REPUBLIC OF LEBANON
MINISTRY OF PUBLIC HEALTH
Epidemiology Surveillance Program

Notifiable Communicable Diseases Surveillance Guideline

2015[b]

ممول من الاتحاد الأوروبي
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طبع هذا الدليل بدعم من الاتحاد الأوروبي ومنظمة الصحة العالمية
بالشراكة مع مفوضية الأمم المتحدة العليا لشؤون اللاجئين وذلك في إطار مشروع بإدارة وزارة الصحة العامة.
إن وزارة الصحة العامة هي الجهة الوحيدة المسؤولة عن محتوى هذا الدليل ولا يمكن اعتباره بأي
حال من الأحوال على أنه يعكس وجهة نظر الاتحاد الأوروبي.

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This guideline was prepared by the Epidemiology Surveillance Program,with the contribution of the Communicable Diseases Department for the sections related to response, and under the supervision of the Director General of the Ministry of Public Health.

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This guideline is available on the website of the Ministry of Public Health:
www.moph.gov.lb - (→ prevention → surveillance)

Reference: MOPH circulars

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المقدمة

قامت الحكومة اللبنانية في العام 1957، باصدار القانون المتعلق بالامراض المعدية في لبنان. بناء عليه، توجب على الاطباء العاملين في لبنان ابلاغ السلطات الصحية عن عدد من الامراض الانتقالية التي تشكل خطرا على الصحة العامة والمجتمع.

وقامت وزارة الصحة العامة في العام 1998 باصدار الدليل الوطني للترصد الوبائي ومكافحة الامراض المعدية.

منذ ذلك الحين، اجريت عدة تعديلات على لائحة الامراض الانتقالية الواجب الابلاغ عنها. نذكر منها الجمرة الخبيثة (Anthrax)، الحميات النزفية، فيروسات النفلونزا المستجدة، الجدري (Smallpox)، فيروس "تي" الليمفاوي البشري (HTLV-1)، داء الفيالقة (Legionellosis)... كما تم اضافة "الاحداث غير العادية وغير المتوقعة" على اللائحة.

اما اليوم، تقوم وزارة الصحة العامة بتجديد الدليل الوطني لترصد الامراض الانتقالية ومكافحتها.

عند قراءة هذا الدليل، سيتعرف القارئ على الامراض الانتقالية المستهدفة: العامل المسبب للمرض، المرض وخصائصه، الطرق المتبعة لترصد هذه الامراض، إضافة الى سبل مكافحتها والوقاية منها.

نشكر جميع العاملين في القطاع الصحي من اصحاب المهن الطبية والطبية المساعدة، والمستشفيات، والمراكز الصحية، والمستوصفات، والمختبرات التي تلتزم بالابلاغ عن الامراض الانتقالية لوزارة الصحة العامة.

كما ننوه بمن قام باعداد هذا الدليل من قبل برنامج الترصد الوبائي ودائرة مكافحة الامراض الانتقالية، وطباعته من قبل منظمة الصحة العالمية بدعم من الاتحاد الاوروبي بالشراكة مع مفوضية الامم المتحدة العليا لشؤون اللاجئين.

مدير عام وزارة الصحة العامة

الدكتور وليد عمّار

Contents

Principles of Communicable Disease Surveillance

1. Definition

Surveillance system is the ongoing, continuous and systematic process of collection of data related to health events or risks, collation, verification, analysis and interpretation and dissemination to those who need to know to reduce mortality and morbidity and improve the health status of the population.

Surveillance is a public health function.

2. Objectives of surveillance system

Communicable diseases surveillance system serves two main objectives:

- Measure disease burden and describe the characteristics. This includes: a) Measure incidence, prevalence, mortality rates and case fatality...; b) Describe event/disease by time, place and person; c) Monitor trends; d) Identify high risk populations or areas; e) Identify risk factors; f) Evaluate specific diseases control programs
- Detect alerts and outbreaks. The detection of an outbreak gives an opportunity to investigate, find etiologies and implement corrective measures, thus aiming to reduce cases and prevent later outbreaks. Early warning and response system refers to the outbreak detection at early stages; when timely corrective measures can prevent additional new cases and stop the natural evolution of the outbreak.

3. Components of surveillance system

Communicable diseases surveillance system can be described through 5 components.

Figure 1: Components of surveillance system

Component 1:	Target events and diseases
Component 2:	Structure
Component 3:	Core functions
Component 4:	Support functions
Component 5:	Attributes

3.1 Target events/diseases

3.1.1 Prioritized events

Target events or diseases are selected based on prioritization. Prioritization is based on the following criteria: disease burden, case fatality, potential epidemic, potential to have control measures, national / regional / international situation, population perception…

3.1.2 Objective of control and objective of surveillance

For each selected disease/event, it is necessary to define:

- Objective of its control: control, elimination or eradication
- Objective of its surveillance.

Control aims to reduce mortality and morbidity. Elimination aims to prevent outbreaks and prevent the indigenous transmission of the infectious agent; or to keep the incidence below a specific threshold. Eradication aims to subtract the infectious agent from the global earth.

For a disease targeted for elimination or eradication, the objective of surveillance is to detect any suspected case, investigate it and prevent the transmission. For a disease targeted for control, the objective of surveillance is to describe disease profile in order to guide needed corrective measures.

3.2 Structure

The structure refers to documents, actors and information.

3.2.1 Legislation and regulations

Official surveillance system relies on official laws. The Lebanese Law related to communicable diseases issued on the 31st December 1957 requests from physicians and healthcare facilities to report to the MOPH selected communicable diseases. On the other hand, the MOPH issues continuously decisions, circulars, and memos that specifies technical aspects of the national surveillance system (case definitions, reporting forms, investigation forms…).

3.2.2 Case definition

Setting the case definition allows a common understanding by professionals of notifiable diseases/events.

Case definition can be:

- Disease-based specifying the agent (ex: measles, poliomyelitis, hepatitis A)
- Or syndrome-based specifying group of clinical signs (ex: febrile

rash, acute flaccid paralysis, acute jaundice...)
Case definition is presented with multi-level format where case can be classified as confirmed, probable or suspected.

3.2.3 Actors and stakeholders

They are the professionals who run the surveillance system as data providers, data processors and data users.
The data sources include health professionals and health facilities. In classical surveillance, the system is universal involving all of them.
The data processors are those who receive the information from the data providers and process it into information. They belong to the Ministry of Public Health.
The end data users are those who use the generated information in order to take actions. They are professionals, decision makers and the population.

3.2.4 Units, data and information

Units refer to the statistical unit used in the surveillance. In classical surveillance system, the unit is any reported person with disease.
Data is the collected values of variables included in the reporting form or investigation form.
Data is archived in database, cleaned and analyzed in order to generate output information. The information regroups reports, tables, curves, graphs and maps…

3.3 Core functions

Core functions regroup activities conducted by actors in order to run the surveillance system.

Figure 2: Core functions of surveillance system

Case detection	By clinicians - Data sources
Case registration:	By health professionals in medical records or registers - Data sources
Case notification	By physicians to MOPH, immediately or weekly - Data sources
Case confirmation	By laboratory to confirm cases or discard them – Clinical or reference labs
Case investigation	By surveillance officers to collect additional data and samples
Data analysis	By surveillance officers to transform data into information
Information Communication	By surveillance officers: feed-back to data sources, forward to higher level, and dissemination to professionals and public

3.3.1 Case detection

Case detection is the activity to identify cases by the data providers. Detection can be passive or active. In passive system, detection is done through the routine activity of the data sources. In active system, detection is done through active search for the cases.

3.3.2 Case registration

Case registration is the activity to document cases by the data providers. Registration can be done in specific records or in logbooks/registries.

3.3.3 Case notification

Case notification is the activity to transmit the information on the case from the data providers to the data processors.
Notification can be done immediately (for diseases that need immediate investigation) or weekly. It can be done orally, or written and transmitted using classical means (mail, fax) or electronically.

3.3.4 Case confirmation

Case confirmation relies on laboratory testing using confirmatory tests. It guides to classify the case. It is done in clinical or in reference laboratories. It can be requested by the data providers or by the data processors.

3.3.5 Case investigation

Case investigation aims to collect additional data and samples related to the cases. The investigation includes laboratory and epidemiological investigation. It is conducted by the data processors.

3.3.6 Data analysis

Data analysis processes the collected data into information. It is done by the data processors.
The output information regroups:

- Descriptive analysis with measure of morbidity, mortality and events description by time, place and person
- Identification of risk factors, high-risk areas or populations
- Identification of etiologies and infectious diseases characteristics
- Generation of alert using epidemic thresholds
- Analysis of time series and computing future expected figures
- Analysis of place and mapping allowing spatial representation and spatial analysis…
- Analysis of surveillance attributes.

3.3.7 Information communication

Information communication includes: a) Forwarding to decision makers; b) Feed-backing to data providers and data processors; and c) Disseminating to professionals and to the public.

3.4 Support functions

Support functions of surveillance aims to enhance the operations related to core functions.

Support functions include:

- Edition of guidelines and standard operating procedures
- Secure resources (human, financial, information, equipment...)
- Organize training and supervision
- Ensure proper coordination
- Ensure laboratory support
- Use of information and communication technology
- Use of geographical information system
- Monitor and evaluate…

3.5 Attributes of surveillance system

Surveillance attributes refer to evaluation & monitoring of surveillance system. They include qualitative and quantitative attributes.

Table 1: Attributes of surveillance system

Qualitative	
Simplicity	It refers to both the structure and the ease of operation.
Flexibility	Ability to adapt to changing information needs or operating conditions with little additional time, personnel, or funds.
Acceptability	It reflects the willingness of persons and organizations to participate in the surveillance system.
Representativeness	Ability to describe occurrence of a health-related event over time & its distribution in the population by place/person.
Stability	It refers to the reliability & availability of the public health surveillance system.
Usefulness	Contribution to prevention & control of adverse health events, including improved understanding of public health implications, & contribution to performance measures.
Quantitative	
Data quality	It reflects the completeness and validity of the data recorded in the public health surveillance system.

Timeliness	It reflects the speed between steps in a public health surveillance system.
Sensitivity	1) It refers to the proportion of cases of a disease (or other health-related event) detected by the surveillance system 2) Or it refers to the ability to detect outbreaks, including the ability to monitor changes in number of cases over time.
Predictive value positive	It is the proportion of reported cases that actually have the health-related event under surveillance.

4. Indicator based surveillance & Event based surveillance

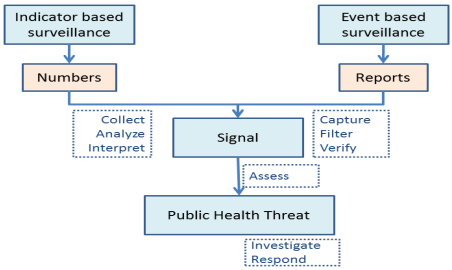
The classical surveillance system is an indicator-based surveillance (IBS) system. Data is collected from identified sources, using specific format and channel, and stored in database. Then data is analyzed and interpreted. Data is also compared with historical data and defined thresholds; any deviation constitutes a signal.

On the other hand, the event-based surveillance (EBS) system collects data from any report, including rumors. Reports are captured from various sources, filtered and verified. Verified report constitutes a signal.

Health signal is verified and assessed in terms of likelihood for occurrence and impact (risk assessment). A signal with significant risk is a public health threat.

IBS and IBS are complementary approaches to detect alert and outbreak in a community. Both of them are part of early warning and response system (EWAR), defined as the function of an integrated surveillance system aiming to detect any abnormal communicable diseases phenomenon and to provide an adequate and timely response.

Figure 3: Schematic representation of early warning and response



5. International Health Regulations (IHR)

5.1 Generalities

The World Health Assembly adopted the revised "International Health Regulations" in 2005, under the resolution WHO 58.3.
The purpose of the IHR is to "To prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic".
The revised IHR introduce the concepts of containment at source instead of control of borders, expand health security to all threats, and recommends adapted response instead of preset measures.
The revised IHR encourage countries to enhance national capacity in early detection of unusual disease events by effective national surveillance, and in ensuring response system at all levels.

5.2 Public Health Event of International Concern

Public Health Event of International Concern (PHEIC) refers to "an extraordinary event which constitutes a public health risk to other States through the international spread of disease and potentially requires a coordinated international response".
At country level, any detected event that may constitute a public health emergency of international concern (potential PHEIC) is to be notified to WHO within 24 hours of national assessment.
At WHO level, the WHO/DG determines whether an event constitutes a PHEIC and issues recommended measures.
Also the IHR recommends the use of a specific algorithm for event assessment (Annex 11):

- Q0: Is the event related to polio (wild-type polio virus), smallpox, human influenza new subtype, SARS? If yes, the event is notified to WHO.
- Q1: Is the event serious? Has the event present impact, or potential impact? Is there need for external assistance?
- Q2: Is the event unusual or unexpected?
- Q3: Is the event likely to spread internationally?
- Q4: Is the event likely to result in restrictions to international travel and trade?

If there is at least to positive answers for Q1-Q4, the country notifies the event to WHO.

PART 1:

Immediately Notifiable Communicable Diseases

Acute Flaccid Paralysis (AFP)

Acute Flaccid Paralysis surveillance is adopted to detect any case of acute poliomyelitis. Acute Flaccid Paralysis includes any paralysis, paresis, or hypotonia, even transient, whatever was the medical diagnosis. AFP can be observed in acute poliomyeliltis, Guillain Barré Syndrome, transverse myelitis, encephalitis, neuritis, myositis...

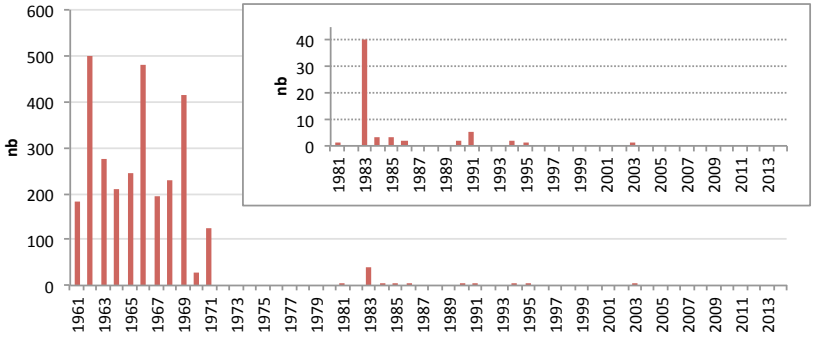
Acute Poliomyelitis	
Agent	Poliovirus, genus Enterovirus, with 3 types: 1, 2 and 3
Incubation	7-14 days (3-35 days)
Period of communicability	- 7-10 days before onset, up to 3-6 weeks after onset - Virus present in throat 36 hours after infection, up to 1 week - Virus present in feces 72 hours after infection, up to 3-6 weeks
Reservoir	Humans
Modes of transmission	- Person-to-person: fecal-oral route, and rarely pharyngeal - Rarely through water and food
Clinical presentation	- 90-95% asymptomatic infection - 4-8% mild illness (influenza-like illness or gastro-intestintal illness) - 1-2% aseptic meningitis - <1% paralytic poliomyeltis
Worldwide	- Endemic countries in 2015: Pakistan and Afghanistan - In May 2014, WHO declared polio as public health event of international concern.
Lebanon	- Last local cases in 1994 - Last imported case in 2003 - Lebanon declared “polio-free” in 2002
Control objective	Worldwide eradication initiative (in 1988). Since 1999, the poliovirus type 2 has been eradicated worldwide.

