a second sample taken too early is useless). In practice, if only one sample is possible, the time delay for seroconversion must be taken into account when interpreting results.



Chapter 1

Suspected Diagnoses

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ANTHRAX

1. Sample to collect

- Cutaneous form: Vesicle contents or serous fluid under the eschars for culture
- Blood sample for serology. Order of preference: ① whole blood, ② filter paper

2. Lab test request form

See Cutaneous anthrax, Poxvirus lab test request form

3. Justification

Diagnostic confirmation

4. When to collect sample

Prior to any antibiotic therapy, if possible

5. Transport medium

For vesicle samples: swab with TGV medium (transport medium for aerobic germs), or filter paper

6. Collection procedure

See procedure for collecting blood in a dry tube

See procedure for collecting capillary blood on filter paper

See procedure for sampling vesicles

7. Storage in the field

Cold chain (+ 4°C)

8. Transport mode

Ideal: cold chain (+ 4°C)

9. Maximum storage and transport time

1 week

10. International transport

Biological samples for diagnosis or laboratory anthrax monitoring are category B, and can be transported as diagnostic specimens. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Institut Pasteur Paris – CNR Charbon

Unité des toxines et pathogénie bactérienne

BURKITT'S LYMPHOMA

1. Sample to collect

- Smear from fine needle aspiration for cytology

NB : It is recommended that several smears (2 to 3) be done.

2. Lab test request form

See Burkitt's Lymphoma lab test request form

3. Justification

Diagnostic confirmation

4. When to collect sample

While patient is symptomatic

5. Transport medium

None

6. Collection procedure

See procedure for fine needle aspiration

7. Storage in the field

Protected from light and humidity

Room temperature

8. Transport mode

Room temperature

9. Maximum storage and transport time

Several weeks, a month

10. International transport

No regulation

11. Reference laboratory

GFAOP – Institut Gustave-Roussy

Prof. Jean Lemerle

CHOLERA

1. Samples to collect

- Stool or vomit sample on filter paper or Cary-Blair medium for culture and drug susceptibility testing.

Note: Remember to do two sets when samples are to be sent to both the national or regional laboratory and to the international reference laboratory.

Always use filter paper when the sample is going to the Pasteur Institute in Paris.

It is sometimes necessary to use Cary-Blair transport medium when the sample is processed by a national reference laboratory unfamiliar with the use of filter paper.

2. Lab test request form

See the Cholera, Shigella, Diarrhoea lab test request form

3. Justification

Epidemic investigation, epidemic monitoring, last cases

Drug susceptibility testing

4. When to collect sample

When the patient has diarrhoea; prior to any antibiotic treatment, if possible

5. Transport medium

Filter paper + saline, or Cary-Blair medium

6. Collection procedure

See procedure for collecting a stool sample on filter paper and procedure for collecting a stool sample with a swab.

7. Storage in the field

Filter paper: room temperature

Cary-Blair medium: cold chain (+ 4°C)

8. Transport mode

Room temperature

9. Maximum storage and transport time

Filter paper: 3 weeks

Cary-Blair medium: 7 days, with reduced yield after 48 hours.

10. International transport

Samples for diagnostic confirmation of cholera are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Institut Pasteur Paris – CNR vibrions et Choléra

DIPHTHERIA

1. Sample to collect

- Blood sample for serology (order of preference: ① serum, ② whole blood, ③ filter paper).
- Throat and nasopharyngeal sample for culture, PCR, and toxin identification.
- If present, swabs of sores and skin lesions.

2. Lab test request form

See the Diphtheria lab test request form

3. Justification

Diagnostic confirmation

4. When to collect sample

Serology: collect prior to serotherapy

5. Transport medium

Cary-Blair or TGV medium

6. Collection procedure

If there is a membrane: at the edge of the pseudomembrane

See procedure for collecting a nasopharyngeal sample

See procedure for collecting a throat sample

See procedure for collecting blood in a dry tube

See procedure for collecting capillary blood on filter paper

See procedure for sampling sores and skin lesions with a swab

7. Storage in the field

Cold chain (+ 4°C)

8. Transport mode

Ideal: cold chain (+ 4°C)

9. Maximum storage and transport time

Serology: 1 week

Culture: as soon as possible!

10. International transport

Samples for diagnostic confirmation of diphtheria are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Institut Pasteur Paris

Unité de Biodiversité des bactéries pathogènes émergentes

HEPATITIS

1. Samples to collect

- Blood sample for serology and PCR.
Collect, in order of preference: ① serum, ② whole blood, ③ filter paper.

2. Lab test request form

See Viral Haemorrhagic Fever, Hepatitis, Leptospirosis and Fever of Unknown Origin lab test request form.

3. Justification

Epidemic investigation

4. When to collect sample

From a symptomatic patient

5. Transport medium

None

6. Collection procedure

See procedure for collecting a serum sample

See procedure for collecting blood in a dry tube

See procedure for collecting capillary blood on filter paper

7. Storage in the field

Blood: cold chain (+ 4°C)

8. Transport mode

Ideal: cold chain (+ 4°C)

9. Maximum storage and transport time

Dry tube: one week

Serum: 2 weeks

10. International transport

Samples for diagnostic confirmation of hepatitis are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Hôpital d'instruction des armées du Val de Grâce

CNR Virus des hépatites à transmission entérique

INFLUENZA

1. Samples to collect

- Blood sample for serological testing: detection of IgG and IgM. Collect, in order of preference:
① serum, ② whole blood, ③ filter paper.
- Nasopharyngeal and throat samples for PCR and viral culture

2. Lab test request form

See the Influenza lab test request form

3. Justification

Diagnostic confirmation

Epidemic investigation

4. When to collect sample

When patient is febrile

For serology, take an early and late sample, if possible, i.e., take two samples two weeks apart.

5. Transport medium

To be made on-site: see procedure for making influenza transport medium

6. Collection procedure

See procedure for collecting a serum sample

See procedure for collecting blood in a dry tube

See procedure for collecting capillary blood on filter paper

See procedure for collecting a nasopharyngeal sample with a swab

See procedure for collecting a throat sample

7. Storage in the field

Cold chain (+ 4°C)

8. Transport mode

Ideal: cold chain (+ 4°C)

9. Maximum storage and transport time

10 days

10. International transport

Samples for diagnostic confirmation of influenza are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Institut Pasteur Paris – CNR virus Influenzae

Unité de génétique moléculaire des virus respiratoires

LEPTOSPIROSIS

1. Samples to collect

- Collect blood in a dry tube for PCR, culture and serology.

2. Lab test request form

See Viral Haemorrhagic Fever, Hepatitis, Leptospirosis and Fever of Unknown Origin lab test request form.

3. Justification

Diagnostic confirmation

4. When to collect sample

- Serology: no earlier than D8 (because no antibodies before D8) ; 2nd serum sample needed at D15/D21
- Culture: before the 10th day of the illness. There is no point in taking a sample for culture after the 10th day of the illness, since there will no longer be leptospira in the blood.
- PCR: after D10. No result is possible if the sample is drawn before the Day 10 of the illness (the opposite of the culture).

5. Transport medium

Not needed for serology and PCR

6. Collection procedure

See procedure for collecting blood in a dry tube

7. Storage in the field

Cold chain (+ 4°C)

8. Transport mode

Ideal: cold chain (+ 4°C)

9. Maximum storage and transport time

1 week

10. International transport

Samples for diagnostic confirmation of leptospirosis are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

Reference laboratory

Institut Pasteur Paris – CNR Leptospirose
Laboratoire des spirochètes

MEASLES

1. Samples to collect

- Serum sample for serology: to detect IgG and IgM.
- Blood sample on filter paper—specifically, Schleischer & Schuell® brand—for isolation of viral RNA and RT-PCR.

Note: If the reference laboratory can process samples transported on dry ice, also take nasopharyngeal and saliva samples for RNA extraction and RT-PCR, and for virus culture.

2. Lab test request form

See the Measles lab test request form

3. Justification

Laboratory confirmation of diagnosis is **mandatory** for epidemic investigation

4. When to collect sample

Serum: 4 to 28 days after onset of rash

Throat and saliva: as soon as possible after onset of rash (no more than 7 days after)

5. Transport medium

Schleischer & Schuell® filter paper

6. Collection procedure

See procedure for collecting a serum sample

See procedure for collecting capillary blood on Schleischer & Schuell® filter paper

7. Storage in the field

Serum on Schleischer & Schuell® filter paper: cold chain (+ 4°C)

Throat and saliva samples: freeze -20°C

8. Transport mode

Serum on Schleischer & Schuell® filter paper: cold chain (+ 4°C)

9. Maximum storage and transport time

Serum: several weeks between +2°C and +8°C

10. International transport

Samples for diagnostic confirmation of measles are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Laboratoire National de Santé Luxemburg

Centre OMS européen de référence pour la rougeole et la rubéole

MENINGOCOCCAL MENINGITIS

1. Samples to collect

- A cerebrospinal fluid (CSF) sample to test for specific antigen by latex agglutination, and a CSF sample for culture, PCR, serotyping and clone identification.

2. Lab test request form

See the Meningitis lab test request form

3. Justification

To look for and identify the micro organism causing the meningitis; determination of serogroup is essential for epidemic management

4. When to collect sample

When patient is febrile

For culture: prior to antibiotic treatment

5. Transport medium

Trans-Isolate (T-I) medium. The CSF must be inoculated in the T-I medium **within one hour** of lumbar puncture.

6. Collection procedure

See procedure for using T-I medium + CD video in the Meningitis guide.

7. Sample storage in the field

- Storage of CSF for latex agglutination antigen testing: cold chain (+ 4°C).
- Storage of CSF for culture, prior to inoculation in Trans-Isolate transport medium (maximum delay 1 hour): room temperature. Do not refrigerate.
- Storage of CSF-inoculated Trans-Isolate medium prior to transport, ventilated with a needle: room temperature. Do not refrigerate. Keep below 40°C.

8. Transport mode

- For latex agglutination antigen testing: cold chain (+ 4°C)
- CSF-inoculated T-I transport medium: room temperature; remove needle used for ventilation before transport.
It is important to store the T-I media for 2 to 3 days before transporting to allow growth of the meningococcus.

9. Maximum storage and transport time

- For latex agglutination antigen testing: 48 hrs
- CSF-inoculated T-I transport medium:
 - Before transport, ventilated with a needle: 3 weeks at room temperature (< 40°C)
 - During transport: Trans-Isolate without needle, 1 week at room temperature (< 40°C)

10. International transport

Samples for diagnostic confirmation of meningitis are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Norwegian Institute of Public Health, Oslo – Dominique A. Caugant

OSTEOMYELITIS/INFECTED SOFT TISSUE

1. Type of sample to collect

- Bone first, soft tissue secondarily
- Overt pus

Note: swabs of serous fluids from the wound are **totally useless**

2. Lab test request form

See Osteomyelitis lab test request form

3. Justification

Identification of the micro organism and drug susceptibility testing

4. When to collect sample

Culture: prior to any new antibiotic treatment

5. Transport medium

Portagerm[®] or blood culture bottle

6. Collection procedure

See procedure for collecting a sample for osteomyelitis and soft tissue infections

7. Storage in the field

Cold chain (+ 4°C) mandatory

8. Transport mode

Cold chain (+ 4°C) mandatory

9. Maximum storage and transport time

- Portagerm[®]: ideally, less than 2 days; 4 days maximum
- Blood culture bottle: ideally, less than 4 hours

10. International transport

Samples for diagnosis of osteomyelitis are category B, and can be transported as diagnostic specimens with the number UN UN3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Check with the Medical Department

PERTUSSIS

1. Samples to collect

- Blood sample for serology (order of preference: ① serum, ② whole blood)

Notes:

- *Serology has no diagnostic value if the patient has been vaccinated within the past 3 years with acellular vaccine or within the past year with whole-cell vaccine;*
- *The method of choice is to culture a nasopharyngeal sample, but this requires that the sample be frozen during transport, which is difficult in the field.*

2. Lab test request form

See the Pertussis lab test request form

3. Justification

Diagnostic confirmation

4. When to collect sample

When the patient is symptomatic

5. Transport medium

No transport medium

6. Collection procedure

See procedure for collecting a serum sample.