Surveillance and Investigation	
Surveillance approach	Syndromic-based surveillance: acute flaccid paralysis
Collect data about case	Clinical findings, medical diagnosis, CSF/ EMG results, vaccination status, travel history, follow-up at 60 days for residual weakness
Collect specimen from case	2 stool specimens from case within 14 days from paralysis onset, with at least 24 hours apart
Collect data about contacts	If polio or highly suspicion of polio: rapid survey on vaccination status (OPV3/IPV3 coverage) at the community level
Collect specimen from contacts	- If delay in specimens collection from case or highly suspicion of polio: stool specimens are collected from at least 3 contacts among children (preferably under 5 years). - If polio case: stool specimens are collected from siblings, neighbors and inpatients
Test	Virological culture
Laboratories	WHO accredited laboratories: Vacsera in Egypt and National Jordanian laboratory
Outbreak level	At least 1 confirmed case of wild polio or circulating vaccine-derived polio
Notification to WHO	- To notify to WHO on confirmed and compatible cases - Routine weekly dataset sharing
Control	
Primary prevention	Vaccination: 3 doses under 1 year, and boosters > 1 year
Post-exposure prevention	Vaccination
Case management	Symptomatic treatment

Isolation	Enteric precautions
Contact prevention	Vaccination
Contact quarantine	None
Mass prevention	Vaccination
Poliomyelitis case definition (MOPH circular no. 34 dated on the 5th May 2012)	
Confirmed case	A suspected case with isolation of wild poliovirus in stool specimens collected from the suspected case or from a close contact of the suspected case.
Suspected case	A suspected case is defined as: - A child under 15 years of age presenting with acute flaccid paralysis AFP whatever was the medical diagnosis - Or any person at any age with paralytic illness if poliomyelitis is suspected by the physician.
Forms	
Reporting	Standard reporting form
Investigation	For case, contacts and neighborhood: specific polio investigation forms (MOPH circular no. 100 dated on the 21st June 2007) - Form (1): case reporting & investigation - Form (2): case investigation - Form (3): specimen collection - Form (4): rapid coverage survey - Form (5): follow up at 60 days - Form (6): final classification.

National figures

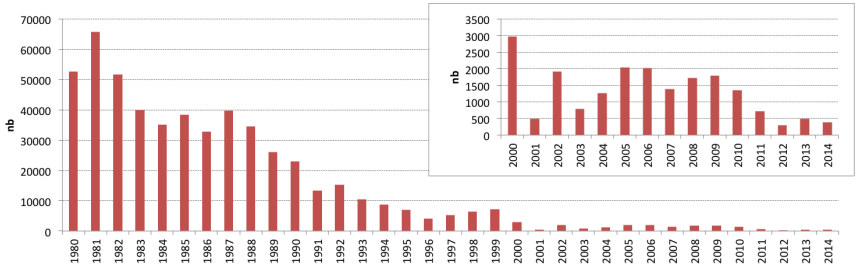
Figure 1: Reported acute poliomyelitis cases in Lebanon, 1961-2014 (Source: MOPH)



- The last local cases were reported in 1994 (one in the North and one in the South).
- In 1995, an imported case from Africa was reported (the child has the onset in Africa and came to Lebanon for case management).
- In 2003, a confirmed polio was reported in the North. The case did not travel. The virus was identified as from Indian source. Two other persons were infected by the virus (1 sibling and 1 cousin). Two national campaigns were conducted. No additional cases were found despite active search.

International figures

Figure 2: Reported acute poliomyelitits cases in the world, 1985-2014 (Source: WHO)



Anthrax

Anthrax	
Agent	- Bacteria: Bacillus anthracis, Gram-positive, aerobic, rod-shaped, encapsulated, spore forming, and non-motile - Can be used in biological warfare
Incubation	1-7 days (up to 60 days for inhalation form)
Period of communicability	- Person-to-person transmission rare: direct contact with skin lesions (cutaneous form) - Contaminated articles & soil remain infective for several years
Reservoir	- Animals (herbivores both livestock and wildlife) who shed the bacilli in terminal hemorrhages or blood at death - Soil and environment where spores may remain viable for years - Dried or processed skins and hides of infected animals, that may harbor spores for years
Modes of transmission	- Cutaneous form: contact with tissues, hair, wool, hides, products of infected animals; contact with soil containing spores or contaminated with bone meal; possible flies bite that fed on infected animals - Inhalation form: inhalation of spore-laden dust: in industries (tanning hides, processing wool or bone products…); accidental inhalation in laboratory; intentional release of spores using aerosol devices including mail-items... - Digestive form: ingestion of contaminated undercooked meat - Injection form: injection of contaminated heroin...

Clinical presentation	- Cutaneous form (95% of cases) on exposed skin: evolutive lesions from itchiness, to papular, vesicular then eschar with or without surrounding redness with extensive oedema. Untreated lesions may progress to regional lymph nodes and/or to septicemia. Case fatality is 5-20%. - Inhalation form (rare): mild respiratory infection that evolves in 3-6 days to acute respiratory distress. At chest XR, a mediastinal widening (with or without pleural effusion) is observed. Meningitis may occur. Case fatality is almost 100% with delayed or no treatment. - Intestinal form (rare): fever with intestinal symptoms (abdominal pain and diarrhea). Case fatality rate is 25-75%. - Oropharyngeal form: a painless mucosal lesion in the oral cavity or oropharynx, with cervical adenopathy, edema, pharyngitis, fever, and possibly septicemia - Injection form: similar to cutaneous form, but there may be infection deep under the skin or in the muscle. Complications: septicemia, meningitis, death.
Worldwide	- Worldwide zoonosis, with accidental infection for humans - Intentional release: USA in 2001 - Accidental release: Ex-URSS (Sverdlovsk) in 1979 - Injectable form: in Europe since 2000
Lebanon	Intestinal form observed in the 1960s
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach

Collect data about case	Clinical presentation, complications, occupation, exposure to infected animals, consumption of undercooked meat, intra-venous drug-user, intentional or accidental release, contaminated mail...
Collect specimen from case	Blood, clotted blood, skin, lesions, respiratory specimens (sputum, pleural fluid, lung aspirate…), CSF
Collect data about contacts	Similar cases among contacts, identification of exposed persons to contaminated items...
Collect specimen from contacts	No
Test	- Demonstration of Bacillus anthracis using polychrome methylene blue - Isolation of Bacillus anthracis in clinical specimens
Laboratories	Supranational reference laboratories
Outbreak level	At least 1 confirmed case
Notification to WHO	Yes if intentional release and /or injectable form and /or inhalation form
Control	
Primary prevention	Vaccination of high risk persons, laboratory safety, occupation safety, prevention of anthrax in animals...
Post-exposure prevention	- Antibiotics (fluoroquinolones) - Vaccination
Case management	- Antibiotics (Penicillin, tetracyclines, erythromycin and chloramphenicol) - Supportive treatment
Isolation	- Standard precautions for cutaneous and inhalational anthrax - Disinfection of discharges from lesions and soiled articles
Contact prevention	Contacts' identification & follow up

Anthrax case definition (MOPH circular no. 98 dated on the 5th May 2015)	
Confirmed case	A case with one of the following laboratory confirmation: - Culture and identification of Bacillus anthracis from clinical specimens in reference laboratory - Detection of Bacillus anthracis by nucleic acid testing (PCR) - Demonstration of Bacillus anthracis antigens in clinical specimen by immunofluorescence - Seroconversion of antibodies to Bacillus anthracis on paired specimens
Probable case	- A suspected case with demonstration of Bacillus anthracis by microscopic examination of stained smears - Or a suspected case with positive ELISA test or RedLine Alert test or lethal factor by mass spectrometry in clinical specimen - Or a suspected case with epidemiological-linked with a confirmed case - Or a suspected case with documented anthrax environmental exposure

Suspected case	Suspected case is a case with clinical presentation and a history of exposure. The clinical presentation includes one of the following: - Cutaneous / Injection form: papular or vesicular lesion, or depressed black eschar with surrounding oedema - Pulmonary form: fever with acute respiratory distress or radiological evidence of mediastinal widening - Gastro-intestinal form: fever with severe abdominal pain or diarrhea - Meningitis form: fever with convulsions, loss of consciousness or meningeal signs. The exposure history includes any exposure to animal, common source, or contaminated food /drinking water.
Forms	
Reporting	Standard reporting form
Investigation	Anthrax investigation form (MOPH circular no. 2 dated on the 7th January 2015)
National figures	
Gastro-intestinal cases were reported from 1960-1974. Source: Z. A. Kanafani, A. Ghossain, S. S. Kanj. Endemic gastrointestinal anthrax in 1960s Lebanon: Clinical manifestations and surgical findings. EID, May 2003; 9 (5): 520-525.	

Cholera

Cholera	
Agent	- Bacteria: Vibrio cholera, serogroup O1 (biotype classical or El Tor, subtype Ogawa, Inaba or hikojima), or serogroup O139 - Enterotoxin producer
Incubation	2-5 days (few hours to 5 days)
Period of communicability	As long as the bacteria is excreted in feces, up to few days after recovery
Reservoir	Humans, brackish water and estuaries
Modes of transmission	- Consumption of contaminated water - Consumption of contaminated food: by water, by human feces, by soiled hands, raw or undercooked seafood - Person-to-person transmission: fecal-oral route
Clinical presentation	- Acute abundant watery diarrhea (rice-water stool) - Asymptomatic infection is common. - Complications: dehydration and death. Case fatality can exceed 50% if untreated and <1% if treated.
Worldwide	Worldwide. The 7th pandemic started since 1961 with O1 El Tor biotype.
Lebanon	Last outbreak in 1993
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease (cholera) and syndromic (acute watery diarrhea)
Collect data about case	Complications, water exposure, food exposure, travel history...
Collect specimen from case	Stool specimens or rectal swab (in AMIES or Cary Blair media)
Collect data about contacts	- Search for cases among contacts - Interview of meal companions for the 5 days prior to onset

Collect specimen from contacts	Stool specimen or rectal swab from household members and close contacts
Test	Coproculture, and identification of the serogroup
Laboratories	- Clinical laboratories for isolation - RHUH for serogroup identification
Outbreak level	At least 1 confirmed case
Notification to WHO	Yes
Control	
Primary prevention	- Water & food safety, hand washing, adequate sanitation, fly control - Cholera vaccine in specific settings
Case management	- Adequate rehydration - For severe cases antibiotherapy (doxycycline, tetracycline)
Isolation	- Contact & enteric precautions - Disinfection of patient belongings
Contact quarantine	Identification & surveillance of contacts for five days from last contact
Mass prevention	Water & food safety, vaccine, awareness
Cholera case definition (MOPH circular no. 99 dated on the 5th May 2015)	
Confirmed case	Isolation of Vibrio cholerae O1 or O139 from stools in any patient with diarrhea
Suspected case	- In area where the disease is not known to be present: severe dehydration or death from acute watery diarrhea - In area where cholera is endemic: acute watery diarrhea with or without vomiting - In area where there is a cholera epidemic: acute watery diarrhea, with or without vomiting in any patient
Forms	
Reporting	Standard reporting form
Investigation	Cholera investigation form (circular no. 151 dated on the 15th October 2007)

National figures

Last outbreak in 1993

International figures

Figure 1: Reported cases of cholera, worldwide, 2000-2014 (Source: WHO, WER no. 40, 2015, 90, 517-544)

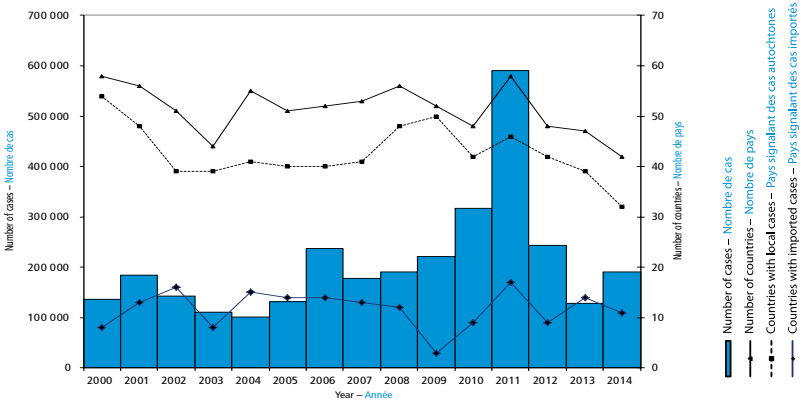
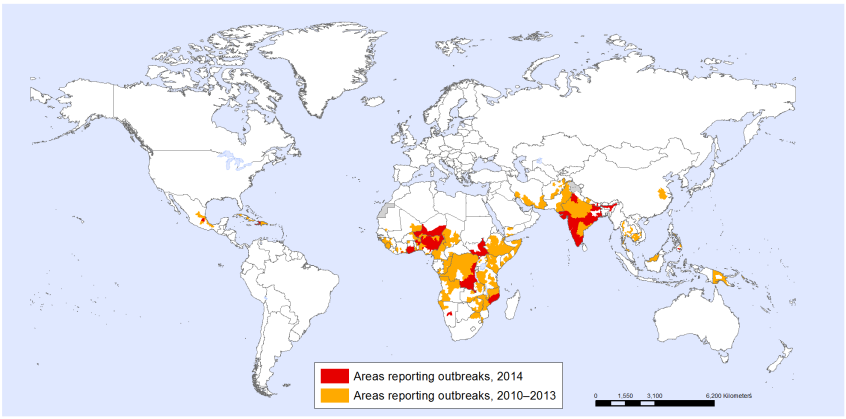


Figure 2: Distribution of cholera cases, worldwide, 2010-2014 (Source: WHO)



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Data Source: World Health Organization
Map Production: Health Statistics and Information Systems (HSI)
World Health Organization

World Health Organization

Diphtheria

Diphtheria	
Agent	- Bacteria: Corynebacterium diphtheria (4 biotypes: gravis, mitis, intermedius and belfani) - Toxin producer (DTX)
Incubation	2-4 days (1-10 days)
Period of communicability	Usually 2 weeks
Reservoir	Humans
Modes of transmission	- Person-to person via droplets (respiratory secretions), skin lesions or fomites; and rarely through indirect contact - Raw milk can serve as vehicle.
Clinical presentation	- Anterior nasal, pharyngeal and tonsillar (pseudo-membranes), laryngeal (stridor) forms - Cutaneous diphtheria (vesicles and later ulcers) - May be asymptomatic - Main complications: myocarditis, neuropathy from mild weakness to total paralysis
Worldwide	Worldwide. Major outbreaks: URSS and Mongolia (1990), Ecuador (1993-1994)
Lebanon	Last local case in 2002
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease-based approach
Collect data about case	Clinical findings (signs), complications, outcomes, vaccination status...

Collect specimen from case	- Nose/ throat swab - Skin swab for cutaneous form
Collect data about contacts	- Search for similar cases among contacts - Vaccination status for close contacts - Search of food handler or KG/school staff...
Collect specimen from contacts	Nose/throat swab from close contacts: search for carrier
Test	- Bacteriological culture in special media (blood and tellurite agar) - If positive: identify biotype and toxigenicity (toxinproducing) by Elek test or PCR
Laboratories	RHUH
Outbreak level	At least 1 confirmed case
Notification to WHO	To notify to WHO if outbreak, case with travel history or case during humanitarian crisis
Control	
Primary prevention	Vaccination: three primary doses and booster at 18 months to 4 years, booster with an adult formulation at 11-18 years of age, then Td every 10 years
Case management	- Diphtheria antitoxin (sensitivity testing before administering the antitoxin) - Antibiotics: Procaine penicillin (IV), erythromycin or oral penicillin V
Isolation	- Contact and droplet precautions for 14 days while on antibiotherapy; or up to two negative cultures 24 hours apart at least 24 hours after cessation of antibiotherapy - Disinfection of the patient belongings

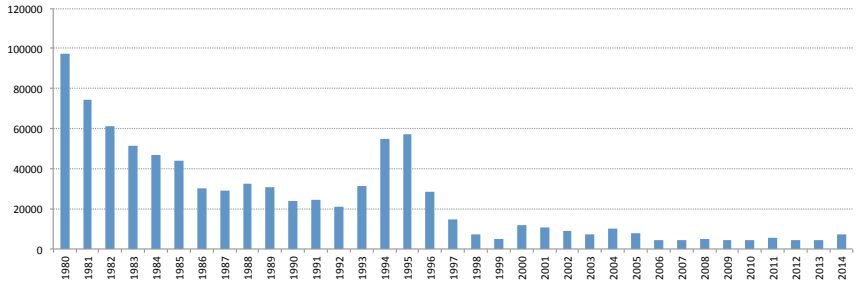
Contact prevention	- Single dose of benzathin penicillin or 7-10 days course of erythromycin - Previously immunized: booster dose if more than five years elapsed from the last booster - Unimmunized: a primary series should be initiated.
Contact quarantine	- Contacts' identification & surveillance for seven days - Those who are in contact with unimmunized children or food-handlers should be excluded from work.
Mass prevention	Vaccination
Diphtheria case definition (MOPH circular no. 107 dated on the 6th September 2006)	
Confirmed case	- Probable case confirmed by laboratory with of Corynebacterium diphteria isolation from a clinical specimen - Or probable case epidmiologically linked to a laboratory-confirmed case
Probable case	- Case presenting with laryngitis, pharyngitis or tonsillitis with presence of adherent membranes of tonsils or naso-pharynx
Carrier	Presence of Corynebacterium diphteria in nasopharynx with no symptoms
Forms	
Reporting	Standard reporting form
Investigation	- For case: diphtheria investigation form (MOPH circular no. 190 dated on the 2nd November 2007) - For contacts: diphtheria contacts investigation form (MOPH circular no. 192 dated on the 2nd November 2007)

National figures

The last confirmed diphtheria case was reported in 2002, in a Lebanese pupil in the North.

International figures

Figure 1: Reported diphtheria cases (nb) in the world, 1980-2014 (Source: WHO)



Food poisoning

Food poisoning	
Agents	Several agents: 1) Bacteria: - Bacillus Cereus, toxin producer, spore forming - Brucella - Clostridium botulinum, spore forming, toxin producer - Campylobacter jejuni and Campylobacter coli - Clostridium perfringes, spore-forming, toxin producer - Escherichia coli - Listeria monocytogenes - Salmonella Typhi/paratyphi - Non-Typhi Salmonella - Shigella dysenteriae, S. flexneri, S. boydii, S. sonnei - Staplyococcus aureus, toxin producer - Vibrio Cholera - Vibrio parahaemolyticus - Vibrio vulnificus - Yersinia enterocolitica… 2) Virus: - Enteric Adenovirus (40 & 41), coronavirus, rotavirus, parvovirus, calicivirus, astrovirus… - Poliovirus and enterovirus - Hepatitis A virus - Hepatitis E virus... 3) Parasites: - Entamoeba histolytica - Giardia intestinalis - Toxoplasma gondii - Trichinella spiralis...

	4) Natural toxins: - Scomboid fish poisoning (histamine poisoning): following the consumption of fish of the family Scombroidea or Scomberesocidae (tuna, mackerel, skipjack, bonito) containing high levels of free histamine, when fish undergoes bacterial decomposition after capture. - Paralytic shellfish poisoning: caused by the presence of saxitoxins and gonyautoxins in the shellfish (Alexandrium sp., and other dinoflagelates) - Tetrodotoxin poisoning (puffer fish poisoning): caused by the tetrodotoxin, non-protein neurotoxin concentrated in the skin and viscera of puffer fish, porcupine fish, ocean sunfish… - Mushroom toxins - Plant toxins… 5) Chemicals - Pesticides (organophosphates, antimony...) - Toxic metals (cadmium, copper, lead, mercury, tin...) - Polychlorinated biphenyls - Fluoride - Zinc - Nitrites (food preservatives) - Sodium hydroxide - Monosodium glutamate… The information below is related to Bacillus cereus, Clostridium botulinum, Clostridium perfringes, Staplycoccus aureus, Vibrio para-haemolyticus, Vibrio vulnificus, Yersinia enterocolitica, Adenovirus, Norovirus, Trichinella spiralis, Toxoplasma gondii, Tetrodotoxin poisoning, scombroid/histamine poisoning, Paralytic shellfish & organophosphates poisoning.

<table>
<tr><td></td><td>Other main agents were exposed in other sections: Brucella, Cholera, Coronavirus, Hepatitis A/E, Intestinal Infections, Meningitis, Poliomyelitis (AFP) and Typhoid Fever.</td></tr>
<tr><td>Incubation period</td><td>The incubation varies with the agent.
<table>
<tr><th>Agent</th><th>Incubation period</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Bacillus cereus</td><td>- Emetic: 1-5 hours
- Diarrheal: 8-16 hours</td></tr>
<tr><td>Clostridium botulinum</td><td>12-36 hours (several hours to 8 days)</td></tr>
<tr><td>Clostridium perfringes</td><td>8-24 hours</td></tr>
<tr><td>Staplyococcus aureus</td><td>2-6 hours</td></tr>
<tr><td>Vibrio parahaemolyticus</td><td>9-25 hours, up to 3 days</td></tr>
<tr><td>Vibrio vulnificus</td><td>12 hours-3 days</td></tr>
<tr><td>Yersinia enterocolitica</td><td>24-36 hours (1-11 days)</td></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>Adenovirus</td><td>3-10 days</td></tr>
<tr><td>Norovirus</td><td>24-48 hours (10-50 hours)</td></tr>
<tr><td colspan="2">Parasites</td></tr>
<tr><td>Trichinella spiralis</td><td>8-21 days (systemic)</td></tr>
<tr><td>Toxoplasma gondii</td><td>5-23 days</td></tr>
<tr><td colspan="2">Chemicals and toxins</td></tr>
<tr><td>Tetrodotoxin poisoning</td><td>From 10 min to 3 hours</td></tr>
<tr><td>Scombroid poisoning</td><td>Within few hours</td></tr>
<tr><td>Paralytic shellfish</td><td>Minutes to several hours</td></tr>
<tr><td>Organophosphates</td><td>Few minutes to few hours</td></tr>
</table></td></tr>
<tr><td>Period of communicability</td><td>Period of communicability varies with the agent.
<table>
<tr><th>Agent</th><th>Period of communicability</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Bacillus Cereus</td><td>No person-to-person transmission</td></tr>
</table></td></tr>
</table>

	<table><tr><td>Clostridium botulinum</td><td rowspan="4">No person-to-person transmission</td></tr><tr><td>Clostridium perfringes</td></tr><tr><td>Staplyococcus aureus</td></tr><tr><td>Vibrio vulnificus</td></tr><tr><td>Vibrio parahaemolyticus</td><td>Usually no person-to-person transmission</td></tr><tr><td>Yersinia enterocolitica</td><td>Bacteria excreted in feces for 2-3 weeks</td></tr><tr><td colspan="2">Virus</td></tr><tr><td>Adenovirus</td><td>During illness. Asymptomatic patient can shed virus in stool.</td></tr><tr><td>Norovirus</td><td>During illness up to 48 hours after diarrhea stops</td></tr><tr><td colspan="2">Parasites</td></tr><tr><td>Trichinella spiralis</td><td rowspan="2">No person-to-person transmission</td></tr><tr><td>Toxoplasma gondii</td></tr><tr><td colspan="2">Chemicals and toxins</td></tr><tr><td>Tetrodotoxin poisoning</td><td rowspan="4">No person-to-person transmission</td></tr><tr><td>Scombroid poisoning</td></tr><tr><td>Paralytic shellfish</td></tr><tr><td>Organophosphates</td></tr></table>
Reservoir	The reservoir vary with the agent. <table><tr><th>Agent</th><th>Reservoir</th></tr><tr><td colspan="2">Bacteria</td></tr><tr><td>Bacillus Cereus</td><td>Widely distributed in soil</td></tr><tr><td>Clostridium botulinum</td><td>Soil, marine, freshwater sediments, intestinal tracts of fishes, animals, birds, and insects</td></tr><tr><td>Clostridium perfringes</td><td>Soil, sewage, dust, feces of animals and humans, animal-origin feedstuffs</td></tr></table>

Staplyococcus aureus	Humans (skin, nose, throat)
Vibrio parahaemolyticus	Coastal seawater, estuarine brackish waters, marine fish and shellfish
Vibrio vulnificus	Coastal and estuarine waters
Yersinia enterocolitica	Animals (pigs...)
Virus	
Adenovirus	Humans
Norovirus (Norwalk-like virus)	Humans
Parasites	
Trichinella spiralis	Swine, dogs, cats, horses, bears, rats...
Toxoplasma gondii	- Cats and other felines - Intermediate hosts: sheep, goats, rodents, pigs, cattle, and birds
Chemicals and toxins	
Tetrodotoxin poisoning	Puffer fish, porcupine fish, ocean sunfish, species of newts & salamanders
Scombroid poisoning	Fish of the family Scombroidea or Scombere-socidae (tuna, mackerel, skipjack, bonito)
Paralytic shellfish	Shellfish (Alexandrium sp., and other dinoflag-elates)
Organophosphates	- Accidental: food sprayed with insecticides containing organo-phosphates - Intentional poisoning

<table>
<tr><td>Modes of transmission</td><td>The modes of transmission are mainly by consumption of contaminated food or toxic food.
<table>
<tr><th>Agent</th><th>Modes of transmission</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Bacillus Cereus</td><td>Consumption of contaminated food after cooking (usually stored at ambient temperature after cooking) as: fried/boiled rice, spices, dried foods, dairy products, vegetable dishes, sauces…</td></tr>
<tr><td>Clostridium botulinum</td><td>- Ingestion of toxin preformed in raw or underprocessed food stored in anaerobic conditions as: vegetables, condiments, fish, meat…
- Honey may transmit the bacteria.</td></tr>
<tr><td>Clostridium perfringes</td><td>Ingestion of contaminated cooked food inadequately cooled as meat and poultry</td></tr>
<tr><td>Staplyococcus aureus</td><td>Consumption of food containing the toxin, and contaminated by food-handlers as ham, chicken, egg salads, creams, ice creams, cheese…</td></tr>
<tr><td>Vibrio parahaemolyticus</td><td>Consumption of raw or undercooked fish or fishery products, or foods subject to cross-contamination from raw fish</td></tr>
<tr><td>Vibrio vulnificus</td><td>Consumption of seafood and raw oysters</td></tr>
<tr><td>Yersinia enterocolitica</td><td>Consumption of contaminated food: milk products, pork products…</td></tr>
</table></td></tr>
</table>

Virus	
Adenovirus	- Person-to-person transmission: feco-oral route - Ingestion of contaminated food, shellfish - Ingestion of contaminated water or drinks
Norovirus (Norwalk-like virus)	
Parasites	
Trichinella spiralis	Consumption of raw or undercooked meat from infected animal
Toxoplasma gondii	Ingestion of oocysts: - By playing with/ handling cats, or playing with sand contaminated with cat feces - By consumption of raw/ undercooked meat - By consumption of food/ water contaminated by feline feces - Tranplacental infection
Chemicals and toxins	
Tetrodotoxin poisoning	Ingestion of puffer fish, porcupine fish, ocean sunfish without extracting intestines and gonads
Scombroid poisoning	Ingestion of fish with high level of histamine
Paralytic shellfish	Ingestion of shellfish producing saxitoxins and gonyautoxins
Organophos-phates	Consumption of food sprayed with organophosphates

<table>
<tr><td>Clinical presentation</td><td>The clinical presentation includes gastro-intestinal symptoms, neurological symptoms, respiratory illness, general symptoms…
<table>
<tr><th>Agent</th><th>Clinical presentation</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Bacillus cereus</td><td>Gastro-enteritis with 2 forms: emetic or diarrheal</td></tr>
<tr><td>Clostridium botulinum (botulism)</td><td>Vomiting, abdominal pain and paralytic manifestations: ocular disturbance, dry mouth, difficulty in swallowing and speaking, limb paralysis, respiratory paralysis</td></tr>
<tr><td>Clostridium perfringes</td><td>Gastro-enteritis (diarrhea)</td></tr>
<tr><td>Staplyococcus aureus</td><td>Upper gastro-intestinal symptoms with no fever</td></tr>
<tr><td>Vibrio parahaemolyticus</td><td>Gastro-enteritis with profuse watery diarrhea. May be asymptomatic.</td></tr>
<tr><td>Vibrio vulnificus</td><td>- Gastro-enteritis with bloody diarrhea
- Complications: septicaemia in persons with chronic liver diseases or immunosuppression</td></tr>
<tr><td>Yersinia enterocolitica</td><td>Gastro-enteritis</td></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>Adenovirus</td><td>Gastro-enteritis with/ without respiratory signs</td></tr>
<tr><td>Norovirus (Norwalk-like virus)</td><td>Gastro-enteritis with watery diarrhea</td></tr>
</table></td></tr>
</table>

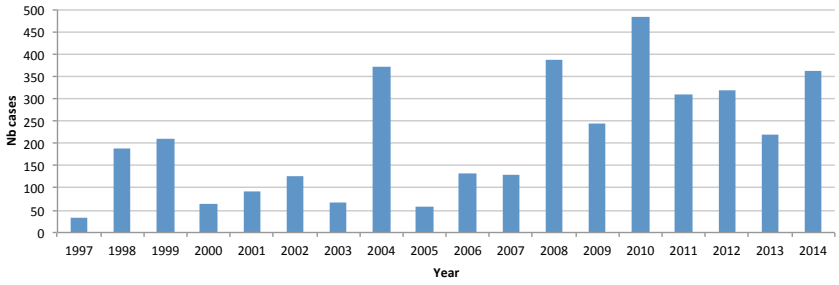
Parasites	
Trichinella spiralis	- Initial phase: nausea, vomiting, diarrhea, fever - Systemic phase: Symptoms depend on number/location of larvae. They may include: rheumatical manifestations, muscle soreness, facial oedema, hypereosinophilia
Toxoplasma gondii	- Acute lympho-adenopathy - May be asymptomatic - Complications during pregnancy: abortion, congenital chorioretinitis & brain damage - Complications in immune-compromised persons: cerebritis, chorioretinitis, pneumonia, myocarditis, death
Chemicals and toxins	
Tetrodotoxin poisoning (tetrodotoxism)	- Neurological manifestations: numbness of mouth and limbs, paresthesia, ataxia, paralysis, cyanosis, death - Case fatality: 60%
Scombroid fish poisoning	Tingling and burning sensations around the mouth, facial flushing, sweating, nausea, vomiting, headache, palpitations, dizziness, rash...
Paralytic shellfish	- Gastro-intestinal symptoms - Severe case: neurological manifestations (dysphonia, dysphagia, paresthaesias of the mouth & extremities, musle paralysis, death)

	<table><tr><td>Organophos-phates</td><td>Cholinergic syndrome: excess respiratory and oral secretions, diarrhea and vomiting, diaphoresis, convulsions, altered mental status, miosis, bradycardia, and generalized weakness that can progress to paralysis, respiratory arrest and death</td></tr></table>
Worldwide	- Most of the agents are found worldwide. - Tedrodotoxin poisoning is usually known in Japan. In the past years, cases were also observed in the Middle East.
Lebanon	In the past 10 years, investigated food poisoning episodes showed the following agents: Escherichia coli, Salmonella, Shigella, Staplyococcus aureus, Trichinella spiralis, tetrodotoxin poisoning, organophosphates...
Control objective	Control
Surveillance and Invesigation	
Surveillance approach	Syndromic and disease approaches
Collect data about case	Demographic, clinical presentation, incubation period, consumed food items, place of food consumption and source...
Collect specimen from case	- Clinical specimens: stool, blood or other depending on the infectious agent
Collect data about contacts	Search for similar cases
Collect specimen from contacts and environment	- Clinical specimens from contacts: if illness - Clinical specimens from food handlers - Food specimens: left over food items, similar food items or ingredients, water...