See procedure for collecting blood in a dry tube.

7. Storage in the field

Serology: Cold chain (+ 4°C)

8. Transport mode

Ideal: cold chain (+ 4°C)

9. Maximum storage and transport time

Serology (serum): 1 month

10. International transport

Samples for diagnostic confirmation of pertussis are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Institut Pasteur – CNR coqueluche et autres bordetelloses

PLAGUE



Caution: pneumonic plague is very contagious. Wear a high filtration mask and gloves when collecting the sample.

1. Samples to collect

- Bubonic plague: bubo aspirate for culture
- Pneumonic plague: sputum, expectorate swab
- Blood sample for serology (to look for IgA and IgM): in order of preference, ① serum, ② whole blood.

Note: In the field, the bacilli can be identified by microscopy after Gram (or Giemsa) staining of bubo aspirate; they will appear as Gram-negative bacilli with bipolar staining.

2. Lab test request form

See Plague lab test request form

3. Justification

Diagnostic confirmation

4. When to collect sample

When the patient is symptomatic

Serology: No earlier than Day 7 (no antibodies before 5 to 7 days)

5. Transport medium

Bubo aspirate and expectorate swab: Cary-Blair medium

6. Collection procedure

See procedure for collecting blood in a dry tube or procedure for collecting a serum sample.

See procedure for sampling a plague bubo.

See procedure for collecting a sputum sample

7. Storage in the field

Cold chain (+ 4°C)

8. Transport mode

Ideal: cold chain (+ 4°C). Always keep at or below 30°C.

9. Maximum storage and transport time

Ideal: 72 hours

10. International transport

Samples for diagnostic confirmation of plague are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Institut Pasteur – CNR peste et autres yersiniooses

POLIOMYELITIS

1. Samples to collect

- Stool sample for isolation and identification of the virus
- Blood sample for serology (order of preference: ① serum, ② whole blood)

Note: Polio is a notifiable disease; notify the Ministry of Health and WHO.

2. Lab test request form

See the Poliomyelitis lab test request form

3. Justification

Diagnostic confirmation

4. When to collect sample

Collect stool samples within 14 days of onset of paralysis.

Shedding of the virus in the stool can be intermittent; it is advisable to take a second sample after 48 hours.

5. Transport medium

Collect the stool directly in a sterile bottle ; no special transport medium needed.

6. Collection procedure

See procedure for collecting a stool sample

See procedure for collecting a serum sample

7. Storage in the field

Cold chain (+ 4°C)

8. Transport mode

Ideal: cold chain (+ 4°C)

9. Maximum storage and transport time

Ideal: 3 days

10. International transport

Samples for diagnostic confirmation of polio are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

CHU de Dijon – CNR virus entériques

Laboratoire de Virologie

POXVIRUS

1. Samples to collect

- Samples from skin lesions for isolation of virus and PCR: collect samples of crusts and vesicle and/or pustule contents. Take at least 2 skin lesion samples per patient. Six samples are ideal.
- Blood samples for serology and molecular biology (order of preference: dry tube, filter paper)

2. Lab test request form

See Poxvirus, cutaneous Anthrax lab test request form

3. Justification

Diagnostic confirmation

4. When to collect sample

When patient is symptomatic.

For serology, if possible, take an early sample and a second, late sample at least two weeks after the onset of clinical signs.

5. Transport medium

For vesicle samples: filter paper

The ideal would be to use a viral transport medium (Viral Pack)

6. Collection procedure

See procedure for sampling vesicles

See procedure for collecting blood in a dry tube

See procedure for collecting capillary blood on filter paper

7. Storage in the field

Cold chain (+ 4°C)

8. Transport mode

Ideal: cold chain (+ 4°C)

9. Maximum storage and transport time

1 week

10. International transport

Samples for diagnostic confirmation of poxvirus infection are category A and must be transported as infectious substances with the number UN 2814. Follow the procedure for air transport of infectious substances.

11. Reference laboratory

Institut Pasteur Paris – CIBU (cellule intervention biologique urgence)

SALMONELLOSIS/TYPHOID FEVER

1. Samples to collect

In order of preference and feasibility:

- Stool sample for culture and drug susceptibility testing
- Blood sample for serology (order of preference: ① serum, ② whole blood, ③ filter paper)
- Blood sample for blood culture

Note: Remember to do two sets when samples are to be sent to both the national or regional laboratory and to the international laboratory.

Notes:

– While blood culture is the gold standard, it is difficult to do in the field. The blood sample must be placed directly in the culture medium under sterile conditions. The option of directly inoculating the culture medium at the patient's bedside and transporting it to the laboratory should be discussed.

– After blood culture, stool sample is a very specific method for detecting salmonella, but there is no way to differentiate from healthy carriers. It does allow drug susceptibility testing, and is easier than blood culture (feasibility of sample collection, higher bacillus content of stools).

– While the Widal test does not provide diagnostic confirmation, its result can be used to guide the diagnosis. The results must be interpreted according to antibody titres for O and H agglutinins, and a positivity threshold needs to be defined. According to various studies, it is between 1:160 and 1:320. The ideal is to have a second sample, taken at least two weeks after the first, in order to observe a rise in antibody titer.

2. Lab test request form

See Salmonellosis, Typhoid Fever lab test request form

3. Justification

Diagnostic confirmation

Drug susceptibility testing

4. When to collect sample

- Stools: not before the second week after infection
- When the patient is febrile, before antibiotic treatment
- Serodiagnosis: one week after infection (pointless before that, antibodies appear after one week)
- Blood culture: take several samples, sensitivity decreases after one week

5. Transport medium

Blood culture: no transport medium; inoculate directly into culture medium

Stools: TGV or Cary-Blair medium

6. Collection procedure

See procedure for collecting a stool sample with a swab

See procedure for collecting a serum sample

See procedure for collecting blood for blood culture

7. Sample storage in the field

- Stool samples: store inoculated TGV and Cary-Blair media in cold chain (+ 4°C)
- Serum: cold chain (+ 4°C)
- Blood culture: at room temperature, as close as possible to 37°C.

8. Transport mode

- Stool sample in TGV or Cary-Blair transport medium: Ideal: cold chain (+ 4°C)
- Serum: cold chain (+ 4°C)
- Blood culture: at room temperature, as close as possible to 37°C

9. Maximum storage and transport time

- 1 week for stools and serum
- Less than 4 hours for blood culture

10. International transport

Samples for confirmation of typhoid fever or salmonellosis are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Institut Pasteur Paris – CNR Salmonelles

SHIGELLOSIS

1. Samples to collect

- Stool samples: faecal or rectal swab for culture and drug susceptibility testing and/or PCR. Do a rectal swab if faecal swab is not possible.

Note: Remember to do two sets when samples are to be sent to both the national or regional laboratory and to the international laboratory.

2. Lab test request form

See the Cholera, Shigella, Diarrhoea lab test request form

3. Justification

Confirmation of an SD1 dysentery epidemic

Drug susceptibility testing

Epidemic monitoring, last cases

4. When to collect sample

When patient has bloody, mucous diarrhoea; before antibiotic treatment

5. Transport medium

TGV or Cary-Blair medium

6. Collection procedure

See procedure for collecting a stool sample with a swab

7. Sample storage in the field

Cold chain (+ 4°C) absolutely necessary

8. Transport mode

Ideal: cold chain (+ 4°C)

9. Maximum storage and transport time

For culture and DST: 7 days, but yield decreases after 48 hours.

For PCR: 7 days

10. International transport

Samples for diagnostic confirmation of shigellosis are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Institut Pasteur Paris – CNR Escherichia Coli et Shigelles

TUBERCULOSIS (CULTURE AND DRUG SUSCEPTIBILITY TESTING)

1. Samples to collect

- Sputum without CPC for DST and rapid culture (rapid method with MGIT medium).
- Sputum with CPC for DST and standard culture (non-rapid method on Löwenstein-Jensen medium).

2. Lab test request form

See the Tuberculosis lab test request form

3. Justification

Diagnosis (smear negative)

Confirmation of failure at the fourth month

Resistance study

4. When to collect sample

Depends on the objective

5. Transport medium

No transport medium for rapid culture. Send the sputum directly in a 50-ml Falcon centrifuge tube.

6. Collection procedure

See procedure for collecting a sputum sample

7. Storage in the field

Cold chain (+ 4°C)

8. Transport mode

Room temperature

9. Maximum storage and transport time

2 weeks

10. International transport

Samples for diagnostic confirmation of TB are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Institute of Tropical Medicine, Mycobacteriology Unit
Antwerp, Belgium

TYPHUS

1. Samples to collect

- Blood sample on filter paper for serology
- Body lice

2. Lab test request form

See the Typhus lab test request form

3. Justification

Diagnostic confirmation

4. When to collect sample

Take the blood sample when the patient is febrile

5. Transport medium

No transport medium; body lice must be placed in tubes for transport.

6. Collection procedure

See procedure for collecting capillary blood on filter paper

7. Storage in the field

Ideal: cold chain (+ 4°C)

8. Transport mode

Room temperature

9. Maximum storage and transport time

2-3 weeks

10. International transport

Samples for diagnostic confirmation of rickettsial infection are category B, and can be transported as diagnostic specimens with the number UN UN3373. Follow DHL's procedure for transport of diagnostic specimens.

11. Reference laboratory

Faculté de médecine – Unité des Rickettsies – UMR 6020

Centre collaborateur OMS – Référence et recherche sur les rickettsioses

VIRAL HAEMORRHAGIC FEVERS



Yellow fever, Dengue, Ebola, Lassa, Marburg, Rift Valley Fever, etc.

1. Samples to collect

In order of preference:

- Collect whole blood in a dry tube for isolation of virus, serology and PCR.
- Collect blood on filter paper for serology and PCR.
- Gum sampling with a swab for PCR and virus isolation for Ebola, Marburg, Lassa
- Plus, for EBOLA: skin biopsy from fatal cases for identification of the virus.

Note: Remember to do two sets when samples are to be sent to both the national or regional laboratory and to the international reference laboratory.

For sampling on filter paper, it is best to collect at least two filter paper samples per patient.

2. Lab test request form

See Viral Haemorrhagic Fever, Hepatitis, Leptospirosis and Fever of Unknown Origin lab test request form.

3. Justification

Confirmation of viral haemorrhagic fever

4. When to collect sample

Collect the sample from a febrile patient.

5. Transport medium

Biopsy: 10% formol solution

Swab: sterile water (e.g. water for injection); VTM (viral transport medium) is not always necessary.