Test	- Bacterial agents: culture - Viral agents: virus detection, PCR… - Parasitic agents: direct exam, histopathology - Organophosphates: decreased plasma or red blood cell cholinesterase activity might indicate a nerve agent or organophosphate exposure...
Laboratories	- Clinical specimens: clinical laboratories - Food specimens: reference laboratories - Isolates: reference laboratories
Outbreak level	The occurence of at least 2 patients following a food consumption reflects food poisoning episode.
Notification to WHO	If meeting the criteria of the International Health Regulations (2005)
Control	
Primary prevention	- Hygiene, hand washing - Food safety: proper washing of food, keep raw foods from ready to eat food, cook food to a safe temperature, training food handlers... - Ensure the safety of the water used to drink and wash
Case management	- Symptomatic treatment (rehydration…) - Antibiotics/ antiparasitics if needed
Isolation	- Standard precautions - Enteric precautions for specific pathogens
Mass prevention	Ensure food safety, water safety & awareness
Food poisoning case definition (MOPH circular no. 81 dated on the 27th December 2001)	
Confirmed Case	At least two patients experiencing same illness following the consumption of common meal or food item, with laboratory confirmation or confirmed link between food and illness

Suspected case	At least two patients experiencing same illness following the consumption of common meal or food item
Forms	
Reporting	Standard reporting form
Investigation	- Food poisioning investigation form (MOPH circular no. 80 dated on 14th October 2011) - Food premises inspection form (MOPH memo no.121 dated on 5th August 2015) - Trichinella investgation form (MOPH circular no. 79 dated on 6th August 2013) - Botulism investigation form (MOPH circular no.153 dated on 15th November 2007) - Isolate form (MOPH circular no.163 dated on 28th November 2015)
National Figures	

Figure 1: Reported food poisioning cases, Lebanon,1997-2014 (Source: MOPH)



<table>
<tr><th colspan="2">Hemorrhagic fever</th></tr>
<tr><td>Agents</td><td>Several agents:
1) Bacteria: Neisseria meningitidis …
2) Virus:
- Dengue virus: genus Flavivirus, family Flaviviridae. It includes 4 serotypes 1-4.
- Yellow fever virus: genus Flavivirus, family Flaviviridae
- Chikungunya: genus Alphavirus, family Togaviridae
- Rift Valley fever virus: genus Phlebovirus, family Bunyaviridae
- Lassa virus: Arenavirus
- Crimean-Congo hemorrhagic fever virus: genus Nairovirus, family Bunyaviridae
- Ebola disease virus: genus Ebolavirus, family Filoviridae. It includes several subtypes.
- Marburg virus: genus Marburgvirus, family Filoviridae…

The following tables will focus on main viral hemorrhagic fevers.</td></tr>
<tr><td>Incubation period</td><td>The incubation period varies with the agent.

<table>
<tr><th>Agent</th><th>Incubation period</th></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>Dengue</td><td>3-14 days (4-7 days)</td></tr>
<tr><td>Yellow fever</td><td>3-6 days</td></tr>
<tr><td>Chikungunya</td><td>3-12 days (7-9 days)</td></tr>
<tr><td>Rift Valley fever</td><td>2-14 days</td></tr>
<tr><td>Lassa</td><td>6-21 days</td></tr>
<tr><td>Crimean-Congo hemorrhagic fever</td><td>3-7 days (1-12 days)</td></tr>
<tr><td>Ebola & Marburg</td><td>2-21 days</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td>Period of communicability</td><td>The period of communicability varies with the agent.
<table>
<tr><th>Agent</th><th>Period of communicability</th></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>Dengue</td><td>No person-to-person transmission. Patients are infective for mosquitoes from shortly before fever to the end (3-5 days).</td></tr>
<tr><td>Yellow fever</td><td>No person-to-person transmission. Human can infect mosquitoes shortly before fever up to 3-5 days of illness.</td></tr>
<tr><td>Chikungunya</td><td>- No person-to-person transmission
- Human is infective to mosquito few days after illness onset</td></tr>
<tr><td>Rift Valley fever</td><td>- No person-to-person transmission
- Human is infective to mosquito during viremia: during early clinical illness.</td></tr>
<tr><td>Lassa</td><td>During the acute phase, and up to 3 months after infection</td></tr>
<tr><td>Crimean-Congo hemorrhagic fever</td><td>During illness. Highly infectious, in particular in hospital.</td></tr>
<tr><td>Ebola</td><td>Patient is infective from clinical onset to 60-90 days.</td></tr>
<tr><td>Marburg</td><td>Patient is infective from clinical onset to 60 days.</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Reservoir</td><td>The reservoir varies with the agent.
<table>
<tr><th>Agent</th><th>Reservoir</th></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>Dengue</td><td>- Humans/mosquitoes cycle (Aedes aegypti) in tropical urban areas
- Monkeys/mosquitoes cycle in forests of South-East Asia and Western Africa</td></tr>
<tr><td>Yellow fever</td><td>Humans/mosquitoes (Aedes)</td></tr>
<tr><td>Chikungunya</td><td>Primates/mosquitoes</td></tr>
<tr><td>Rift Valley fever</td><td>Vertebrates/mosquitoes</td></tr>
<tr><td>Lassa</td><td>Wild rodents</td></tr>
<tr><td>Crimean-Congo hemorrhagic fever</td><td>Wild and domestic animals/ host ticks (Hyalomma spp, Boophilus sp, Rhipicephalus ticks)</td></tr>
<tr><td>Ebola & Marburg</td><td>Unknown. Probably: non-human primates (Gorillas, chimpanzees, monkeys, forest duikers, porcupines) and bats</td></tr>
</table></td></tr>
<tr><td>Modes of transmission</td><td>The modes of transmission vary with the agent.
<table>
<tr><th>Agent</th><th>Modes of transmission</th></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>Dengue</td><td>Bite of infected Aedes</td></tr>
<tr><td>Yellow fever</td><td>Bite of infected Aedes/ Haemagogus</td></tr>
<tr><td>Chikungunya</td><td>Bite of infected Aedes mosquitoes (A. aegypti, Aedes albopictus…)</td></tr>
<tr><td>Rift Valley fever</td><td>- Bite of infected Aedes/Culex
- Direct/indirect contact with infected animal blood or organs: skin inoculation or aerosols</td></tr>
</table></td></tr>
</table>

Lassa	- Aerosol or direct contact with excreta of infected rodents deposited on surfaces - Laboratory/nosocomial acquired infections - Person-to-person: contact with pharyngeal secretions, urine or sexual contact
Crimean-Congo hemorrhagic fever	- Bite/crushing infected adult tick (Hyalomma genus) - Nosocomial infection following exposure to blood or secretions - Handling infected animal blood
Ebola & Marburg	- Person-to-person: direct contact with infected blood or body fluids (secretions, organs or semen...) - Animal to human: handling infected animals

Clinical presentation

The clinical presentation varies with the agent.

Agent	**Clinical presentation**
Virus	
Dengue	- Dengue: acute febrile illness, with or without rash, and minor bleeding - Dengue hemorrhagic fever/ dengue shock syndrome: abnormal blood clotting and increased vascular permeability, hemorrhagic signs, hypovolemic shock. Case fatality: 40-50% if untreated, and 1-2% if well treated.

Yellow fever	- Usually febrile illness - 15% of cases, after brief remission, evolve to intoxication with hemorrhagic manifestations and liver/ renal failure. Case fatality: 20-50%.
Chikungunya	- Self-limiting febrile illness with fever, arthralgia/ arthritis, cervical lymphoadenopathy - Maculopapular rash may appear later. - Rarely minor hemorrhage
Rift Valley fever	- Usually mild illness as dengue-like - Conjunctivitis is common. - Complications: retinitis, hemorrhage, encephalitis, hepatitis, lower limbs weakness
Lassa	- Acute mild or asymptomatic viral illness in 80% of the cases - Inflammation and exudation of pharynx and conjunctiva - Complications: multisystem disease, abortion, pleural effusion hemorrhage, encephalopathy, seizures, hypotension or shock, oedema of the face and neck, deafness… - Case fatality rate: 1-15%

<table>
<tr><td></td><td>
<table>
<tr><td>Crimean-Congo hemorrhagic fever</td><td>- Sudden febrile illness
- Flush on face and chest with conjunctival injection
- Hemorrhagic fever with liver damage. CFR: 2-50%.</td></tr>
<tr><td>Ebola and Marburg</td><td>- Sudden onset of fever, followed by pharyngitis, vomiting, diarrhea and maculopapular rash
- Complications: hepatic and renal dysfunction, CNS involvement, shock and multi-organ dysfunction, severe thrombocytopenia. Case fatality is 50-90% for Ebola and 25-80% for Marburg.</td></tr>
</table>
</td></tr>
<tr><td>Worldwide</td><td>The agents of viral hemorrhagic fever have various geographical distributions.
<table>
<tr><th>Agent</th><th>Profile</th></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>Dengue</td><td>Endemic in the tropics</td></tr>
<tr><td>Yellow fever</td><td>- Sylvatic (jungle) cycle: accidental human infection in tropical regions (Africa and latin America), with Aedes and Haemagogus mosquitoes
- Urban cycle, with Aedes Aegypti: in endemic countries of tropical Africa and Central/South America
- Intermediate cycle: African Savanah region with Aedes</td></tr>
<tr><td>Chikungunya</td><td>Africa, South-East Asia, Philippines</td></tr>
<tr><td>Rift Valley fever</td><td>Africa, Arabia peninsula</td></tr>
</table>
</td></tr>
</table>

	<table><tr><td>Lassa</td><td>Endemic in Guinea, Nigeria, Sierra Leone</td></tr><tr><td>Crimean-Congo hemorrhagic fever</td><td>Africa, Central Asia, Europe, Middle East</td></tr><tr><td>Ebola/Marburg</td><td>Africa</td></tr></table>
Lebanon	Viral hemorrhagic fevers are rare in Lebanon. They are usually imported cases (Ex: dengue).
Control objective	Control & containment depending on the agent
Surveillance and Investigation	
Surveillance approach	Syndromic approach (Hemorrhagic fever)
Collect data about case	Demography, clinical presentation, travel history, contact with cases...
Collect specimen from case	Blood...
Collect data about contacts	Identification, presence of cases among contacts, follow up
Collect specimen from contacts	If symtpoms
Test	Viral agents: serological test, PCR, culture
Laboratories	For viral agents: reference laboratories in Lebanon or abroad
Outbreak level	For viral agents: at least one confirmed case of viral hemorrhagic fever
Notification to WHO	For viral agents: based on IHR (2005) criteria
Control	
Primary prevention	- Depends on the pathogen - For person-to-person transmission: hand washing, infection control practice, case detection/isolation and contact tracing - For vector-borne disease: vaccination (yellow fever), vector control, avoid mosquito bites…

Case management	- Symptomatic treatment - Antiviral for some viral pathogens
Isolation	- Depends on the pathogen - For person-to-person transmission: strict isolation up to air precautions - For vector-borne disease: standard precautions, blood/body fluids precautions, prevent contact with mosquito, vector control
Contact prevention	Yellow fever: vaccination of contacts
Contact quarantine	For person-to-person transmission: contact identification and follow up
Mass prevention	Depends on the pathogen. For yellow fever: vaccination
Case definitions	
Hemorrhagic fever (MOPH circular no. 49 dated on the 10th April 2007)	
Clinical presentation	Case presenting: - Acute onset of fever of less than 3 weeks duration in a severely ill patient - And any 2 of the following: haemorrhagic or purpuric rash, epistaxis, haemoptysis, blood in stools, other haemorrhagic symptom - And no known predisposing host factors for haemorrhagic manifestations.
Confirmed case	Case presenting an haemorrhagic fever with laboratory confirmation for one of the following agents: Neisseria meningitidis infection, dengue, Ebola-Marbrug viral diseases, Lassa fever, Yellow fever, Rift valley fever virus, hantavirus virus infections, Crimean-Congo haemorrhagic fever, and other viral, bacterial ou rickettsial diseases...

Ebola (MOPH circular no. 70 dated on the 11th August 2014)	
Confirmed case: Ebola	Any suspected or probable case with laboratory confirmation: - Positive antigen or IgM detection (ELISA …) - Or positive PCR with sequence confirmation - Or positive virus isolation (only in laboratory of biosafety 4).
Probable case: Ebola	Any suspected person or suspected death who has an epidemiological link with a confirmed or probable case
Suspected case: Ebola	Case presenting: - Acute onset of fever with any one of the following: haemorrhagic or purpuric rash, epistaxis, haemoptysis, blood in stools, other haemorrhagic symptom; and no known predisposing host factors for haemorrhagic manifestations - Acute onset of fever with any 3 of the following: headache, myalgia/arthralgia, abdominal pain, anorexia, hiccup, vomiting, diarrhea, dyspnea and dysphagia, and coming from a country who reported confirmed cases among humans and/or animals (arrival in the 21 days before onset) - Acute onset of fever with any 3 of the following: headache, myalgia/arthralgia, abdominal pain, anorexia, hiccup, vomiting, diarrhea, dyspnea and dysphagia; and having a contact with animals coming from a country who reported cases among humans and/or animals (contact in the 21 days before onset). The list countries with confirmed cases is available on the WHO website: http://www.who.int/csr/disease/ebola/en

Contact	A person with no symptoms who had in the previous 21 days, contact with confirmed or probable case. The contact with confirmed or probable case is defined by at least one of the following: - Having slept/stayed in the same household - Has had direct physical contact with the case (alive or dead) during the illness - Has had direct physical contact with the deceased at the funeral - Has touched his/her blood or body fluids during the illness - Has touched his/her clothes and/or linens - Has been breastfed by the patient (for baby) - Has touched his/her clinical specimens.
Marburg (MOPH circular no. 50 dated on the 10th April 2007)	
Confirmed case: Marburg	Any suspected (haemorrhagic fever) or probable case that is laboratory-confirmed: - Positive ELISA antigen detection or IgM capture - Or positive virus isolation (only in laboratory of biosafety level 4) - Or positive skin biopsy (immunohisto-chemistry) - Or positive PCR with sequence confirmation.
Probable case: Marburg	In epidemic situation: - Any person having had contact with a clinical case and presenting with acute fever - Or any person presenting with acute fever and 3 of the following: headache, vomiting/ nausea, loss of appetite, diarrhea, intense fatigue, abdominal pain, general or articular pain, difficulty in swalling, difficulty in breathing, hiccoughs - Or any unexplained death.

Contact of Marburg case	In epidemic situation: an asymptomatic person who had physical contact within the past 21 days with a confirmed or probable case or his/her body fluids (care for patient, participation in burial ceremony, handling of potentially infected laboratory specimens).
Yellow fever (MOPH circular no. 132 dated on the 22nd September 2006)	
Confirmed case: Yellow fever	An acute onset of fever followed by jaundice within 2 weeks of onset of first symptoms with possible haemorrhagic manifestations and signs of renal failure with laboratory confirmation (in reference laboratory): - Isolation of yellow fever virus - Or presence of yellow fever specific IgM or a 4-fold or greater rise in serum IgG levels in paired sera (acute and convalescent) - Or positive post-mortem liver histopathology - Or detection of yellow fever antigen in tissues by immunohisto-chemistry - Or detection of yellow fever virus genomic sequences in blood or organs by PCR - Or epidemiologically-linked to a confirmed case or outbreak.
Other agents	
Confirmed case: Lassa, CCHF, Rift Valley fever, Chikungunya	Case with at least one of the following: - Isolation of the virus from clinical or autopsy specimens - Detection of specific virus nucleic acid in a clinical or autopsy specimen - Positive serological test: demonstration of increase in IgG antibody titres in paired sera or detection of IgM antibody in clinical or autopsy specimen.

Forms	
Reporting	- Standard reporting form - Or Haemorrhagic fever reporting form (MOPH circular no. 157 dated on the 16th October 2014)
Investigation	- Haemorrhagic fever investigation form (MOPH circular no. 158 dated on the 16th October 2014) - Ebola contacts follow up (MOPH circular no. 155 dated on the 16th October 2014)

International figures

Figure 1: Countries at risk of dengue (Source: WHO, 2014)

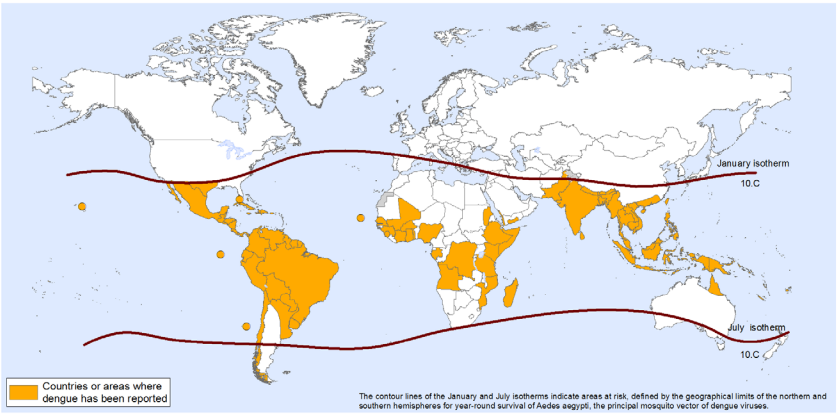


Figure 2: Countries at risk of yellow fever in Africa (Source: WHO, 2015)

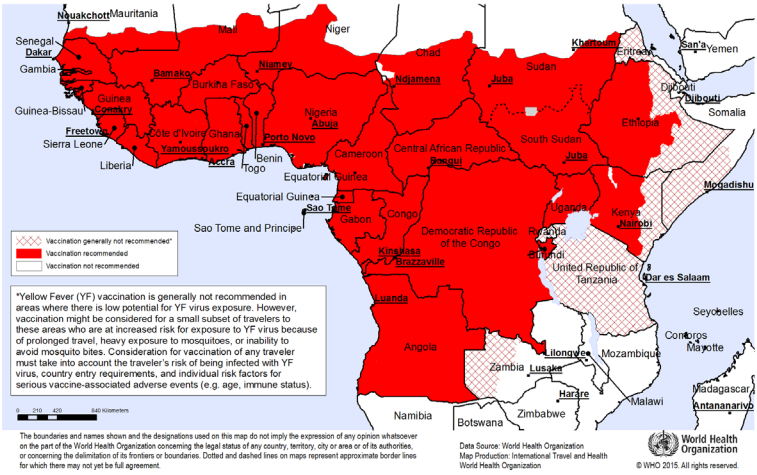


Figure 3: Countries at risk of yellow fever in America (Source: WHO, 2013)

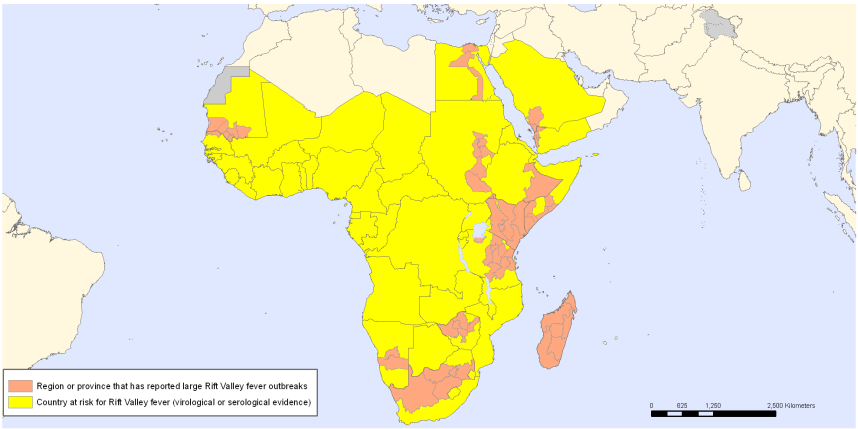
Figure 4: Countries at risk of Chikungunya (Source: WHO, 2014)

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: Adapted from Fields virology
5th ed. Vol. 1. Philadelphia,
Lippincott Williams & Wilkins, 2006:1047.
Map Production: International Travel and Health (ITH)
World Health Organization

World Health Organization

Figure 5: Countries reporting Rift valley fever cases and outbreaks (Source: WHO, 2009)



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source:Global Alert and Response Department
World Health Organization
Map Production: Public Health Information
and Geographic Information Systems (GIS)
World Health Organization

World Health Organization

Figure 6: Countries reporting Crimean-Congo hemorrhagic fever CCHF cases and outbreaks (Source: WHO, 2015)

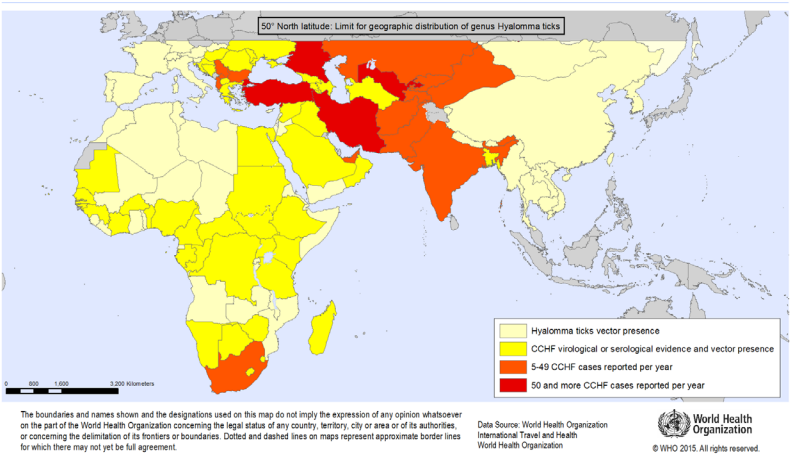


Figure 7: Countries at risk of Marburg hemorrhagic fever (source: WHO, 2009)

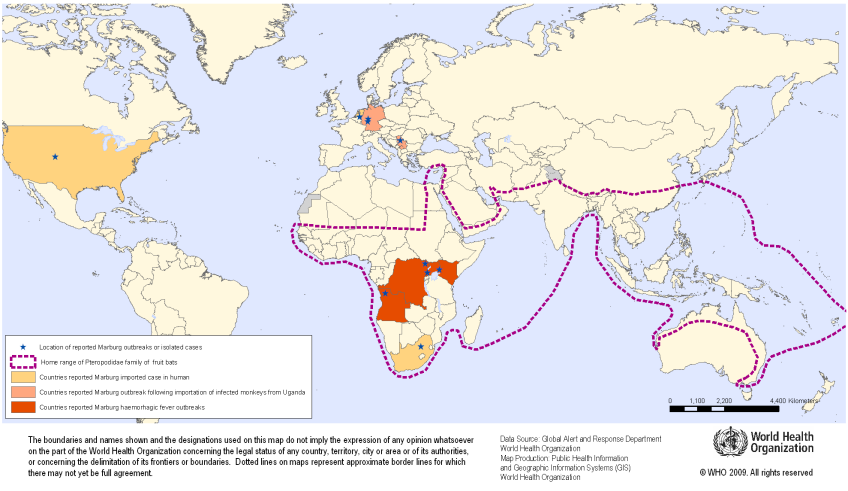
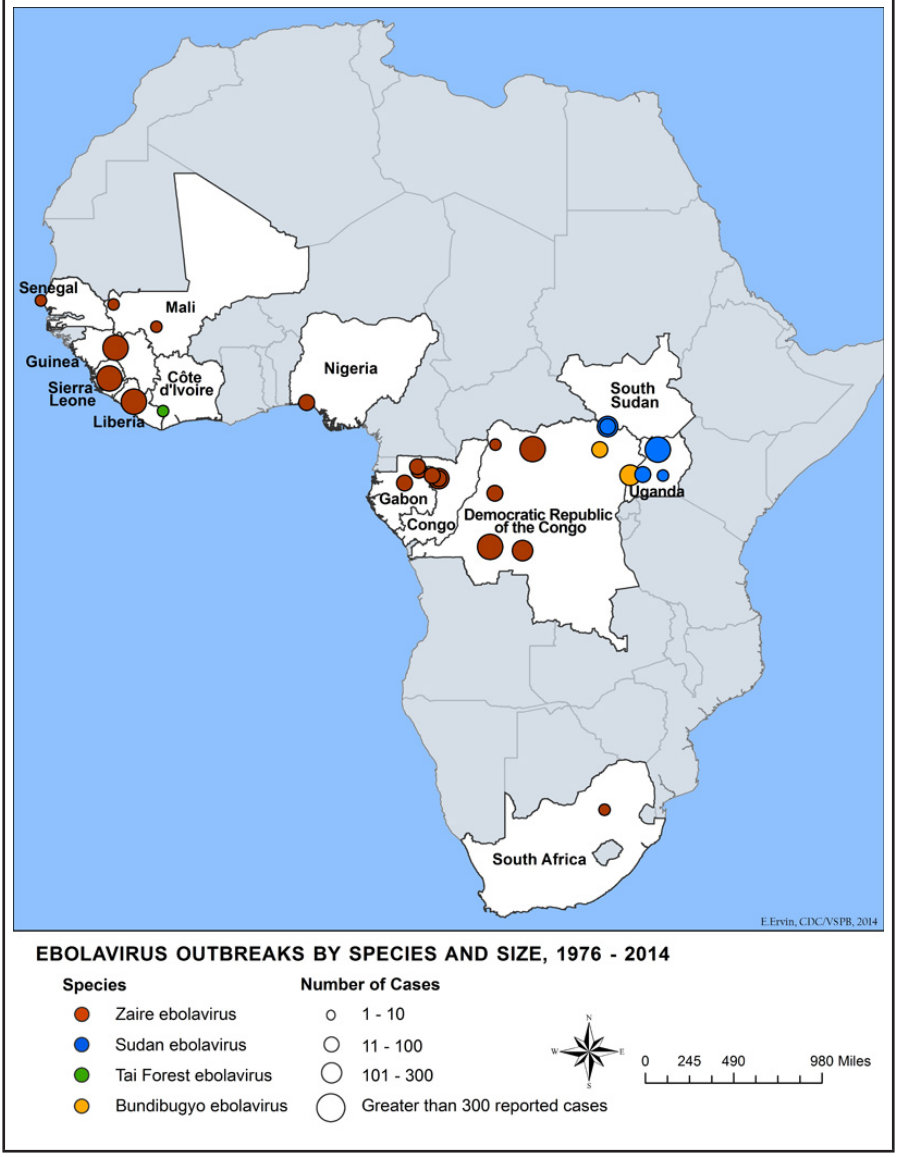


Figure 8: Countries reporting Ebola cases and outbreaks, 1976-2014 (Source: USA-CDC)



Novel Influenza

This section focuses on emerging novel influenza viruses. The seasonsal influenza viruses (common flu) are not notifiable communicable diseases.
Any novel influenza virus represents a threat for pandemic if the virus can cause human disease and be efficiently transmitted from person-to-person.

Novel Influenza	
Agent	Emergence of novel subtypes of Influenza A virus due to antigenic shift. Types B and C do not have subtypes.
Incubation period	2-7 days
Period of communicability	- Usually 3-5 days before onset and until 7 days after onset - Patient may remain infectious for 3 weeks
Reservoir	Aquatic birds, domestic poultry, mammalian (pigs, horses, whales, seals, ferrets, cats…)
Modes of transmission	- Person-to-person: • Direct and/or indirect contact with droplets of infected person • Airborne (in case of aerosol-generated procedures) from an infected person - Animal to person: • Airborne, while slaughtering, defeathering, handling carcasses of infected poultry • Consumption of raw contaminated poultry • Direct contact with infected animals
Clinical presentation	- Upper respiratory infection - Complications: lower respiratory infection
Worldwide	- Known past pandemics: • 1918-1919: A(H1N1) • 1957-1958: A(H2N2) • 1968-1969: A(H3N2) • 2009-2010: A(H1N1)/2009. Since August 2010, A(H1N1) became a seasonal virus. - Current novel Influenza with pandemic potential: A(H5N1), A(H7N9)

Control objective	- Preparedeness: inter-pandemic phases - Containment: at early phase with no community transmission - Mitigation: if community transmission of novel virus
Surveillance and Investigation	
Surveillance approach	Syndromic approach (acute respiratory infection)
Collect data about case	Clinical presentation, contact with cases, contact with animals and/or death animals, travel history…
Collect specimen from case	Throat swab or nasal swab in viral transport media (VTM), bronchoalveolar lavage, tracheal aspirate, lung biopsy
Collect data about contacts	Similar cases among contacts
Collect specimen from contacts	If symptoms
Test	PCR test, virus culture, antiviral susceptibility profile
Laboratories	- PCR: National Influenza Center at RHUH - Culture: supranational reference laboratories
Outbreak level	At least one confirmed case of novel virus
Notification to WHO	Yes, based on IHR (2005)
Control	
Primary prevention	- Seasonal influenza: vaccination coupled with pneumococcal vaccine - Novel influenza: vaccination if vaccine available - Avoid contact will ill persons & potentially infected animals, hand washing, cough etiquette
Post-exposure prevention	Antiviral prophylaxis

Case management	- Symptomatic treatment - Antivirals (despite uncertain efficacy): Rimantadine or Amantadine started within 48 hrs of onset of Influenza A for 3-5 days, or Neuraminidase inhibitors against Influenza A and B
Isolation	- Seasonal influenza: contact and droplet precautions - Novel influenza: strict isolation with airborne precautions
Contact prevention	Chemoprophylaxis with antiviral agents
Contact quarantine	Contact identification and follow up
Mass prevention	Vaccination if vaccine available
Case definitions	
Novel Influenza virus infection case definition (MOPH circular no. 38 dated on the 5th May 2012)	
Confirmed case	Any laboratory-confirmed case of a recent human infection caused by an Influenza A virus with the potential to cause a pandemic. An Influenza A virus is considered to have the potential to cause a pandemic if: - The virus has demonstrated the capacity to infect a human - And if the heamagglutinin gene (or protein) is not a variant or mutated form of those circulating widely in the human population. An infection is considered recent if it has been confirmed by: - Positive results from PCR - Or virus isolation - Or paired acute and convalescent serologic tests.