6. Collection procedure

See procedure for collecting blood in a dry tube

See procedure for collecting blood on filter paper

7. Sample storage in the field

Cold chain (+ 4°C)

8. Transport mode

Whole blood in dry tube: ideally, cold chain

Filter paper: room temperature

Biopsy: room temperature

9. Maximum storage and transport time

1 week

10. International transport

Samples for laboratory diagnosis of Yellow Fever/ Dengue-type arboviruses are category B, and can be transported as diagnostic specimens with the number UN 3373. Follow DHL's procedure for transport of diagnostic specimens.

All samples for diagnosis of other viral haemorrhagic fevers (Ebola, Marburg, Lassa, etc.) are category A and must be transported as infectious substances with the number UN 2814.

See Chapter 4 for a list of Category A bacteria and viruses.

Follow the procedure for air transport of infectious substances.

11. Reference laboratories

Institut Pasteur Lyon

Hervé Zeller

Bernhard Nocht Institut für Tropenmedizin Hamburg

Dr. Christian Drostein

Chapter 2

Specimen collection procedures

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PROCEDURE FOR COLLECTING BLOOD IN A DRY TUBE

Whole blood without serum separation**Safety** 

Use protective measures during sample collection.

For patients suspected of haemorrhagic fever, anthrax, etc., gloves, coat, apron, safety goggles and high filtration masks must be worn. Protection containers must be used for sample storage and transport.

To avoid sample contamination and infection risk to the person taking the sample, the sample must be collected using a closed, sterile system such as Vacutainer[®] tubes.

In cases of suspected haemorrhagic fever, send the tube of blood directly, without separating the serum. The additional handling might contaminate the sample and infect the person doing it.

Wash hands after sample collection

Materials

- Dry Vacutainer[®] tube
- Tube holder
- 21G or 23G Vacutainer needle
- Sharps container
- Gloves, coat
- Cotton wool, tourniquet, disinfectant, etc.
- Protection container

Sample collection

- Label the tube (patient identification, location and date of sample collection)
- Put on gloves
- Collect at least 5 ml of blood; let the Vacutainer[®] fill up (fill the tube to eliminate empty space, which facilitates haemolysis).
- Discard the needle into the sharps container.
- Place the tube of blood in a protection container
- Dispose of the waste

Waste disposal

Incinerate all contaminated materials

Sample storage

Store the tubes of blood in the cold chain (+ 4°C)

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking Register).

PROCEDURE FOR COLLECTING CAPILLARY BLOOD ON FILTER PAPER

Safety

Use protective measures during sample collection.

For patients suspected of haemorrhagic fever, anthrax, etc., gloves, coat, apron, safety goggles and high filtration masks must be worn. Protection containers must be used for sample storage and transport.

Wash hands after sample collection

Materials

- Filter paper
- Plastic bag for drugs
- Lancet
- Silica gel packet
- Disinfectant, cotton wool or gauze
- Gloves, coat
- Sharps container

Sample collection

- Label the filter paper (patient identification, location and date of sample collection)
- Put on gloves
- Disinfect the finger (or heel, for newborns); let air dry
- Prick with the lancet and discard the lancet in the sharps container
- Using a clean compress (or cotton wool), wipe away the first drop of blood
- Collect the blood (2 cm in diameter) on the filter paper; the filter paper should be impregnated on both sides
- Let the filter paper dry, away from sunlight and dust; prevent any contact with other people.
- Once it is dry, place the filter paper in a plastic bag for drugs
- Place the silica gel packet in the plastic bag with the filter paper

Waste disposal

Discard the lancet into the sharps container.

Incinerate all contaminated materials

Sample storage

Store filter paper samples in the refrigerator before shipping

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking Register)

PROCEDURE FOR COLLECTING A SERUM SAMPLE

Separating serum from a tube of whole blood

Serum is obtained by coagulating whole blood and separating it from the clot.

Safety – hygiene

Never separate the serum from samples that might contain Category A viruses or bacteria.

Use protective measures during sample collection.

For patients suspected of haemorrhagic fever, anthrax, etc., gloves, coat, apron, safety goggles and high filtration masks must be worn. Protection containers must be used for sample storage and transport.

Wash hands after sample collection

Materials

- Dry Vacutainer tubes, tube holder, 21G or 23G needles
- Sterile pipette
- 2-ml CryoTube™
- Protection container
- Gloves, coat

Sample collection

- Collect a sample of venous blood in a dry tube; let the tube rest for 30 minutes at room temperature to facilitate clot retraction.
- If there is a laboratory with a centrifuge, centrifuge the tube for 10 minutes at 3000 rpm (1000g) to obtain the serum
- If there is no laboratory, after leaving the tube for 30 minutes at room temperature, place it in the refrigerator in an upright position until sedimentation is complete (serum is bright yellow and clear)

Blood can be stored between 4° and 8°C before separating the serum

- Using a sterile pipette, transfer the serum to a CryoTube
- Label the CryoTube (patient identification, location and date of sample collection)
- Place the tube of blood in a protection container

Waste disposal

Incinerate all contaminated materials

Sample storage

One week in the refrigerator

For longer periods, store the serum in the freezer at -20°C

Avoid repeated freezing and thawing

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking Register)

PROCEDURE FOR COLLECTING BLOOD FOR BLOOD CULTURE

Safety - Hygiene

Use protective measures during sample collection. Wear a coat, sterile gloves, and a mask. Wash hands before and after drawing the sample.

It is essential to work aseptically; disinfect the puncture site and the stopper of the blood culture bottle.

Materials

- Blood culture bottle
- Sterile drape
- Sterile gloves, surgical masks
- Alcohol-based solutions
- Povidone iodine
- Sterile compresses
- Tourniquet
- 10-ml syringe
- 20G or 21G needles for taking the sample, or a 23G butterfly needle
- 19G needle
- Sharps container

Sample collection

Two people may be needed: one to draw the sample, the other to help prepare the equipment

- Wash hands with soap and water and disinfect them with an alcohol-based solution
- Prepare the sample collection equipment on a sterile drape:
 - Sterile compresses soaked in povidone iodine
 - 10-ml syringe (removed from packaging)
 - Needles for taking the sample, 19G needle (removed from packaging)
 - Dry sterile compresses
- Prepare the blood culture bottle:
 - Label the bottle with the patient's name and the location, date and time of sample collection
 - Remove the metal film protecting the stopper of the blood culture bottle
 - Apply a povidone iodine-soaked sterile compress to the stopper of the bottle.
- Perform the blood draw
 - Explain the procedure to the patient
 - Apply the tourniquet and find the vein
 - Put on sterile gloves
 - Clean the area around the puncture site with a povidone iodine-soaked sterile compress
 - Fit the needle onto the syringe, puncture the vein, and draw 10 ml of blood (5 ml for children)
 - Remove the needle and put the syringe down onto a sterile compress
- Inoculate the blood culture bottle
 - Fit the 19G needle onto the syringe
 - Insert the needle through the stopper of the blood culture bottle
 - Gently mix the blood in the bottle using a rotational motion

Waste disposal

Discard all contaminated needles and syringes in the sharps container
Incinerate all contaminated materials

Sample storage

Store the sample at room temperature

Recording

Complete the lab test request form
Enter the lab test request in a special register (Sample Shipment Tracking Register)

FINE NEEDLE ASPIRATION FOR THIN SMEARS

For Burkitt's lymphoma

Safety – hygiene

Wear gloves and a coat

Wash hands after sample collection

Materials

- 22G needle
- 5- or 10-ml syringe
- Disinfectant
- Gauze
- Four microscope slides
- Gloves, coat

Sample collection

- Disinfect the skin area and let dry
- Puncture with the needle, changing the direction of the needle, if necessary, until fluid appears at the needle base. *
- Remove the needle
- Place a dry compress on the puncture site

Thin smear

- Fit the syringe, filled with a bit of air, onto the needle
- Place a drop, approximately 2 mm in diameter, on each of three slides
- Using a smooth motion, immediately spread to a thin smear with a slide held at a 35° angle

Waste disposal

Discard the needle and the slide used to spread the drops in the sharps container

Storage

Allow the smears to dry completely

Fix with methanol by covering the slides with methanol for several seconds

Let dry

Recording

Complete the lab test request form

Enter the lab test request in the Sample Shipment Tracking register

* If nothing comes out, aspirate with the syringe. Remove the needle and syringe from the mass, without aspirating as you do so.

PROCEDURE FOR COLLECTING A STOOL SAMPLE ON FILTER PAPER

For cholera

Safety - hygiene

Use protective measures during sample collection

Wear gloves and a coat

Wash hands after sample collection

Materials

- KMEDSAM1C- sample module
- Gloves, coat

Sample collection

- Properly label the tube with the patient's name or identification number and the sample date
- Open the tube, which should already contain a filter paper disk
- Pick up the disk with a clean forceps or a needle
 - Wash and disinfect the forceps between samples (hold the forceps in a flame and let cool, or disinfect with chlorine and rinse well with filtered water)
 - Using needles: *needles are single use only. They must be destroyed after use.*
- Dip the disk into the suspect stool (or vomitus).

Important: make sure that the stool has not already been chlorinated

- Put the disk back in the tube
- Add 3 drops of normal saline
- Close the tube tightly

Waste disposal

Discard the needle into the sharps container (or wash and disinfect the forceps after each sample)

Incinerate all contaminated materials

Sample storage

Hermetically sealed, the sample can be stored for 2 to 3 weeks at room temperature.

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking register)

PROCEDURE FOR COLLECTING A STOOL SAMPLE WITH A SWAB

For shigellosis, salmonellosis and cholera

Safety - hygiene

Use protective measures during sample collection

Wear gloves and a coat

Wash hands after sample collection

Materials

- TGV or Cary-Blair medium with sterile swab
- Gloves, coat
- Protection container
- Scissors (if the swab stick is bigger than the Cary-Blair medium tube)

Sample collection

- Label the tube (patient identification, location and date of sample collection)
- Put on gloves
- Remove the swab from its protection
- Insert the swab into the pot containing the stool making sure to collect the blood-mucous parts
- Next, plant the swab into the culture medium agar.
- Cut the stick of the swab if it protrudes from the tube
- Close the tube tightly
- Place the tube in a protection container

Waste disposal

Incinerate all contaminated materials

Sample storage

Cold chain (+ 4°C)

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking Register)

Note: when a faecal swab cannot be done, do a rectal swab:

- *use a sterile swab*
- *wet the swab with a sterile fluid*
- *swab the rectum, getting a good scraping of the anal mucosa*
- *insert the swab into its transport medium.*

PROCEDURE FOR COLLECTING A STOOL SAMPLE IN A TUBE

For polio

Safety – hygiene

Use protective measures during sample collection

Wear gloves and a coat

Wash hands after sample collection

Materials

- 50-ml centrifuge tube, conical bottom, screw cap, sterile
- Gloves, coat

Sample collection

- Label the sample container (patient identification, date and location of sample collection)
- Collect an amount equal in size to the end of an adult's thumb (distal phalanx)
- Place the specimen in the sample container

Waste disposal

Incinerate all contaminated materials

Sample storage

Cold chain (+ 4°C)

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking Register)

PROCEDURE FOR COLLECTING A THROAT SAMPLE

For influenza and diphtheria**Safety** 

Use protective measures during sample collection

For patients suspected of haemorrhagic fever, anthrax, etc., gloves, coat, apron, safety goggles and high filtration masks must be worn. Protection containers must be used for sample storage and transport.