Novel Influenza virus A(H5N1) infection case definition (MOPH circular no. 66 dated on the 24th April 2007)	
A(H5N1): Confirmed case	A suspected or probable case and one of the following results conducted in a national, regional or international reference laboratory: - Isolation of an H5N1 virus - Positive H5 PCR results from tests using two different PCR targets, e.g. primers specific for Influenza A and H5 HA - A fourfold or greater rise in neutralization antibody titer for H5N1 based on testing of an acute serum specimen (collected 7 days or less after symptom onset) and a convalescent serum specimen. The convalescent neutralizing antibody titer must also be 1:80 or higher - A microneutralization antibody titer for H5N1 of 1:80 or greater in a single serum specimen collected at day 14 or later after symptom onset and a positive result using a different serological assay (for example, a horse red blood cell haemagglutination inhibition titer of 1:160 or greater or an H5-specific western blot positive result).
A(H5N1): Probable case	- A suspected case with 1 of the following criteria: • Infiltrates or evidence of an acute pneumonia on chest radiography plus evidence of respiratory failure (hypoxemia, severe tachypnea) • Or positive laboratory confirmation of an Influenza A infection but insufficient laboratory evidence for H5N1 infection - Or a person dying of an explained acute respiratory illness who is considered to be epidemiologically-linked by time, place, and exposure to a confirmed or probable or H5N1 case.

A(H5N1): Suspected case	- A person presenting with unexplained acute lower respiratory illness with fever (>38ºC) and cough, dyspnea - And one or more of the following exposures in the 7 days prior to symptom onset: • Close contact (within 1 meter) with a person (e.g. caring for, speaking with, or touching) who is a confirmed, probable or suspected, H5N1 case • Exposure (e.g. handling, slaughtering, defeathering, butchering, preparation for consumption) to poultry or wild birds or their remains or to environments contaminated by their faeces in an area where H5N1 infection in animals or humans has been confirmed or suspected in the last month • Consumption of raw or undercooked poultry products in an area where H5N1 infection in animals or humans has been confirmed or suspected in the last month • Close contact with a confirmed H5N1 infected animal other than poultry or wild birds (e.g. cat or pig) • Handling samples (animal or human) suspected of containing H5N1 virus in a laboratory or other setting.
Novel Influenza virus A(H7N9) infection case definition (MOPH circular no. 60 dated on the 6th June 2013)	
A(H7N9): confirmed	A person with laboratory confirmation of a recent infection caused by the A(H7N9) virus
A(H7N9): probable	A person with an acute respiratory infection and a history of close contact, in the 2 weeks before illness, with a laboratory-confirmed case of A(H7N9) virus infection

A(H7N9): Suspected	A person with a severe acute respiratory infection (requiring hospital admission) and a history of recent travel, within 2 weeks before illness onset, to a risk area [known to have A(H7N9) circulation]

Forms

Reporting	Standard reporting form
Investigation	Novel Influenza investigation form (MOPH circular no. 4 dated on the 7th January 2015)

National figures

No case of H5N1 neither of H7N9 was reported up to Dec 2015.

International figures

Table 1: Influenza A(H5N1) - Cumulative number of confirmed human cases, worldwide, 2003-Nov.2015 (Source: WHO)

Country	2003-2009*		2010		2011		2012		2013		2014		2015		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	8	5	0	0	0	0	0	0	0	0	0	0	0	0	8	5
Bangladesh	1	0	0	0	2	0	3	0	1	1	0	0	0	0	7	1
Cambodia	9	7	1	1	8	8	3	3	26	14	9	4	0	0	56	37
Canada	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1
China	38	25	2	1	1	1	2	1	2	2	2	0	5	1	52	31
Djibouti	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	90	27	29	13	39	15	11	5	4	3	37	14	136	39	346	116
Indonesia	162	134	9	7	12	10	9	9	3	3	2	2	2	2	199	167
Iraq	3	2	0	0	0	0	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Myanmar	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Nigeria	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Pakistan	3	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1
Thailand	25	17	0	0	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	12	4	0	0	0	0	0	0	0	0	0	0	0	0	12	4
Viet Nam	112	57	7	2	0	0	4	2	2	1	2	2	0	0	127	64
Total	468	282	48	24	62	34	32	20	39	25	52	22	143	42	844	449

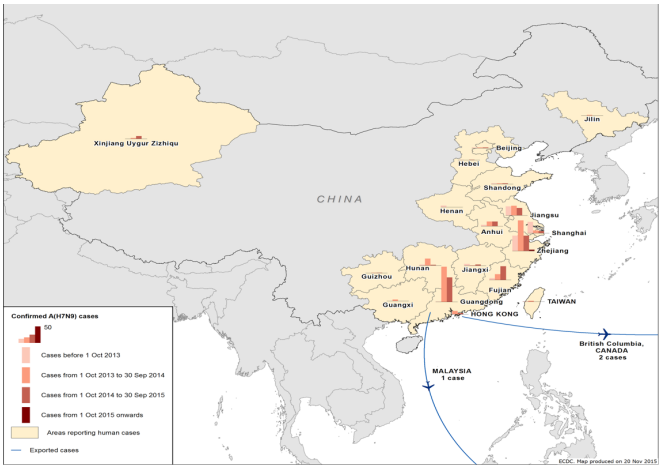
* 2003-2009 total figures. Breakdowns by year available on next table

Total number of cases includes number of deaths
WHO reports only laboratory cases
All dates refer to onset of illness

Source: WHO/GIP, data in HQ as of 13 Nov 2015

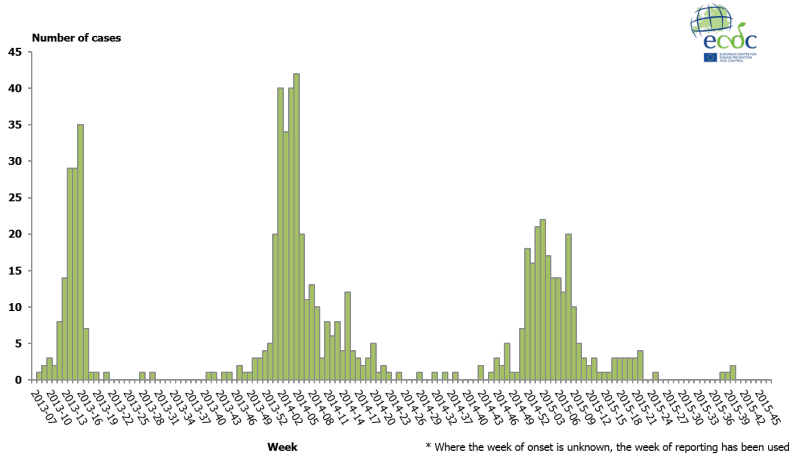
World Health Organization

Figure 1: Influenza A(H7N9) - Areas with confirmed cases from 2013W07 to 2015W47 (Source: www.ecdc.europa.eu)



Source: European Centre for Disease Prevention and Control. Communicable Disease Threats Report, week 47. Stockholm: ECDC; 2015

Figure 2: Influenza A(H7N9) - Weekly count of confirmed cases from 2013W07 to 2015W47 (Source: www.ecdc.europa.eu)



Source: European Centre for Disease Prevention and Control. Communicable Disease Threats Report, week 47. Stockholm: ECDC; 2015

<table>
<tr><th colspan="2">Invasive Coronavirus</th></tr>
<tr><td>Agent</td><td>Coronavirus is a large family of viruses that can cause diseases ranging from common cold to Severe Acute Respiratory Syndrome.

1) Classical coronavirus: viruses that can infect humans and animals:
- Human coronavirus HCoV: causing mild illness (229E, OC43, NL63, HKU1...)
- Animal coronavirus: may infect pigs, domestic & wild birds, bats, rodents, dogs, cats & cattle. They cause acute & chronic diseases in animals such as respiratory, gastro-enteric diseases, neurologic diseases & liver disease.

2) Novel coronavirus:
- Severe Acute Respiratory Syndrome – SARS-CoV who emerged in 2002 and caused a large outbreak in 2003.
- Middle East Respiratory Syndrome – Novel Coronavirus MERS-CoV: first identified in 2012</td></tr>
<tr><td>Incubation period</td><td>Short for the classical virus, and may be longer for the novel coronavirus.<table><tr><th>Agent</th><th>Incubation period</th></tr><tr><td>Classical human coronavirus</td><td>2-4 days</td></tr><tr><td>SARS-CoV</td><td>2-10 days (mean: 5 days)</td></tr><tr><td>MERS-CoV</td><td>2-14 days</td></tr></table></td></tr>
<tr><td>Period of communicability</td><td>Usually during active phase.<table><tr><th>Agent</th><th>Period of communicability</th></tr><tr><td>Classical human coronavirus</td><td>During the active disease</td></tr><tr><td>SARS-CoV</td><td>From onset to 21 days</td></tr><tr><td>MERS-CoV</td><td>During the illness period. The duration of infectivity after resolution of symptoms is unknown.</td></tr></table></td></tr>
</table>

<table>
<tr><td>Reservoir</td><td>The reservoir can be human or animal.
<table>
<tr><th>Agent</th><th>Reservoir</th></tr>
<tr><td>Classical human coronavirus</td><td>Humans</td></tr>
<tr><td>SARS-CoV</td><td>- Cave-dwelling bats (genus Rhinolophus)
- Himalayan masked palm civet (Paguma larvata)
- Other wildlife animals</td></tr>
<tr><td>MERS-CoV</td><td>May be camels and bats</td></tr>
</table></td></tr>
<tr><td>Modes of transmission</td><td>Known for some, and not clarified for novel ones.
<table>
<tr><th>Agent</th><th>Modes of transmission</th></tr>
<tr><td>Classical human coronavirus</td><td>Person-to-person: respiratory droplets, aerosols, feco-oral route, fomites</td></tr>
<tr><td>SARS-CoV</td><td>- Animal to human
- Person-to-person:
• While caring for, or living with a patient
• Respiratory secretions
• Body fluids and fomites
• Airborne (aerosolized sewage, mechanical ventilation..)</td></tr>
<tr><td>MERS-CoV</td><td>- Limited person-to-person transmission: close contact, when providing unprotected care to a patient
- Suspected animal to person transmission: droplet contact, fomite transmission, food-borne, airborne</td></tr>
</table></td></tr>
<tr><td>Clinical presentation</td><td>Coronavirus can cause mild to severe illness.
<table>
<tr><th>Agent</th><th>Clinical presentation</th></tr>
<tr><td>Classical human coronavirus</td><td>- Usually self-limited illness: upper respiratory infection, otitis media, gastroenteritis
- Complications: pneumonia, encephalitis, peritonitis...</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td>SARS-CoV</td><td>- Pneumonia, acute respiratory distress syndrome (ARDS)
- Case fatality in 2003: 10%</td></tr>
<tr><td>MERS-CoV</td><td>- May be asymptomatic
- Acute lower respiratory infection with or without gastro-intestinal symptoms. The illness may be severe in people with chronic medical conditions or weakened immune system. It may evolve to respiratory failure (ARDS), organ failure (as renal failure), septic shock...
- Global case fatality rate: 36%</td></tr>
</table>
</td></tr>
<tr><td>Worldwide</td><td>
<table>
<tr><th>Agent</th><th>Worldwide</th></tr>
<tr><td>Classical human coronavirus</td><td>Worldwide. It is causing 10-15% of common cold cases. It has seasonal pattern with main occurrence in winter.</td></tr>
<tr><td>SARS-CoV</td><td>Global outbreak in 2003: 8098 cases in 26 countries (mainly China, Canada, Singapore, Vietnam, and imported cases in several countries) including 774 deaths. The last reported case was in 2004 in China.</td></tr>
<tr><td>MERS-CoV</td><td>Since 2012, the virus appears to be circulating in the Arabian Peninsula. Cases reported outside the Middle East are travel-related with limited human-to-human transmission. In 2015, a large outbreak occured in Republic of Korea following 1 index travel-related case.</td></tr>
</table>
</td></tr>
</table>

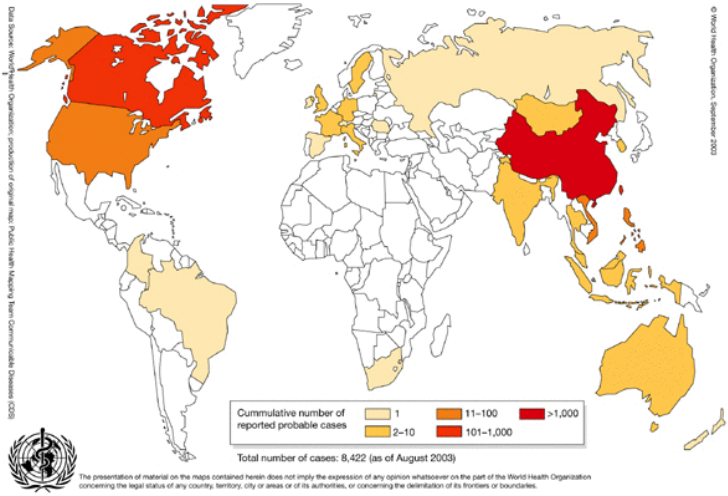
<table>
<tr><td>Lebanon</td><td>Rarely detected.<table><tr><th>Agent</th><th>In Lebanon</th></tr><tr><td>SARS-CoV</td><td>No case reported in Lebanon in 2003</td></tr><tr><td>MERS-CoV</td><td>1 case detected in May 2014</td></tr></table></td></tr>
<tr><td>Control objective</td><td>- Control for classical human coronavirus
- Containment for SARS-CoV and MERS-CoV</td></tr>
<tr><th colspan="2">Surveillance and Investigation for SARS-CoV and MERS-CoV</th></tr>
<tr><td>Surveillance approach</td><td>Disease approach or syndromic approach</td></tr>
<tr><td>Collect data about case</td><td>Clinical presentation, demography, travel history, occupation, contact with cases, contact with animals and camels or consumption of camel milk...</td></tr>
<tr><td>Collect specimen from case</td><td>Respiratory specimens (deep respiratory specimens)</td></tr>
<tr><td>Collect data about contacts</td><td>For SARS-CoV and MERS-CoV: contact identification and follow up</td></tr>
<tr><td>Collect specimen from contacts</td><td>If symptoms</td></tr>
<tr><td>Test</td><td>PCR test</td></tr>
<tr><td>Laboratories</td><td>RHUH</td></tr>
<tr><td>Outbreak level</td><td>At least 1 confirmed case</td></tr>
<tr><td>Notification to WHO</td><td>Yes, according to IHR (2005)</td></tr>
<tr><th colspan="2">Control for SARS-CoV and MERS-CoV</th></tr>
<tr><td>Primary prevention</td><td>- Hand washing
- Avoid contact with dead animals
- Avoid close contact with ill persons
- Avoid camel contact & products (milk, meat, urine)
- Case strict isolation and contact tracing</td></tr>
<tr><td>Case management</td><td>Symptomatic treatment</td></tr>
</table>