Wash hands after sample collection

Materials

- Sterile swab (wooden stick)
- Microtube containing viral transport medium or normal saline
- Tongue depressor
- Pen light
- Gloves, coat

Sample collection

- Using a sterile swab, scrape the nasopharynx and the throat
- Insert the swab into the microtube containing the viral transport medium
- Break off the stick of the swab and close the tube
- Label the tube (patient identification, location and date of sample collection)

Waste disposal

Incinerate all contaminated materials

Sample storage

Cold chain (+ 4°C)

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking register)

PROCEDURE FOR COLLECTING A NASOPHARYNGEAL SAMPLE WITH A SWAB

For influenza and diphtheria

Safety

Use protective measures during sample collection

For patients suspected of haemorrhagic fever, anthrax, etc., gloves, coat, apron, safety goggles and high filtration masks must be worn. Protection containers must be used for sample storage and transport.

Wash hands after sample collection

Materials

- Sterile swab with flexible stick (one per nostril)
- Microtube containing transport medium for viruses (viral transport medium or normal saline)
- Gloves, coat

Sample collection

- Label the tube (patient identification, location and date of sample collection)
- Clear the nose of mucus
- Place the patient in a comfortable position
- Insert the swab in the base of the nostril (parallel to the palate) and scrape to collect as many cells as possible
- Place the swab into the microtube containing the transport medium for viruses
- Close the tube
- Take one sample per nostril

Waste disposal

Incinerate all contaminated materials

Sample storage

Cold chain (+ 4°C)

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking register)

PROCEDURE FOR COLLECTING A SPUTUM SAMPLE

Safety – Hygiene

The sample should be collected out of doors whenever possible. If it must be collected indoors, the room should be ventilated after the sputum is produced. The patient should be alone, if possible, when he spits. Any medical personnel present should wear a coat, gloves and high filtration mask.

Materials

Sputum container (transparent container with a screw-top, diameter of opening about 50 mm).

Sample collection

The sample is collected by the patient, who should be given detailed instructions. The sample is collected either at the time of the consultation or lab visit, or at the patient's home, upon awakening. In the latter case, explain to the patient that he should collect the sample the moment he wakes up, before eating or drinking.

In all cases:

- Label the sputum container (patient identification, location and date of sample collection)
- Ask the patient to rinse out his mouth (and clean his teeth, if possible)
- Ask the patient not to open the sputum container until just before producing the sample
- Ask the patient to collect the sample out of doors
- Instruct the patient on producing the sample. He should:
 - take a deep breath, and hold breath for 5 seconds;
 - release the air slowly;
 - repeat the operation a second time;
 - then start again, taking a deep breath, and cough until there is sputum in the mouth;
 - then spit into the sputum container.
- Ask the patient to produce about 5 ml (equivalent to a tablespoon)
- Ask the patient to close the sputum container tightly, and then wash his hands

Storage

Cold chain

PROCEDURE FOR USING TRANS-ISOLATE (T-I) MEDIUM

For meningitis

Note: see the video demonstration on the CD-ROM to the MSF guide, Management of Epidemic Meningococcal Meningitis.

Hygiene – Safety

Follow the rules for asepsis very closely, to avoid any risk of contamination

The cerebrospinal fluid should be collected in a sterile tube used only for this purpose

Wear gloves and a coat

Wash hands after sample collection

Materials

- T-I medium
- 1-ml syringe
- 19G and 21G needles
- Protection container, 44-mm diameter
- Povidone iodine, cotton wool
- Gloves, coat

Check the appearance of the T-I medium before use. It should be a clear liquid with no colony growth on the black agar. Destroy any medium that shows signs of contamination: liquid that is cloudy, or the presence of colonies on the agar.

Inoculating the T-I with CSF

- Take the T-I medium out of the refrigerator 10 minutes before using
- Label the tube (patient identification, location and date of sample collection)
- Disinfect the rubber stopper and let dry for 1 minute.
- Draw up 0.5 to 1 ml of CSF (use the 21G needle and the syringe that are supplied with the medium)
- Inject the CSF through the stopper of the T-I vial
- After injection, ventilate the T-I vial by inserting the large 19G needle
- Plug the needle with cotton wool

Store the T-I medium, ventilated with its needle, **at room temperature** until the day it is shipped.

Waste disposal

Incinerate all contaminated materials

Sample storage

It is important to store the media for 2 to 3 days before shipping to allow meningococcal growth.

At room temperature < 40°C

Do not ventilate if the medium will reach the laboratory within 2 days

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking register)

Transport

- Remove the needle before shipping
- Place the medium in its protection container. Sample is transported **without cold chain**

PROCEDURE FOR SAMPLING VESICLES

For Poxviruses

Safety – Hygiene

Use protective measures during sample collection

For patients suspected of haemorrhagic fever, anthrax, etc., gloves, coat, apron, safety goggles and high filtration masks must be worn. Protection containers must be used for sample storage and transport.

Wash hands after sample collection

Materials

- Soap and water
- Scalpel and no. 10 scalpel blade or 26G needles
- Haemolysis tubes with red stopper
- Filter paper and plastic bag
- Gloves, coat

Sample collection procedures

Collecting crust samples

- Label the tubes (patient identification, location and date of sample collection)
- Using soap and water, clean an area with at least four lesions, and let dry
- Using the scalpel, remove the crust from the vesicle or pustule
- Place two crusts in each tube (two tubes per patient). Do not add anything to the tubes; the crust must remain completely dry.
- Place the tube in a protection container

Sampling vesicular (or pustular) contents

- Label the sample (patient identification, location and date of sample collection)
- Collect the vesicular contents on filter paper (two pieces of filter paper per patient)
- Let the filter paper dry in the open air, protected from dust, avoiding any risk of contact with other people
- Put the filter paper in the plastic bag, then place the plastic bag in a protection container

Waste disposal

Incinerate all materials used for sample collection

Sample storage

Cold chain (+ 4°C)

Recording

Complete the lab test request form

Enter the lab test request in a special register (See Sample Shipment Tracking Registers)

PROCEDURE FOR SAMPLING SORES AND SKIN LESIONS WITH A SWAB

For diphtheria

Safety

Use protective measures during sample collection

Wear gloves and a coat

Wash hands after sample collection

Materials

- Sterile normal saline
- Cotton swab
- Gloves, coat
- Gauze
- TGV medium

Sample collection

- Clean the lesions with sterile normal saline
- Remove the crust
- Press the swab firmly into the base of the lesion
- Insert the swab into its TGV medium
- Dispose of the waste

Waste disposal

Incinerate all contaminated materials

Sample storage

Cold chain (+ 4°)

Recording

Complete the lab test request form

Enter the lab request in a special register

PROCEDURE FOR SAMPLING A PLAGUE BUBO

Safety - hygiene

Use protective measures during sample collection

For patients suspected of haemorrhagic fever, anthrax, etc., gloves, coat, apron, safety goggles and high filtration masks must be worn. Protection containers must be used for sample storage and transport.

Wash hands after sample collection

Materials

- 5-ml syringe
- Normal saline
- 19G needle
- TGV or Cary-Blair medium
- Sterile swab
- Gauze or cotton wool
- Povidone iodine
- Gloves, coat

Sample collection

- Label the tube (patient identification, location and date of sample collection)
- Disinfect the bubo with povidone iodine
- Using a 5-ml syringe containing 1 to 2 ml of normal saline and fitted with a 19G needle, inject and aspirate the syringe contents several times into and out of the bubo.
- Impregnate the sterile swab with the bubo material obtained
- Insert the swab in the transport medium.

Waste disposal

Incinerate all contaminated materials

Sample storage

Cold chain (+ 4°C)

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking register)

PROCEDURE FOR COLLECTING A SAMPLE FOR OSTEOMYELITIS AND INFECTED SOFT TISSUE

Safety – hygiene

Sample must be collected under sterile conditions, **by a surgeon in the operating room only**

Transport medium

Portagerm[®] medium for solid specimens (bone and soft tissue)

Blood culture bottle for liquid specimens (overt pus)

Sample collection

- Take one Portagerm[®] or blood culture bottle per sample and per patient
- Label the bottles (patient name or code), location and date of sample collection
- Collect the sample:
 - Bone
 - Soft tissue
 - Overt pus
- Introduce each of the samples directly into either the Portagerm[®], by sticking it into the agar, or the blood culture bottle, if overt pus.
- Reclose the Portagerm[®] or the blood culture bottle
- Place the Portagerm[®] or the blood culture bottle in a protection container

Sample storage

Cold chain (+ 4°C)

Recording

Complete the lab test request form

Enter the lab test request in a special register (Sample Shipment Tracking register)

PROCEDURE FOR MAKING INFLUENZA TRANSPORT MEDIUM

Hygiene – Safety

Wash hands before making the medium

Materials

- 1 lyophilized vial of PBS (phosphate buffer), to be reconstituted
- 1 litre sterile distilled water (or WFI)
- 1 vial penicillin (1 MU) to be reconstituted with 5 ml WFI
- 1 vial streptomycin (1g) to be reconstituted with 5 ml WFI
- 8 vials ready-to-use gentamicin (1 mg/ml)
- sterile 3-ml transfer pipettes
- 2 empty, sterile 1-litre bottles (for preparing the PBS and storing the transport medium)
- 6 x 5-ml syringes
- 8 x 1-ml syringes
- 10 ml WFI

Procedure for making the solution

- **Vial of penicillin (1 MU):**

Reconstitute with 5 ml WFI; shake to completely dissolve the product

- **Vial of streptomycin (1 g/ml):**

Reconstitute with 5 ml WFI. Note that streptomycin is hard to dissolve in water. Make sure the product has completely dissolved before going on to the next step.

- **PBS (phosphate buffer):**

Reconstitute the lyophilized vial of PBS with 1 litre of sterile distilled water

Mixing and making the medium

- Take a sterile 1-litre bottle
- Using a 5-ml syringe, add the **5 ml of penicillin**
- Using a 5-ml syringe, add the **5 ml of streptomycin**
- Add the **8 ampoules of gentamicin** (use one syringe for each ampoule of gentamicin)
- Add reconstituted PBS to obtain 1 litre of mixture.
- Shake the mixture
- Store in the cold chain between +2°C and +8°C (the solution is stable for about two months)

Preparing tubes to be used for transporting samples

- Take a 5-ml sterile tube (red stopper)
- Draw 3 ml of transport medium using a sterile pipette and place it in the tube.

Note: to maximize the sterility of the operation, the tube should not be opened until the 3 ml of solution are ready to be added, and then should be re-closed as quickly as possible.

NOMENCLATURE AND CODES FOR ITEMS USED IN DIAGNOSTIC SAMPLE COLLECTION

(s.prél.sang.) CORPS PORTE TUBE avec éjecteur d'aiguille (blds. syst.) HOLDER for VACUUM TUBE with needle ejector	ELAEBSVV1H-
(s.prél.sang) AIGUILLE, stérile, 20G (Vacutainer) (blds. syst.) NEEDLE, sterile, 20G (Vacutainer)	ELAEBSVV20N
(s.prél.sang) AIGUILLE, stérile, 21G (Vacutainer) (blds.syst.) NEEDLE, sterile, 21G (Vacutainer)	ELAEBSVV21N
(s.prél.sang) UNITE PRELEVEMENT à ailettes, 23G (Vacutainer) (blds.syst.) SAMPLING SET, with wings, 23 G (Vacutainer)	ELAEBSVV23S
(s. prél. sang.) TUBE SOUS VIDE, plast., SEC, 5 ml, rouge (bld sampling syst.) TUBE, VACUUM, plast., SERUM, 5 ml, red	ELAEBSVT5P-
CONTAINER, récupération aiguilles 4 l, plastique (Huar 200) CONTAINER, sharps, 4 l, plastic (Huar 200)	SINSCONT4P-
CENTRIFUGEUSE électrique, pour tubes 15-20 ml CENTRIFUGE, electrical, for 15-20 ml tubes	ELAECENT1ET
CENTRIFUGEUSE, manuelle + 4 tubes 15 ml CENTRIFUGE, hand-operated + 4 tubes 15 ml	ELAECENT1M-
RECIPIENT PROTECTEUR, transport échantillon, plast., Ø 30 mm CONTAINER, PROTECTION, transport of sample, plastic, Ø 30 mm	ELAECONP3P-
RECIPIENT PROTECTEUR, transport échantillon, plast., Ø 44 mm CONTAINER, PROTECTION, transport of sample, plastic, Ø 44 mm	ELAECONP4P-
LANCETTE, u.u., stérile, pointe normale LANCET, s.u., sterile, standard point	ELAELANC1D-
PAPIER, WHATMAN, n°3, disque PAPER, WHATMAN, n°3, disc	ELAEPAPW3D-
PAPIER, WHATMAN, n°4, disque PAPER, WHATMAN, n°4, disc	ELAEPAPW4D-
PAPIER FILTRE, grade 903, simple (SCHLEISHER & SCHUELL) PAPER, FILTER, grade 903, single (SCHLEISHER & SCHUELL)	ELAEPAPF903
PIPETTE DE TRANSFERT, graduée, plastique, stérile, u.u. PIPETTE, TRANSFER, graduated, plastic, sterile, s.u.	ELAETIPT1S-
LAME PORTE-OBJETS, dépolie, 76 x 26 mm, épaisseur 1-1,2 mm SLIDE, frosted, 76 x 26 mm, 1-1.2 mm thickness	ELAESLID1F-
MICROTUBE, plastique, fond plat, bouchon à visser, 2 ml MICROTUBE, plastic, flat bottom, screw cap, 2 ml	ELAETUBE2--
TUBE A CENTRIFUGER, 50 ml, fond conique, plastique, bouchon TUBE, CENTRIFUGE, 50 ml, conical bottom, plastic, cap	ELAETUCE5P-
TUBE A HEMOLYSE, 12 mm, plastique, stérile, 5 ml + BOUCHON TUBE, HAEMOLYSIS, 12 mm, plastic, sterile, 5 ml + PLUG	ELAETUHA1P-
ECOUVILLON, extrémité coton, tige en bois, stérile, 150 mm SWAB, cotton tip, wooden stick, sterile, 150 mm	ELAESWAB1C-
ECOUVILLON, stérile, tige metal Dacron, sous tube SWAB, sterile, metal stick Dacron, with tube	ELAEZBD0017
ABAISSE LANGUE de bois ! DEPRESSOR, TONGUE, wooden	SMSUDEPT1W-
BOITE, triple emball., transp.échantillon diagnostic UN 3373 BOX, triple packaging, transport diagnostic specimen UN 3373	PPACUN62DS-
BOITE ISOTHERME, triple emb., transp. éch.diagnostic UN 3373 BOX ISOTHERM, triple pack., transp. diagnostic spec. UN 3373	PPACUN62DSI
BOITE, triple emballage, transp. subst. infectieuse UN 2814 BOX, triple packaging, transp. infectious substance UN 2814	PPACUN62IS-
BOITE ISOTHER, triple emb., transp. subst. infect. UN 2814 BOX ISOTHERM, triple pack., transp.infectious subst. UN 2814	PPACUN62ISI

GEL DE SILICE, granulés avec indicateur de saturation, 5 gr SILICA GEL, granulated, with saturation indicator, 5 g	SLASSILI1C5
TRANSPORT GERMES VIVANTS AEROBIES avec écouvillon TRANSPORT MEDIUM, FOR AEROBIC GERMS with swab	SLASTMAB1--
MILIEU DE TRANSPORT, Portagerm [®] , fl. TRANSPORT MEDIUM, Portagerm [®] , bot.	SLASZBD0245
(module laboratoire) MILIEU DE TRANSPORT POUR LCR (laboratory module) TRANSPORT MEDIUM FOR CSF	KMEDMLAB120
MODULE PRELEVEMENT, 001, transport MODULE, SAMPLE, 001, transport	KMEDMSAM1C-
MODULE PRELEVEMENT SEROLOGIE, transport MODULE, SAMPLE, SEROLOGY, transport	KMEDMSAM1S-
CHLORHEXIDINE 1,5% + CETRIMIDE 15%, solution, 1 l, fl. CHLORHEXIDINE 1.5% + CETRIMIDE 15%, solution, 1 l, bot.	DEXTCHLC1S1
IODE POVIDONE, 10%, solution, 200 ml, fl. verseur IODINE POVIDONE, 10%, solution, 200 ml, dropper bot.	DEXTIODP1S2
COMPRESSE DE GAZE, 10 cm, 12 plis, 17 fils, non stérile COMPRESS, GAUZE, 10 cm, 12 plies, 17 threads, non sterile	SDRECOMP1N-
COMPRESSE, TULLE, gras, 10 cm x 10 cm, stérile COMPRESS, GAUZE, paraffin, 10 cm x 10 cm, sterile	SDRECOMP1P-
COTON hydrophile, rouleau, 500 g COTTON WOOL, hydrophillic, roll, 500 g	SDRECOTW5R-
AIGUILLE, Luer, u.u. SC, IM enfant, 23 G (0,6 x 30 mm), bleu NEEDLE, Luer, s.u. SC, IM child 23 G (0.6 x 30mm) blue	SINSNEED23-
AIGUILLE, Luer, u.u., 25 G (0,5 x 25 mm), orange NEEDLE, s.u., Luer, 25 G (0.5 x 25 mm), orange	SINSZBD0030
AIGUILLE, u.u., Luer, ID, 26 G (0,45 x 13 mm), brun NEEDLE, s.u., Luer, ID, 26 G (0.45 x 13 mm), brown	SINSNEED26-
AIGUILLE PONCTION LOMBAIRE, u.u., 20 G (0,9 x 90 mm) NEEDLE, SPINAL L.P., s.u., 20 G (0.9 x 90 mm)	SINSNESD20-
AIGUILLE PONCTION LOMBAIRE, u.u., 22 G (0,7 x 40 mm) NEEDLE, SPINAL L.P., s.u., 22 G (0.7 x 40 mm)	SINSNESD22-
SERINGUE, u.u., Luer, 1 ml, graduée au 1/100ème SYRINGE, s.u., Luer, 1 ml, graduated 1/100	SINSSYDI01-
SERINGUE, u.u., Luer, 2 ml SYRINGE, s.u., Luer, 2 ml	SINSSYDL02-
SERINGUE, u.u., Luer, 5 ml SYRINGE, s.u., Luer, 5 ml	SINSSYDL05-
SACHET, plastique, pour médicaments, 6 x 8 cm BAG, plastic, for drugs, 6 x 8 cm	SMSUBAGP06-
GANTS D'EXAMEN, latex, usage unique, grand GLOVES, EXAMINATION, latex, single use, large	SMSUGLOE1L-
GANTS D'EXAMEN, latex, usage unique, moyen GLOVES, EXAMINATION, latex, single use, medium	SMSUGLOE1M-
GANTS D'EXAMEN, latex, usage unique, petit GLOVES, EXAMINATION, latex, single use, small	SMSUGLOE1S-
TABLIER DE PROTECTION, plastique APRON PROTECTION, plastic	ELINAPRP1P-
BLOUSE MEDICALE, blanche, large COAT, MEDICAL, white, large	ELINCOAW1L-
BLOUSE MEDICALE, blanche, moyen COAT, MEDICAL, white, medium	ELINCOAW1M-
BLOUSE MEDICALE, blanche, petit COAT, MEDICAL, white, small	ELINCOAW1S-
MASQUE DE PROTECTION, haute filtration PCM2000, u.u. MASK, PROTECTION, high filtration PCM2000, s.u.	ELINMASP1HF
MASQUE CHIRURGICAL, usage unique MASK, SURGICAL, single use	ELINMASS1--

GARROT élastique, 100 x 1,8 cm TOURNIQUET, elastic, 100 x 1.8 cm	EMEQTOUR1--
PLATEAU A PANSEMENTS, 30 x 20 x 3 cm, inox TRAY, DRESSING, 30 x 20 x 3 cm, stainless steel	EMEQTRAD3--
LUNETTES DE PROTECTION, plastique GOGGLES, PROTECTIVE, plastic	EMEQGLAS1P-
CONTAINER aiguilles/seringues, 5 l, carton pour incinération CONTAINER, needles/syringes, 5 l, cardboard for incineration	SINSCONT5C-
LAMPE STYLO, pour malle d'urgence, piles type R6 LAMP, PEN LIGHT, for first aid kit, 2 R6 batteries	PLIGLAMPP1-
PILE, R6, AA, alcaline, 1.5 V. (14 x 50 mm) BATTERY, dry cell, R6, AA, alkaline, 1.5 V. (14 x 50 mm)	PELEBATT06
SONDE GASTRIQUE, embout Luer, u.u., 40 cm, CH6 TUBE, GASTRIC, Luer tip, single use, 40 cm, CH6	SCTDTUGL06-

Chapter 3

Lab test request forms

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CUTANEOUS ANTHRAX, POXVIRUS

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Fever of _____ °C for the past _____ days

Clinical signs: _____

Clinical examination

Cutaneous signs: Vesicles Eschar Pustules Satellite lymphangitis Crusts

Location: _____

Lymphadenopathy location: _____

Lab tests: _____

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Suspected diagnosis: _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Sample

Date collected _____

Type of sample: whole blood blood on filter paper vesicular fluid
 crusts other (specify) _____

Storage: With cold chain (+ 4°C)

Transport medium: if possible (Viral Pack) for vesicular fluid and crusts

BURKITT'S LYMPHOMA

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Wasting Anorexia

Clinical signs: _____

Clinical examination

Maxillary tumour: size _____

Abdominal tumour: size _____

Neurological signs Lymphadenopathy Hepatomegaly Splenomegaly

Lab tests: _____

Context: Treatment already started (cyclophosphamide) Date _____

Sample: Date _____

Type of sample: smear from the maxillary tumour

Storage/transport medium: None

CHOLERA, SHIGELLA, DIARRHOE

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Clinical signs:

Fever of _____ °C for the past _____ days
 Vomiting Intense abdominal pain Wasting
 Diarrhoea: frequency, colour _____ History of blood in the stools

Clinical examination

Signs of moderate or severe dehydration
 Confusion, convulsions, coma Blood in the stools (macroscopic)

Lab tests Stool microscopy

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Suspected diagnosis: _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Sample: Date and time collected _____

Type of sample: stool vomitus anal or rectal swab

Storage: Room temperature for filter paper. Cold chain for transport medium

Transport medium: Cary-Blair if cholera is suspected. TGV medium if Shigella is suspected