Isolation	Droplet and airborne isolation is required and continued even 24 hours after symptoms resolution
Contact quarantine	Contact identification and follow up
Case definitions	
SARS-CoV case definition (MOPH circular no. 35 dated on the 5th May 2012)	
SARS-CoV: Confirmed case	A person with laboratory confirmation of infection with SARS-CoV who: • Either fulfills the SARS clinical case definition • Or has worked in a laboratory with live SARS-CoV or storing clinical specimens infected with SARS-CoV. SARS is lab-confirmed by one of the following: a) Conventional reverse transcriptase polymerase chain reaction (RT-PCR) and real-time reverse transcriptase PCR (real-time RT-PCR) assay detecting viral RNA present in: • At least two different clinical specimens (e.g. nasopharyngeal and stool) • Or the same clinical specimen collected on 2 or more occasions during illness (e.g. sequential nasopharyngeal aspirates) • Or in a new extract from the original clinical sample tested positive by two different assays or repeat RT-PCR/real-time RT-PCR on each occasion of testing b) Enzyme Linked Immunosorbent Assay (ELISA) and immunofluorescent assay (IFA): • Negative antibody test on serum collected during the active phase of illness followed by positive antibody test on convalescent phase serum, tested simultaneously • Or four fold or greater rise of antibody titre against SARS-CoV between an acute serum specimen and a convalescent serum specimen (paired sera), tested simultaneously c) Virus culture: from any clinical specimen

SARS-CoV: Clinical definition	A person presenting picture of lower respiratory infection with: • Fever • And one or more symptoms of lower respiratory tract illness (cough, difficulty breathing, shortness of breath) • And radiographic evidence of lung infiltrates consistent with pneumonia or acute respiratory distress syndrome (ARDS) or autopsy findings consistent with the pathology of pneumonia of ARDS without an identifiable cause • And no alternative diagnosis can fully explain the illness
MERS-CoV case definition (MOPH circular no. 37 dated on the 7th May 2014)	
MERS-CoV: Confirmed case	Any person with positive laboratory confirmation of infection with novel coronavirus
MERS-CoV: Probable case	Any possible case with close contact during the last 10 days before onset of illness with a symptomatic confirmed case of novel coronavirus infection. Close contact is defined as: • Anyone who provided care for a MERS-CoV patient • Or anyone who stayed at the same place while a MERS-CoV patient was ill.
MERS-CoV: Suspected case	Any person with severe acute respiratory infection, with: a) Symptoms of fever (>= 38°C), cough, and evidence of pulmonary parenchymal disease (pneumonia or acute respiratory distress syndrome) based on clinical and/or radiological evidence b) And not already explained by any other infection or etiology c) And admitted to hospital

	d) And one of the following: • With travel history within 14 days before symptoms onset in a country who reported local cases • Or contact history with a person with acute respiratory infection who traveled in a country who reported local cases • Or healthcare worker caring for patients with severe acute respiratory infection • Or the case occurs as part of a cluster. Cluster is defined as at least 2 persons with severe acute respiratory infection, with onset of symptoms within the same 2 weeks, and who are associated with a specific setting.
Forms	
Reporting	Standard reporting form, or MERS-CoV reporting form (MOPH circular no. 56 dated on the 3rd June 2013)
Investigation	- Specific investigation form for SARS-CoV (MOPH circular no. 46 dated on the 17th May 2003) - Specific investigation form for MERS-CoV

Figure 1: SARS-CoV - Countries who reported cases, world, 2002-2003 (Source: WHO)



International figures

Figure 2: MERS-COV - Confirmed cases by country of infection, worldwide, Mar. 2012 - Nov. 2015 (Source: www.ecdc.europa.eu)

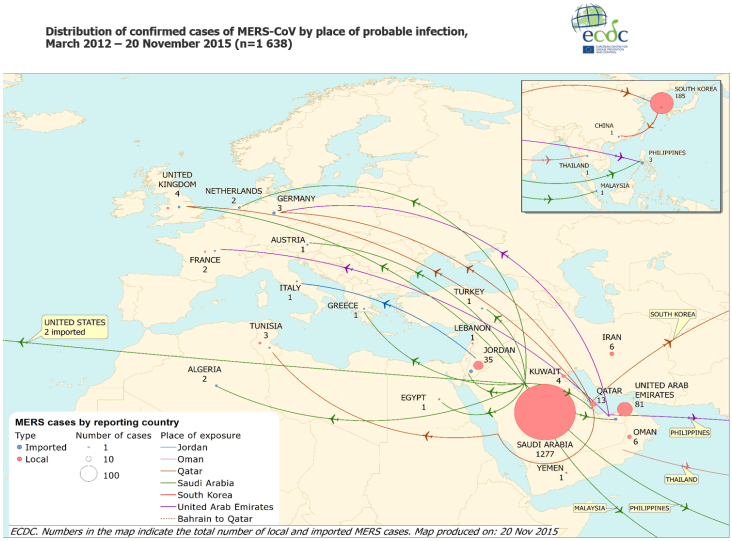
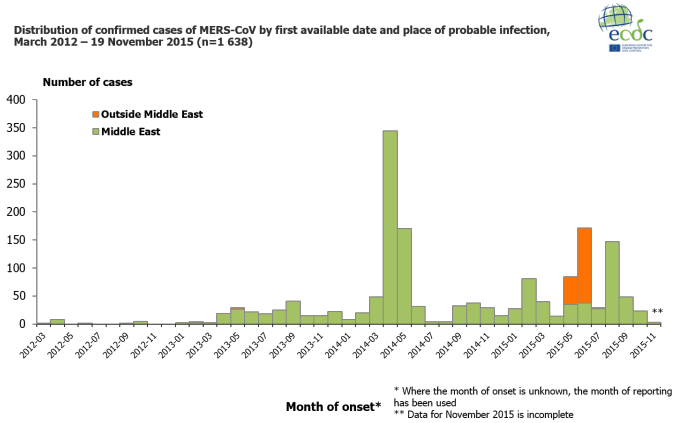


Figure 3 MERS-COV: Weekly confirmed cases, worldwide, Mar. 2012 - Nov. 2015 (Source: www.ecdc.europa.eu)



Measles

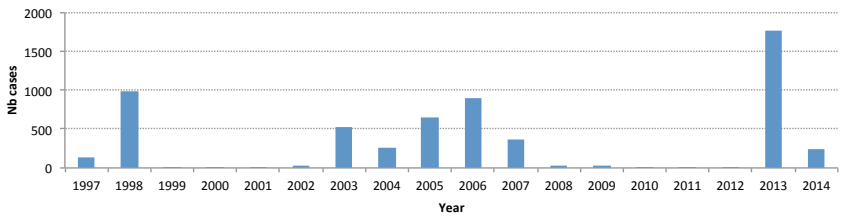
Measles	
Agent	Measles virus, genus Morbillivirus, family Paramyxoviridae
Incubation	10 days (7-18 days, may be to 21 days)
Period of communicability	4 days before rash to 4 days after rash onset
Reservoir	Humans
Modes of transmission	- Person-to-person: direct contact with droplets, rarely indirect contact - Airborne (in confined place)
Clinical presentation	- Febrile maculo-papular rash - Complications: otitis media (7-9%), pneumonia (1-6%), gastro-enteritis (8%) and dehydration, blindness, convulsions (1/200), encephalitis (1/1000) - Encephalitis: post-infectious encephalitis (1 week from onset) or delayed acute encephalitis (weeks & months after onset) - Long term complication: sub-acute sclerosing pan-encephalitis (SSPE) 7 years or more after onset (1/25000 case, and 1/8000 if onset under 2 years) - Case fatality: 3-6% in developing countries, 1-3/1000 in developed countries
Worldwide	- Worldwide - In high coverage area: outbreak every 7-8 years - In low coverage area: outbreak every 3-4 years
Lebanon	Annual outbreaks from 2003 to 2007, and in 2013
Control objective	Elimination goal
Surveillance and Investigation	
Surveillance approach	Syndromic approach (febril macuplo-papular rash)

Collect data about case	Signs, vaccination status, travel history, complications, contact tracing, pregnancy...
Collect specimen from case	Serum, urine, oral fluid, dried blood, throat swab, (CSF)
Collect data about contacts	Cases among contact, travel history, vaccination status, pregnancy...
Collect specimen from contacts	If cases among contact
Test	- IgM: 1-28 days from rash onset (serum, oral fluid, urine, CSF, dried blood) - PCR: 1-7 days from rash onset (oral fluid, dried blood) - Culture: 1-5 days from rash onset (urine, throat swab)
Laboratories	- Serology and PCR: RHUH - Virus isolation: Tunis Pasteur and Central Public Health of the Sultanat d'Oman
Outbreak level	At least 3 confirmed cases epidemiologically (or virologically) linked.
Notification to WHO	- To report to WHO if outbreak - Routine monthly dataset sharing
Control	
Primary prevention	Vaccination with at least 2 doses after 1 year
Case management	- Symptomatic treatment - Treatment of the complications
Isolation	- Droplet isolation - If hospitalized: airborne isolation
Contact prevention	Vaccination of susceptible contacts
Contact quarantine	NA
Mass prevention	Vaccination campaign
School eviction	4 days after rash onset
Measles case definition (MOPH circular no.11 dated on the 23rd February 2013)	
Laboratory-confirmed case	A suspect case with presence of measles specific IgM antibodies or positive PCR

Epidemiologically-confirmed case	A suspect case who has not had a laboratory test, and who is epidemiologically-linked to a laboratory-confirmed case in which rash onset occurred 7-18 days earlier
Suspected case / clinical case	- Any person with fever & maculo-papular (non vesicular) rash - Or any person in whom a clinician suspects measles infection
Forms	
Reporting	Standard reporting form or specific measles/ rubella reporting form (MOPH circular no. 13 dated on the 23rd February 2013)
Investigation	Measles/rubella investigation form (MOPH circular no. 75 dated on the 31st July 2013)

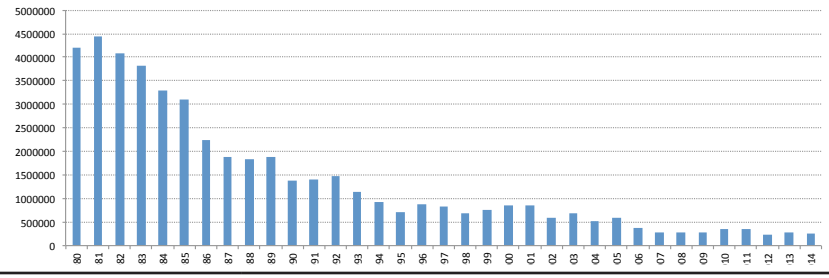
National figures

Figure 1: Reported measles cases in Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Reported measles cases (nb), worldwide, 2008-2012 (Source: WHO)



Meningitis	
Main agents	1) Main bacteria: - Neisseria meningitidis (meningococcus): Gram (-) diplococcus. Main invasive serotypes: A, B, C, W135, X and Y - Haemophilus influenza: Gram (-) cocco-bacilli. There are 6 serotypes (a-f) for encapsulated strains. The serotype (b) is the most pathogenic. - Streptococcus pneumonia (pneumococcus): Gram (+) diplococcus. There are more than 90 known capsular serotypes. - Leptospirosis: Spirochetes, Leptospira interrogans (26 serogroups) - Listeria monocytogenes: Gram (+), rod-shapped - Other: Staphylococcus, enteric bacteria, group B Streptococci, Mycobacterium tuberculosis… 2) Main virus: - Mumps - Measles - West Nile virus: a flavivirus - Enterovirus: Coxsackie viruses A (2-4, 7, 9, 10) Coxsackie viruses B (1-6), Echoviruses (2, 5-7, 9-11, 14, 18, 30), Enterovirus 71, Poliovirus (1-3) - Herpes simplex virus (type 1 & 2): family Herpesviridae - Varicella-Zoster virus: Human (alpha) herpesvirus 3 (varicella-zoster) from the group Herpesvirus - Adenovirus: several types (1, 2, 3, 4, 5 and 7), genus Mastadenovirus, family Adenoviridae - Lymphocytic choriomeningitis virus: an Arenavirus - Sandfly fever viruses: genus phlebovirus, family Bunyaviridae. They include more than 60 antigenically virus serotypes. Two main groups are identified: the sandfly fever group including the Naples serocomplex (Karimabad virus, Arabia virus, Massilia virus, Punique virus, Tehran virus, Toscana virus…) & Sicilian serocomplex; and the Uukuniemi group. - Other virus: Arboviruses… 3) Main parasites: Candida albicans, Cryptococcus...

<table>
<tr><td>Incubation period</td><td>The incubation varies with the agent.
<table>
<tr><th>Agent</th><th>Incubation period</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Neisseria meningitidis</td><td>2-10 days (commonly 3-4 days)</td></tr>
<tr><td>Haemophilus influenza</td><td>2-4 days</td></tr>
<tr><td>Streptococcus pneumoniae</td><td>1-4 days</td></tr>
<tr><td>Listeria monocytogenes</td><td>3-70 days (median: 3 weeks)</td></tr>
<tr><td>Leptospira</td><td>5-14 days (2-30 days)</td></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>West Nile virus</td><td>3-12 days</td></tr>
<tr><td>Enterovirus</td><td>- Enterovirus: 1-2 days
- Echovirus: 2-10 days
- Coxsackievirus: days to years (myocarditis)
- Poliovirus: 7-14 days</td></tr>
<tr><td>Herpes simplex virus</td><td>2-12 days</td></tr>
<tr><td>Varicella-Zoster virus</td><td>14-16 days (10-21days)</td></tr>
<tr><td>Lymphocytic choriomeningitis virus</td><td>8-13 days (15-21 days for meningitis)</td></tr>
<tr><td>Sandfly fever viruses</td><td>3-4 days (up to 6 days)</td></tr>
</table></td></tr>
<tr><td>Period of communicability</td><td>It varies with the agent.
<table>
<tr><th>Agent</th><th>Period of communicability</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Neisseria meningitidis</td><td>From onset and up to 24 hours after starting antibiotherapy that has effective concentrations in nasopharynx</td></tr>
<tr><td>Haemophilus influenza</td><td>From onset and up to 24-48 hours of starting effective antibiotherapy</td></tr>
<tr><td>Streptococcus pneumoniae</td><td>As long as bacteria is in the upper respiratory tract</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td>Listeria monocytogenes</td><td>- Mother of infected newborn can shed the bacteria in vaginal discharges and urine for 7-10 days after delivery.
- Infected patient can shed the bacteria in stool for several months.</td></tr>
<tr><td>Leptospira</td><td>- Rare person-to-person transmission
- Usually, bacteria is excreted in urine for 1 month</td></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>West Nile virus</td><td>Rare person-to-person transmission: blood transfusion, mother to child...</td></tr>
<tr><td>Enterovirus</td><td>- Virus is excreted in stools for several weeks.
- Virus is excreted in pharynx for 1-3 weeks post infection.</td></tr>
<tr><td>Herpes simplex virus</td><td>For 2 weeks and up to 7 weeks after primary lesions</td></tr>
<tr><td>Varicella-Zoster virus</td><td>2 days before until skin lesions are crusted (5 days)</td></tr>
<tr><td>Lymphocytic choriomeningitis virus</td><td>Unlikely person-to-person transmission</td></tr>
<tr><td>Sandfly fever viruses</td><td>Virus is present in blood of infected patient 1 day before and 1 day after onset of illness.</td></tr>
</table>
</td></tr>
<tr><td>Reservoir</td><td>The reservoir varies with the agent.
<table>
<tr><th>Agent</th><th>Reservoir</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Neisseria meningitidis</td><td>Humans</td></tr>
<tr><td>Haemophilus influenza</td><td>Humans</td></tr>
<tr><td>Streptococcus pneumoniae</td><td>Humans with possible carriage</td></tr>
</table>
</td></tr>
</table>