DIPHTHERIA

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Previous vaccinations, with dates: _____

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Clinical signs:

Fever of _____ °C for the past _____ days pseudomembranous tonsillitis

laryngitis lymphadenopathy cervical oedema skin lesions

Clinical examination

cutaneous signs cardiac signs neurological signs pulmonary signs

Lab tests: _____

Treatment

Date antibiotic treatment started: _____ Date serotherapy started: _____

Clinical progress (with dates of improvement, worsening, or death): _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Sample: Date _____

Type of sample:

whole blood blood on filter paper skin and/or nasopharyngeal and/or throat swab

other (specify) _____

Storage: cold chain

Transport medium: none

**HEPATITIS, LEPTOSPIROSIS, VIRAL HAEMORRHAGIC FEVER,
FEVER OF UNKNOWN ORIGIN/1**

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Previous vaccinations, with dates: _____

- Yellow fever Hepatitis A Hepatitis B Japanese encephalitis

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Clinical signs:

Fever of _____ °C for the past _____ days

- Jaundice Headache Muscle, joint pain
- Vomiting (colour): _____ Melena (tarry stools)
- Haematemesis Diarrhoea Abdominal pain
- Epistaxis Petechiae Skin rash Bleeding at injection sites
- Other haemorrhagic signs: Other

Clinical examination

- Pregnancy Neurological signs Liver Spleen
- Pulmonary signs Cutaneous signs

**HEPATITIS, LEPTOSPIROSIS, VIRAL HAEMORRHAGIC FEVER,
FEVER OF UNKNOWN ORIGIN/2**

Lab tests

- Paracheck Thick film Other _____
 Urinalysis strips Urine colour: _____

Risk factors, exposure

- Contact with suspect patients or with animals, meat, or slaughtering
 Presence of tick-bearing livestock
 Time spent in the forest where monkeys were present
 Contact with contaminated water

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Suspected diagnosis: _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Sample:

Date _____

Type of sample: whole blood blood on filter paper

serum skin biopsy

other (specify) _____

Storage: cold chain (+ 4°C)

Transport medium: none

INFLUENZA

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Clinical signs: Fever of _____ °C for the past _____ days

- Headache Muscle, joint pain Cough

Clinical examination

- pulmonary signs other _____

Lab tests

- Paracheck

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Sample: Date _____

- whole blood blood on filter paper nasopharyngeal and/or throat swab

- other (specify) _____

Storage: Cold chain (+ 4°C)

Transport medium: influenza-specific

MEASLES

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Number of doses of measles vaccine: _____ Date of last measles dose: _____

Other vaccinations, with dates: _____

Date of onset of fever: _____ Date of onset of rash: _____

Date of consultation/hospitalization: _____

Clinical signs: Fever of _____ °C Cough Diarrhoea

Clinical examination

Type **and location** of rash (and where it started) _____

Desquamation

Koplick's spots

Pulmonary signs

Signs of dehydration

Ocular signs

Lab tests: _____

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Context:

Start of epidemic (always confirm)

Epidemic monitoring

End of epidemic

Sample: Date _____ Type of sample: Serum

Blood on filter paper

Other (specify) _____

Storage: Cold chain (+ 4°C) for serum (do not freeze)

Transport medium: specific for swab samples

MENINGITIS

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Previous vaccination with date and vaccine type: _____

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Treatment taken since onset of symptoms: _____

Clinical signs: Fever of _____ °C for the past _____ days

- Headache Vomiting Photophobia

Clinical examination

- Kernig's sign Coma Brudzinski's sign Convulsions
- Bulging fontanelle Purpura

Lab tests

Paracheck: Positive Negative Not done

Date of lumbar puncture: _____ Colour of CSF _____

- Pandy test Cell count Gram stain Latex agglutination test

Results _____

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Sample: Date _____ Antibiotics received before LP: _____

Type of sample: CSF

Storage/transport medium: Trans-Isolate **WITHOUT** cold chain

OSTEOMYELITIS/1

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Date of onset of symptoms: _____

Date of consultation/hospitalization: _____

Treatment taken since onset of symptoms: _____

Surgery, details and dates: _____

Radiology report of infected site: _____

OSTEOMYELITIS/2

Lab tests

ESR CRP, if available

Clinical progress (with dates of improvement, worsening, or death): _____

Sample: Date _____

Antibiotics received before: drugs, dosages, duration _____

Type of sample: surgical biopsy, pus

Storage/transport medium: cold chain/Portagerm®
cold chain/blood culture bottle

PERTUSSIS

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Previous vaccinations, with dates: _____

Date of onset of cough: _____ Date of consultation/hospitalization: _____

Clinical signs

paroxysmal cough “whooping” cough vomiting triggered by the cough fever

Clinical examination

pulmonary signs neurological signs weight loss

Lab tests: _____

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Date sample collected _____ Date antibiotic treatment started: _____

Type of sample: whole blood other (specify) _____

Storage: cold chain (+ 4°C)

Transport medium: none

PLAGUE

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Clinical signs: Fever of _____ °C for the past _____ days

- Coughing bouts Chills, muscle aches Haemoptysis Headache
- Respiratory distress Painful ganglion Vomiting, diarrhoea

Clinical examination

- bubo pulmonary signs septicæmic signs meningeal signs

Lab tests: _____

Risk factors, exposure: presence of rats

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Sample: Date _____ Date antibiotic treatment started: _____

Type of sample: Serum Whole blood (at least 5 to 7 days after onset of signs)

- Bubo puncture Sputum swab Other (specify) _____

Storage: cold chain (+ 4°C), never above 30°C

Transport medium: Cary-Blair for bubo puncture and swab

POLIOMYELITIS

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Previous vaccinations, with dates: _____

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Clinical signs: Fever of _____ °C for the past _____ days

Paralysis location _____

Onset: slow rapid Urinary incontinence

Clinical examination

Muscle tone _____ Muscle strength _____

Deep tendon reflexes _____ Sensitivity _____

Lab tests: _____

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Sample: Date _____ 1st sample or 2nd sample

Type of sample:

Serum Whole blood Blood on filter paper Stools

Storage: cold chain (+ 4°C)

Transport medium: none

SALMONELLOSIS, TYPHOID FEVER

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Dates of previous typhoid vaccinations: _____

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Clinical signs: Fever of _____ °C for the past _____ days

- Abdominal pain Headache Diarrhoea/Constipation
- Epistaxis Prostration, typhoid state Exhaustion Anorexia

Clinical examination

- Cutaneous signs: lenticular rose-coloured spots Neurological signs Splenomegaly

Pulse _____ Complications: _____

Lab tests

Paracheck: Positive Negative Not done CBC: relative leucopenia Yes No

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Suspected diagnosis: _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Sample: Date _____ Date antibiotic treatment started: _____

Type of sample: Whole blood for blood culture at bedside Blood for serology

Stool swab Other (specify) _____

Storage: cold chain (+ 4°C) for faecal swab

Transport medium: TGV or Cary-Blair for faecal swabs

TUBERCULOSIS

Sputum samples to be sent to the Institute of Tropical Medicine, Antwerp, Belgium

Always send 2 samples (A and B) and fill in one request form for **each patient****Inform your TB reference person in Paris when sending the sample** (except for DST survey)**Country of origin:** _____ **Project:** _____**Indication:** Diagnosis (smear-) DST survey Confirmation of failure DST for adapted regimen**Case definition:** Suspect New Re-treatment: Failure Relapse Treatment After Default Others**Sputum** Baseline Follow-up: Month n°: _____ Current regimen: _____**Patient information**

TB register number (if applicable) _____ Date registration: _____

Surname: _____ Name _____

Sex: _____ Age: _____

Results of microscopy performed in the field:

TB laboratory number: _____ Date: _____

 Scanty 1+ 2+ 3+ 4+ negative**Sputum specimen(s)**

Sample number: _____

Date collection specimen A: _____ Date collection specimen B: _____

Request for culture and:Drug susceptibility testing for first-line drugs: Yes NoDrug susceptibility testing for second-line drugs: Yes No**Date shipped from the field:** _____**Date shipped from the capital to Antwerp:** _____**Name and signature of requester:** _____

TYPHUS

Requester
Country: _____
Region: _____
Town: _____
Health structure: _____
Test requested by: _____

Mission e-mail: _____

Patient
Name: _____
First name and/or sample identification number: _____
Age: _____ Sex: _____
Profession/activity: _____
Place of residence: _____

History of the illness

Date of onset of symptoms: _____ Date of consultation/hospitalization: _____

Clinical signs: Fever of _____ °C for the past _____ days

- Maculopapular rash except palms, soles, and face
- Impaired consciousness Extreme debility

Clinical examination

- Cutaneous signs Neurological signs

Lab tests: _____

Risk factors, exposure: body lice

Treatment (which, date started): _____

Clinical progress (with dates of improvement, worsening, or death): _____

Context: Epidemic investigation Monitoring during epidemic End of epidemic

Sample: Date _____

Type of sample: Blood on filter paper Body lice

Storage: cold chain (+ 4°C)

Transport medium: none

Chapter 4

International Transport

Procedures

(excerpts from the 2007 MSF Laboratory Catalogue)

LEGAL PROVISIONS

Samples are considered “dangerous substances” whose transport is subject to very strict regulations based on the “UN Recommendations on the Transport of Dangerous Goods”. The IATA (International Air Transport Association) has incorporated these recommendations in its “Dangerous Goods Regulations,” to which all airlines, including express carriers like DHL, are subject. These regulations are updated annually.

According to the “UN Recommendations on the Transport of Dangerous Goods,” all samples fall into class “6.2 – INFECTIOUS SUBSTANCES.”

DEFINITIONS USED AS A BASIS FOR THE INFECTIOUS SUBSTANCES REGULATIONS

Infectious Substances

“Substances which are known or are reasonably expected to contain pathogens.”

Pathogens

“Micro organisms (including bacteria, viruses, rickettsia, parasites, and fungi) and other agents such as prions, which can cause disease in humans or animals.”

CLASSIFICATION OF INFECTIOUS SUBSTANCES

Since January 2005, Class 6.2 is divided into two categories:

CATEGORY A	CATEGORY B
<p>“An infectious substance which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life threatening or fatal disease in otherwise healthy humans or animals.”</p>	<p>“An infectious substance which does not meet the criteria for inclusion in Category A.”</p>
<p>must be assigned to UN 2814 (UN2900) “Infectious substance affecting humans (animals)”</p>	<p>must be assigned to UN 3373 “Biological substance – Category B”</p>
<p>EXAMPLES (see ANNEX 1): any sample in case of suspicion of:</p> <ul style="list-style-type: none"> ▶ 1 Multi-drug resistant tuberculosis: cultures ▶ 2 Rabies (animal part, brain sample in a hermetically sealed plastic bag) ▶ 3 Viral Haemorrhagic Fever (whole blood in dry tube) 	<p>EXAMPLES: any sample of biological substance (blood, CSF, sputum, biopsy...)</p> <ul style="list-style-type: none"> ▶ 4 For detection of multidrug-resistant tuberculosis: sputum in dry tube ▶ 5 For detection of meningitis: CSF in Trans-Isolate medium or, failing that, in TGV AER medium

NB: - Cultures of pathogens are automatically classified in Category A!

- Category A includes all of risk group 4 from the 2004 regulations.

PACKAGING OF SAMPLES

All samples must be:

- ▶ 1 labelled (patient's name or code number + date and place of sampling)
- ▶ 2 sent with clinical and epidemiological data
- ▶ 3 transported in a triple packaging box to prevent any risk of leakage or contamination

Several items in the MSF list refer to the packaging and the transport of samples. The instructions on each technical sheet should be carefully followed.

TRIPLE PACKAGING BOXES IN THE MSF LIST

All samples must be transported in approved triple packaging. This kind of packaging cannot be bought locally and should be provided by the supply centres.

The system consists of 3 layers:

1. Primary container containing the sample

Tube or vial, hermetically sealed and labelled (if possible with a permanent marker).

2. Secondary container intended to protect the primary container

Watertight box with enough absorbent material to absorb the fluid completely in case of breakage.

3. Outer packaging intended to protect the secondary container

Reinforced cardboard box with UN labelling.

Four boxes with UN-approved triple packaging are offered in the PPAC family, Medical catalogue, Volume IV.

The choice of box depends on the classification of the sample to be transported (see “Legal Provisions”) and on whether or not the sample needs to be transported by cold chain.

CATEGORY A	CATEGORY B
<p>INFECTIOUS SUBSTANCES ⇒ IATA packaging instructions 602</p>	<p>BIOLOGICAL SUBSTANCES ⇒ IATA packaging instructions 650</p>
<p>PPACUN62IS- BOX, triple packaging, transp. infectious substance (UN2814)</p> <p>PPACUN62ISI BOX ISOTERM, triple packaging, transp. infectious substance (UN2814)</p>	<p>PPACUN62DS- BOX, triple pack., transp. biological substance (UN3373)</p> <p>PPACUN62DSI BOX ISOTERM, triple pack., transp. biological substance (UN3373)</p>
<p>Labelling</p> <ul style="list-style-type: none"> •1 Infectious substance international label •2 Marking "UN2814" •3 UN name “Infectious substance affecting humans” 	<p>Labelling</p> <ul style="list-style-type: none"> •4 Marking “UN3373” in a diamond of contrasting colour •5 UN name “Biological substance – Category B”



The shipping of category A and B samples should usually be assumed

- ▶ 4 either by the local government
- ▶ 5 or by a WHO representative
- ▶ 6 or by the Centre for Disease Control (CDC)

MSF can, however, take responsibility for shipping samples in some circumstances.

In any case, you **MUST** contact your medical/public health department.

Shipping of “diagnostic specimens” UN 3373 (Biological substance, Category B) ⇒ DHL transport

The shipment of a sample to a reference laboratory **MUST ALWAYS** be discussed beforehand with the Medical Department, so that it can contact the laboratory and confirm that it is ready to receive the sample.

Obligations and responsibilities

The shipper is responsible for classifying, declaring, packaging and labelling the samples. If there is a problem during the transport, the shipper, i.e. the MSF office in capital, must be able to prove that it has strictly followed the regulations.

STEP 1: CLASSIFICATION OF THE SAMPLE AND ASSIGNATION TO A “UN” NUMBER

- 1 **Only category B samples are accepted by DHL!** Category A samples must be transported by airlines that accept dangerous goods (see below).
- 2 **Category B samples are transported under the n° UN 3373, “Biological substance, Category B.”**

STEP 2: PACKAGING THE SAMPLE

- 1 **Only diagnostic specimens packaged in approved triple packaging are accepted by DHL!**
- 2 2 boxes with approved triple packaging system are provided for the transport of samples classified UN3373 (see above, “Triple Packaging Boxes in the MSF List”). Please specify the references of the box you want:

PPACUN62DS- ⇒ box intended for the transport of diagnostic specimens

PPACUN62DSI ⇒ ISOTHERMAL box intended for the transport of diagnostic specimens
BY COLD CHAIN

- REMARKS:
- 6 DHL does not guarantee temperature stability during the transport of samples.
 - 7 The use of dry ice is strictly forbidden in the DHL network. To keep samples between 2°C and 8°C for 72 hours, place 4 frozen ice packs in the spaces designed for that purpose (without putting them in direct contact with the samples).
 - 8 DHL does not guarantee shipping time, but the average from the capitals is 48 hours.

Packaging instructions

- 1 Check that the primary container with the sample is hermetically sealed.
- 2 Pack the primary container according to the instructions enclosed in the packaging.
- 3 The secondary container can have 1 litre maximum.

STEP 3: INFORMATION TO BE WRITTEN ON THE TRIPLE PACKAGING BOX

a) Check the address of the destination laboratory

- 1 Always include a street name and number (a P.O. box is not enough!)
- 2 Always include the postal code of the destination town
- 3 Always include the destination country
- 4 Always specify the department and include the name and phone number of the person who will receive the sample (many laboratories are integrated into very large hospital structures)

If the destination laboratory is not listed in Chapter 6, contact the people at the Medical Department to get the exact information.

b) Write the following information on the outer packaging of the box:

<i>Shipper</i>	<i>Consignee</i>	<i>Emergency contact</i>	<i>UN 3373</i>
<ul style="list-style-type: none"> ▶6 MSF - name of the capital ▶7 Address ▶8 Town + country + phone ▶9 Name of the medical coordinator 	<ul style="list-style-type: none"> ▶10 Name of the laboratory ▶11 Exact address of the laboratory ▶12 Contact person's name + phone number 	MSF-Logistique Véronique Pinot or Cécile Richard Phone: +33/56137373 Mob: +33/6060875535	Proper shipping name: “Biological substance – category B” <i>Do not write anything else!</i>

c) **Mandatory marking**

The marking “UN 3373” in a diamond of contrasting colour **MUST** appear on the outer packaging of triple packaging boxes containing category B samples.



STEP 4: SHIPPING DOCUMENTS TO BE GIVEN TO DHL

- 1 Proforma invoice
- 2 Cargo manifest
- 3 Donation certificate

STEP 5: HANDING OVER THE SAMPLE TO THE DHL AGENCY IN YOUR CAPITAL

a) **Give the DHL employee the account number under which the sample should be shipped**

- 1 These account numbers are normally transmitted to all DHL agencies. If, however, your DHL agency does not have them, immediately call MSF-Logistique, which will do what is necessary to communicate them (always call ahead to check before going to your DHL agency).
- 2 Do not pay anything. DHL transport costs are fully paid by MSF-Logistique. Ask the DHL employee for the DHL air waybill number.

This is the number of the DHL shipping contract.

c) **Send this number by e-mail**

- 1 MSF-Logistique: vpinot@bordeaux.msf.org

d) **Fill in the DHL air waybill**

- 1 Fill in all the boxes indicated by an arrow on the sample in Annex 6
- 2 Write the number of parcels, the weight (0.8 kg per triple packaging) and the value (US\$10 per triple packaging)
- 3 In "Full description contents," write: “Biological substance – category B packed in compliance with IATA packing instruction 650”
- 4 Do not forget to date and sign
- 5 **Caution**
- 6 Do not tick the Insurance box (shipping of samples is covered by MSF-Logistique's insurance)
- 7 Check to make sure that the DHL employee does not fill in any boxes in the right-hand column entitled “Products and services”
- 8 Keep the counterfoil as proof of the shipment request

e) **Notify the Medical Department of the diagnostic specimen shipment**

Send MSF-Logistique an e-mail worded as follows:

“Pre-advice of diagnostic specimen shipping by DHL”

- 1 Shipper
- 2 Consignee
- 3 Type of sample
- 4 Date handed over to DHL
- 5 DHL air waybill number

STEP 6: SHIPMENT TRACKING

- 1 As soon as your e-mail is received, MSF-Logistique informs the destination laboratory of the sample's arrival. (Normally already notified by the desk or the field)
- 2 MSF-Logistique can track your shipment online with the DHL air waybill number, and informs you when the sample has safely arrived.

Shipment of “infectious substances” UN 2814 (category A samples) ⇒ air transport

The shipment of a sample to a reference laboratory **MUST ALWAYS** be discussed beforehand with the Medical Department, so that it can contact the laboratory and confirm that it is ready to receive the sample.

Obligations and responsibilities

The shipper is responsible for classifying, declaring, packaging and labelling the samples. If there is a problem during transport, the shipper, i.e. the MSF office in capital, must be able to prove that it has strictly followed the regulations.

STEP 1: CLASSIFICATION OF THE SAMPLE AND ASSIGNATION TO A “UN” NUMBER (see Annex 1)

- 1 **Category A samples are not accepted by DHL and must be transported by airlines that accept dangerous goods.**
- 2 **They are transported under the number UN 2814, “Infectious substance, affecting humans.”**

STEP 2: HEADQUARTERS MUST BE INFORMED THAT A UN 2814 SAMPLE WILL BE SHIPPED

Send the following information to MSF-Logistique/MSF-Holland/MSF-Belgium:

- 1 Nature of the sample
- 2 Destination laboratory
- 3 Planned shipping date and airline

STEP 3: AIRLINE SELECTION

- 1 **The first choice should be Air France, which has agreements with MSF!**
- 2 If there is no AF routing from your country, check the possibility of using LUFTHANSA or EMIRATES, or contact your headquarters.
- 3 Call AF at least 24 hours before departure (48 hours is even better) to notify them of shipment of a “UN 2814 class 6.2” sample, and ask for an AWB (Air Waybill) number.
- 4 Ask AF to make a reservation on the flight you identified. The sample **MUST** go via EQUATION (AF's express service) to speed up package removal on arrival and make tracking easier.

STEP 4: PACKAGING THE SAMPLE

- 1 **Only samples packaged in approved triple packaging are accepted by the airlines!**
- 2 2 boxes with approved triple packaging system are provided for the transport of samples classified UN 2814 (*see above, “Triple Packaging Boxes in the MSF List”*). Please specify the reference code of the box you want:

PPACUN62IS- ⇒ box intended for the transport of infectious substances

PPACUN62ISI ⇒ ISOTHERMAL box intended for the transport of infectious substances
BY COLD CHAIN

Packaging instructions

- 1 Check that the primary container with the sample is hermetically sealed.
- 2 Pack the primary container according to the instructions enclosed in the packaging.
- 3 The total quantity of the sample must not exceed 50 ml.
- 4 The secondary container can have 1 litre maximum.

STEP 5: INFORMATION TO BE WRITTEN ON THE TRIPLE PACKAGING BOX**a) Check the address of the destination laboratory**

- 1 Always include a street name and number (a P.O. box is not enough!)
- 2 Always include the postal code of the destination town
- 3 Always include the destination country
- 4 Always specify the department and include the name and phone number of the person who will receive the sample (many laboratories are integrated into very large hospital structures)

If the destination laboratory is not listed in Chapter 6, contact the responsible persons at the Medical Department to get the exact information.

b) Write the following information on the outer packaging of the box:

<i>Shipper</i>	<i>Consignee</i>	<i>Emergency contact</i>	<i>UN 2814</i>
<ul style="list-style-type: none"> ▶ 13 MSF - name of the capital ▶ 14 Address ▶ 15 Town + country + phone ▶ 16 Name of the medical coordinator 	<ul style="list-style-type: none"> ▶ 17 Name of the laboratory ▶ 18 Exact address of the laboratory ▶ 19 Contact person's name + phone number 	MSF-Logistique Véronique Pinot or Cécile Richard Phone: +33/56137373 Mob: +33/6060875535	Proper shipping name: "Infectious substance affecting humans" <i>Do not write anything else!</i>

c) Mandatory marking

- ▶ 20 The "Infectious substance" logo **MUST** appear on the outer packaging of triple packaging boxes containing category A samples.



- ▶ 21 IATA approval marking and arrows cannot be covered up.

Example of approved marking:  **4G/CLASS 6.2/02F/BVT190468/E3**

STEP 6: SHIPPING DOCUMENTS TO BE GIVEN TO THE AIRLINE

- 1 Proforma invoice
- 2 Cargo manifest
- 3 Donation certificate
- 4 Shipper's declaration for dangerous goods
- 5 **MUST** be an original (ask your headquarters for blank documents)
- 6 **MUST** be completed in English by the shipper (MSF office in capital)
- 7 **MUST** be dated and signed (with the signatory's name and title)
- 8 **Caution:** any crossing-out or going outside the boxes can be a reason for refusal!

STEP 7: HANDING OVER THE SAMPLE TO THE AIRLINE IN YOUR CAPITAL**a) Give the airline employee the instructions for filling in the AWB**

- 1 Ask Air France to ship the sample via EQUATION (AF's express service)
- 2 Pay the transport costs on departure
- 3 For "destinataire/consignee," write the exact address of the laboratory + name of contact person + phone number
- 4 Keep a copy of the AWB

b) Notify your headquarters that a UN 2814 sample is being shipped

Send MSF-Logistique an e-mail worded as follows:

"Pre-advice of UN 2814 sample shipping by AIR"

- 6 Shipper
- 7 Consignee
- 8 Type of sample
- 9 AWB number

STEP 8: SHIPMENT TRACKING

- 1 As soon as your e-mail is received, MSF-Logistique informs the destination laboratory of the sample's arrival (normally already notified by the desk).
 - 2 MSF-Logistique can track your shipment online with the AWB number, and informs you when the sample has safely arrived.
- 60)

EXAMPLES OF CATEGORY A INFECTIOUS SUBSTANCES

Excerpt from the IATA “Dangerous Goods Regulations,” 46th edition
(Chapter 3 Classification 3.6.2 Division 6.2 – Infectious substances)

Notes:

1. The following table is not exhaustive. Infectious substances, including new or emerging pathogens, which do not appear in the table but which meet the same criteria must be assigned to category A. In addition, if there is doubt as to whether or not a substance meets the criteria, it must be included in category A.
2. In the following table, micro organisms in italics are bacteria, mycoplasma, rickettsia or fungi.

<i>UN 2814 “Infectious substance affecting humans”</i>
<i>Bacillus anthracis</i> (cultures only)
<i>Brucella abortus</i> (cultures only)
<i>Brucella melitensis</i> (cultures only)
<i>Brucella suis</i> (cultures only)
<i>Burkholderia mallei</i> – <i>Pseudomonas mallei</i> – Morve (cultures only)
<i>Burkholderia pseudomallei</i> – <i>Pseudomonas pseudomallei</i> (cultures only)
<i>Chlamydia psittaci</i> (cultures only)
<i>Clostridium botulinum</i> (cultures only)
<i>Coccidioides immitis</i> (cultures only)
<i>Coxiella burnetii</i> (cultures only)
Crimean Congo hemorrhagic fever virus
Dengue virus (cultures only)
Eastern equine encephalitis virus (cultures only)
<i>Escherichia coli</i> , verotoxinogenic (cultures only)
Ebola virus
Flexal virus
<i>Francisella tularensis</i> (cultures only)
Guanarito virus
Hantaan virus
Hantavirus causing hantavirus pulmonary syndrome
Hendra virus
Hepatitis B virus (cultures only)
Herpes B virus (cultures only)
Human immunodeficiency virus (cultures only)
Highly pathogenic avian influenza virus (cultures only)
Japanese encephalitis virus (cultures only)
Junin virus
Kyasanur Forest disease virus
Lassa virus
Machupo virus
Marburg virus

Monkeypox virus
Mycobacterium tuberculosis (cultures only)
Nipah virus
Omsk hemorrhagic fever virus
Poliovirus (cultures only)
Rabies virus
Rickettsia prowazekii (cultures only)
Rickettsia rickettsii (cultures only)
Rift Valley fever virus
Russian spring-summer encephalitis virus (cultures only)
Sabia virus
Shigella dysenteriae type 1 (cultures only)
Tick-borne encephalitis virus (cultures only)
Variola virus
Venezuelan equine encephalitis virus (cultures only)
West Nile virus (cultures only)
Yellow fever virus (cultures only)
Yersinia pestis (cultures only)

Chapter 5

Tracking registers of shipped samples

Chapter 6

Reference laboratories

Contact information

Anthrax

Institut Pasteur Paris - CNR Charbon

Dr Michèle Mock

Unité des toxines et pathogénie bactérienne

25-28, rue du Docteur Roux

75724 PARIS CEDEX 15

Tel: 01 45 68 83 12 or 01 40 61 30 35

Fax: 01 45 68 89 54

e-mail: cnr.charbon@pasteur.fr

Burkitt's lymphoma

GFAOP - Institut Gustave Roussy

Pr Jean Lemerle

39, rue Camille Desmoulins

94805 Villejuif

Office: Mme Danielle Hugon - Tel: 01 42 11 52 52

e-mail: dhugon@igr.fr

Cholera

Institut Pasteur Paris

Dr Marie-Laure Quilici

CNR vibrions et Choléra

25-28 rue du Dr Roux

75724 Paris Cedex 15/ France

Tel: 01 45 68 82 20 or 82 21 or 01 40 61 33 85

Fax: 01 45 68 82 23

e-mail: quilici@pasteur.fr or vibrions@pasteur.fr

Diphtheria

Institut Pasteur Paris

Unité de Biodiversité des bactéries pathogènes émergentes

25-28, rue du Docteur Roux

75724 PARIS CEDEX 15

Tel: 01 45 68 83 36

Fax: 01 40 61 36 11

e-mail: coryne@pasteur.fr

Hepatitis E

Hôpital d'instruction des armées du Val de Grâce

Dr Elisabeth Nicand

CNR Virus des hépatites à transmission entérique

Laboratoire de Biologie Clinique

74, Bd du Port Royal

75230 Paris cedex 5/ France

Tel 01 40 51 46 35 (sec) 46 30 (direct)

Fax: 01 40 51 42 98

e-mail: en.biol-vdg@filnet.fr

Influenza

Institut Pasteur Paris

Docteur Sylvie Van Der Werf

CNR virus Influenzae / Unité de génétique moléculaire des virus respiratoires

25-28 rue du Dr Roux

75724 Paris Cedex 15/ France

Tel: 01 45 68 87 35 et 01 40 61 33 54

e-mail: grippe@pasteur.fr

Leptospirosis

Institut Pasteur Paris

Pr Guy Baranton

CNR Leptospirose

Laboratoire des spirochètes

25-28 rue du Dr Roux

75724 Paris Cedex 15/ France

Tel 01 45 68 83 37 or 83 67

Fax: 01 40 61 30 01

e-mail: spiroc@pasteur.fr

Measles

Laboratoire National de Santé

Pr. Claude Muller

Centre OMS européen de référence pour la rougeole et la rubéole

Institut d'immunologie

20 rue Auguste Lumière

Boite postale 1102

L- 1011 Luxembourg

Tel: 00 35 249 06 04

Fax: 00 35 249 06 86

e-mail: claudemuller@LSN.ETAT.LU

Meningitis

Norwegian Institute of Public Health

Dr Dominique A. Caugant

Folkehelsa

Geitmyrsvein 75

NO-0403 OSLO / Norvège

Fax: 00.47.22.04.25.18

e-mail: dominique.caugant@fhi.no

Tel: 00.47.22.04.23.11

Osteomyelitis

Check with the Medical Department

Pertussis

Institut Pasteur - CNR coqueluche et autres bordetelloses

Docteur Nicole Guiso

Unité de la prévention et des thérapies moléculaires des maladies humaines

25/28 rue du Dr Roux

75724 Paris Cedex 15 / France

Tel 01 45 68 80 05; 01 45 68 83 34

e-mail: cnr-bordetella-coqueluche@pasteur.fr

Plague

Institut Pasteur - CNR peste et autres yersinioses

Dr Elisabeth Carniel

Unité de recherche Yersinia

25/28 rue du Dr Roux

75724 Paris Cedex 15 / France

Tel: 01 45 68 83 26 or 01 45 68 83 27

Fax: 01 40 61 30 01

e-mail: cnr.yersinia@pasteur.fr

Poliomyelitis

CHU de Dijon - CNR virus entériques

Professeur Pierre Pothier

Laboratoire de Virologie

1, boulevard Jeanne d'Arc

BP 1542

21079 Dijon cedex / France

Tel: 03 80 29 34 37

Fax: 03 80 29 36 04

e-mail: Pierre.Pothier@u-bourgogne.fr

Poxvirus

Institut Pasteur Paris

Dr Jean Claude Manuguerra

CIBU (cellule intervention biologique urgence)

25-28 rue du Dr Roux

75724 Paris Cedex 15/ France

Tel: Jean Claude Manuguerra: 01 40 61 33 54 or Ana Maria Burguière: 01 45 68 84 17

e-mail: cibu@pasteur.fr or jmanugu@pasteur.fr or amburgui@pasteur.fr

Salmonellosis and Typhoid

Institut Pasteur Paris

Professeur Patrick Grimont

CNR Salmonelles

25-28 rue du Dr Roux

75724 Paris Cedex 15/ France

Tel: 01 45 68 83 39

Fax: 01 45 68 88 37

e-mail: salmonella@pasteur.fr or pgrimont@pasteur.fr

Shigella

Institut Pasteur Paris

Dr François-Xavier Weill

CNR Escherichia coli et Shigelles

Unité Biodiversité des bactéries pathogènes émergentes

25-28 rue du Dr Roux

75724 Paris Cedex 15/ France

Tel: 01 45 68 83 40 or 01 45 68 87 39

Fax: 01 45 68 88 37

e-mail: colishig@pasteur.fr

Tuberculosis

Institute of Tropical Medicine

Anandi MARTIN

Mycobacteriology Unit

Nationalestraat, 155, 2000 Antwerp, BELGIUM

Tel: +32 (0)3 247 63 34

Fax: +32 (0)3 247 63 33

e-mail: amartin@itg.be

Typhus

Faculté de médecine - Unité des Rickettsies - UMR 6020

Pr Didier Raoult

Centre collaborateur OMS - Référence et recherche sur les rickettsioses

27, boulevard Jean Moulin

13385 Marseille Cedex 5 / France

Office tel: 04 91 32 43 75

Fax: 04 91 38 77 72

e-mail: Didier.Raoult@medecine.univ-mrs.fr

Viral hemorrhagic fever

Institut Pasteur Lyon

Dr Hervé Zeller

CNR Unité des fièvres hémorragiques virales

21 avenue Tony-Garnier

69 365 Lyon Cedex / France

Tel: 04 37 28 24 21 or 04 37 28 24

Fax: 04 37 28 24 51

e-mail: zeller@cervi-lyon.inserm.fr

Bernhard Nocht Institut fuer Tropenmedizin

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Bernhard Nocht Stasse 74

20359 Hamburg

Tel 49 / 40 428 18 460

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