	Listeria monocytogenes	- Soil, forage, mud, silage, livestock food, water - Domestic/wild animals - Humans
	Leptospira	- Wild/domestic animals - May remain viable in moist soil, water for weeks & months
	Virus	
	West Nile virus	Birds/mosquitoes cycle
	Enterovirus	Humans
	Herpes simplex virus	Humans
	Varicella-Zoster virus	Humans
	Lymphocytic choriomeningitis virus	Mouse (in particular house mouse, Mus musculus), hamster
	Sandfly fever viruses	Sandflies (transovarian transmission)
Modes of transmission	The modes of transmission vary with the agent.	
	Agent	**Modes of transmission**
	Bacteria	
	Neisseria meningitidis, Haemophilus influenza, Streptococcus pneumoniae	Person-to-person transmission: direct contact with respiratory (nasal/throat) droplets
	Listeria monocytogenes	- Foodborne: contaminated food (milk, soft cheese, vegetables, meat) - Person-to-person: direct contact with cutaneous lesions, or transplacental transmission (mother to fetus, mother to newborn) - Nosocomial transmission: contaminated instruments

Leptospira	- Contact of abraded skin or mucous membranes with soil, vegetation or contaminated water with urine of infected animals - Direct contact with urine, fluids or tissues of infected animals - Ingestion of food or water contaminated with urine of infected animals - Inhalation of droplet aerosols of contaminated fluids
Virus	
West Nile virus	- Usually bite of infected mosquito - Rarely: blood transfusion, mother to fetus, organ transplantation
Enterovirus	- Person-to-person: fecal oral route, respiratory droplets, aerosols, fomites, transplancental, perinatal - Contaminated water
Herpes simplex virus	Person-to-person: - Contact with saliva (HSV-1) - Sexual contact (HSV-2) - Soiled hands - Infected birth canal: neonates
Varicella-Zoster virus	Person-to-person: direct and indirect contact, droplet, air-bone spread of vescile fluid or respiratory discharge
Lymphocytic choriomeningitis virus	- Oral/respiratory contact with contaminated food or dust - Direct contamination of skin lesions or cuts
Sandfly fever viruses	Bite of infective phlebotomine (sandfly): Phlebotomus papatasi, P. perfiliewi , P. perniciosus, P. major sensu lato

<table>
<tr><td>Clinical presentation</td><td>The symptoms vary with the agent.
<table>
<tr><th>Agent</th><th>Clinical presentation</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Neisseria meningitidis</td><td>Meningitis, septicaemia</td></tr>
<tr><td>Haemophilus influenza</td><td>Meningitis, epiglottitis, pneumonia …</td></tr>
<tr><td>Streptococcus pneumoniae</td><td>Meningitis, pneumonia, septicaemia, otitis media, mastoiditis...</td></tr>
<tr><td>Listeria monocytogenes</td><td>- Mild to severe illness: meningitis, septicaemia
- If pregnancy: preterm delivery, fetal infection, stillbirth...</td></tr>
<tr><td>Leptospira</td><td>Rash, hemolytic anemia, hemorrhage, hepato-renal failure, mental confusion, myocarditis…</td></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>West Nile virus</td><td>- Usually asymptomatic
- Complications: meningitis and encephalitis</td></tr>
<tr><td>Enterovirus</td><td>- Asymptomatic
- Gastro-enteritis, flu-like illness, aseptic meningitis, encephalitis, paralysis, conjunctivitis, hand-foot & mouth disease, hepatitis, herpangina, myocarditis...</td></tr>
<tr><td>Herpes simplex virus</td><td>- Gingivostomatitis (HSV-1), genital infection (HSV-2)
- Complications: meningo-encephalitis, kerato-conjunctivitis, neonatal infection
- Possible reactivation of latent infetion (herpes labialis)</td></tr>
</table></td></tr>
</table>

	Varicella-Zoster virus	Two diseases: - Varicella/Chikenpox as primary infection: initial maculo-papular rash then vesicular, with possible secondary bacterial infection of skin lesions. Rare complications: pneumonia, hemorrhage, meningoencephalitis... - Herpes Zoster: if reactivation
	Lymphocytic choriomeningitis virus	- Influenza-like illness - Complications: meningitis, arthritis, myocarditis, orchitis, parotitis…
	Sandfly fever viruses	- Usually self-limited disease: fever, myalgia, headache, photophobia… - Complications: Aseptic meningitis & meningoencephalitis (Toscana)

Worldwide

Agent	**Profile**
Bacteria	
Neisseria meningitidis	Endemic in the African meninigitis belt (from Senegal to Ethiopa)
Haemophilus influenza	Worldwide under 5 years
Streptococcus pneumoniae	Worldwide
Listeria monocytogenes	Worldwide
Leptospira	Worldwide
Virus	
West Nile virus	Widespread in Africa, Middle East, North America, India
Enterovirus	Worldwide
Herpes simplex virus	Worldwide
Varicella-Zoster virus	Worldwide

	<table><tr><td>Lymphocytic choriomeningitis virus</td><td>America, Europe</td></tr><tr><td>Sandfly fever viruses</td><td>In Mediterranean counties, Europe and Middle East</td></tr></table>
Lebanon	The annual average of reported cases of meningitis is 192. Among them: - Meningitis due to Neisseria meningitis: annual average of 6 (2-12) cases per year - Meningitis due to Haemophilus influenza: annual average of 1 (0-2) cases per year. - Meningitis due to Streptococcus pneumoniae: annual average of 19 (16-21) cases per year.
Control objective	- Control - Eradication for poliovirus
Surveillance and Investigation	
Surveillance approach	Syndromic approach: meningitis
Collect data about case	Demography, clinical presentation, complications, vaccination status, travel history…
Collect specimen from case	CSF, serum...
Collect data about contacts	Age, travel history
Collect specimen from contacts	If symptoms
Test	- CSF: cytology, biochemistry, soluble antigens, culture, PCR - Blood: CBC, culture
Laboratories	- Clinical laboratories - Reference laboratories: serotypes, virus detection and isolation
Outbreak level	At least 3 epidemiologically-linked cases with same agent and type
Notification to WHO	If outbreaks

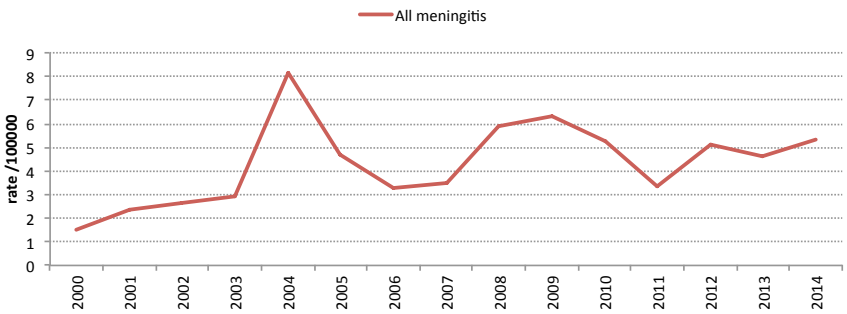
Control	
Primary prevention	- Vector control - Water safety, food safety - Hygiene and hand washing - Vaccination for specific pathogens and circumstances: • Childhood vaccination: Haemophilus influenza b, Streptococcus pneumoniae • Living or travelling to endemic countries: Neisseria meningitidis • Mass gathering, outbreaks
Post-exposure prevention	- For Neisseria menintigitidis: refer to meningococcal infection chapter - For Haemophilus influenza b - For fatal Bacterial meningitis with unidentified agent: Rifampin 600 mg (for children > 1 month: 10 mg/kg; for children < 1 month: 5 mg/kg), per os, every 12 h for 4 doses. Ceftriaxone 250 mg (for children < 15 year: 125 mg), IM, for 1 dose. For adults, fluoroquinolone (ciprofloxacin or levofloxacin).
Case management	For bacterial meningitis: - For 18-50 years, the recommended treatment for the main pathogens (S. pneumoniae, N. meningitidis, S. aureus) is Ceftriaxone or Cefotaxime plus Vancomycin - For 50 years and above, the recommended treatment for the main pathogens (S. pneumoniae, L. monocytogenes, S. aureus, Gram negative bacteria, N. meningitidis) is Ceftiaxone or Cefotaxime plus Ampicillin, plus Vancomycin
Isolation	For bacterial meningitis: Standard & droplet isolation for the first 24 hours of the therapy.
Contact prevention	For bacterial meningitis (Neisseria menintigitidis Haemophilus influenza b): Antibio-prophylaxis for close contacts
Mass prevention	Depends on the pathogen and the presence of outbreak

Meningitis case definitions	
Meningitis (MOPH circular no. 52 dated on the 10th April 2007)	
Suspected case	Case presenting fever >= 38.5ºC with: - Neck stiffness - And/or other meningeal sign: severe altered consciousness, unexplained headache, photophobia, nausea, vomiting - And/or petechial/purpural or other rash. For children under 2 years of age, a case presenting fever (>= 38.5ºC) with: - Bulging fontanelle - And/or irritability - And/or lethargy.
Neisseria meningitidis: refer to meningococcal infection chapter	
Haemophilus influenzae (MOPH circular no. 54 dated on the 10th April 2007)	
Confirmed case: HIb	A case of bacterial meningitis with: - Isolation of Haemophilus influenzae type b (CSF or blood) - Or identification of Hib antigen from normally sterile fluids (CSF or blood)
West Nile virus (MOPH circular no. 36 dated on the 5th May 2012)	
Confirmed case: West Nile	A case with meningitis or encephalitis with: - IgG antibody sero-conversion (or significant increase in antibody titers) in two serial specimens collected at a one week interval by enzyme-linked immunosorbent assay (ELISA) - Or IgM antibody capture enzyme-linked immunosorbent assay (ELISA) - Or neutralisation assays - Or viral detection by reverse transcription polymerase chain reaction (RT-PCR) assay - Or virus isolation by cell culture
Other meningitis	
Confirmed cases	Meningitis with laboratory confirmation of the causative agent by culture, soluble antigens, PCR or other confirmatory tests

Forms	
Reporting	Specific meningitis reporting form (MOPH circulat no. 53 dated on the 27th May 2002) or standard reporting form
Investigation	Specific investigation form for meningitis (MOPH circulat no. 76 dated on the 31st July 2013)

National figures

Figure 1: Reported meningitis incidence rate (per 100000), Lebanon, 2000-2014 (Source: MOPH)



International figures

Figure 2: Incidence of Haemophilus influenza b infection (per 100000) for the under 5 years, 2000 (Source: www.who.int)

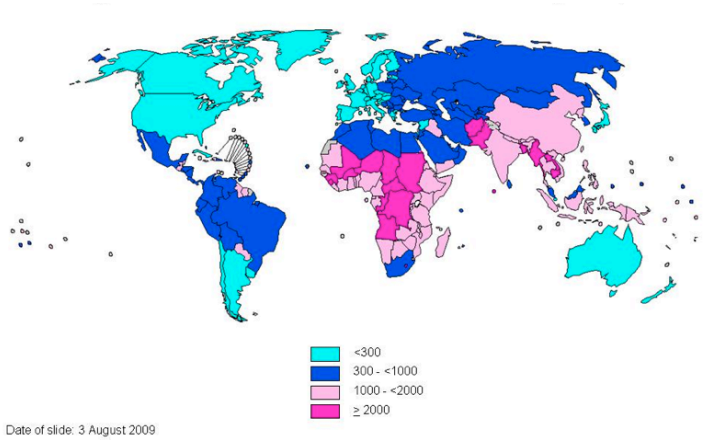


Figure 3: Incidence of pneumococcal infection (per 100000) for the under 5 years, 2000 (Source: www.who.int)

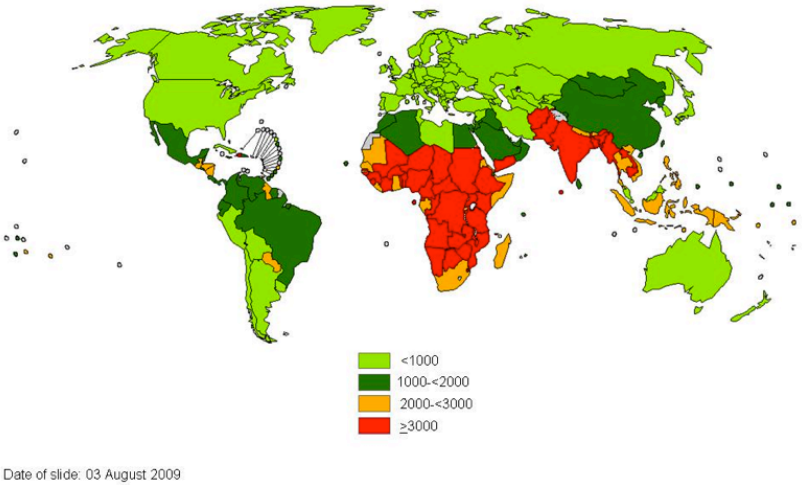


Figure 4: Distribution of West Nile fever cases in the region, season 2015 up to 19 Nov 2015 (Source: ECDC)

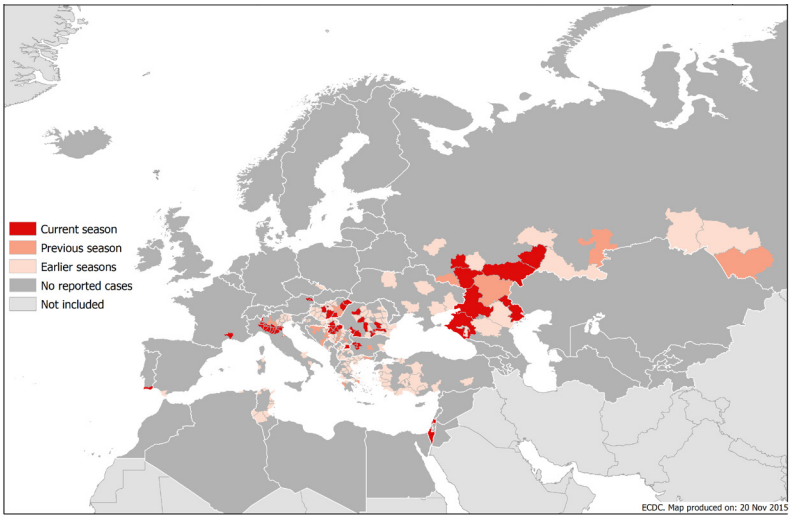
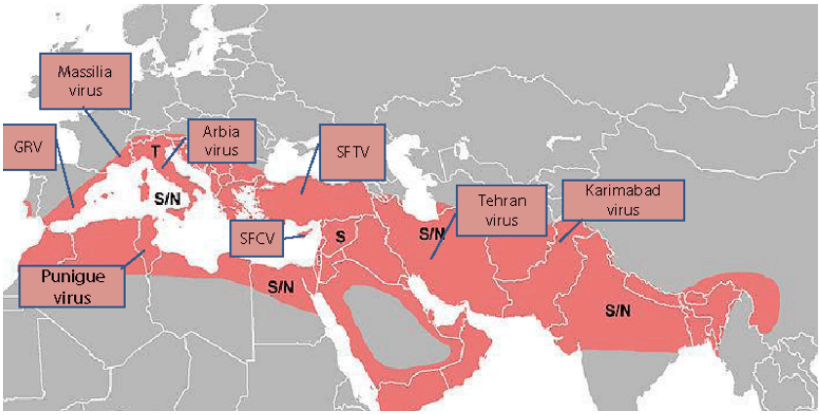


Figure 5: Distribution of sandfly fever viruses by serotype.
Abbreviations: S: Sandfly Sicilian Virus, N: Sandfly Naples Virus, T: Toscana virus, SFTV: Sandfly Fever Turkey Virus; SFCV: Sandfly Fever Cyprus Virus; GRV: Granada Virus.
(Source: Kocak Tufan Z, Tasyaran MA, Guven T (2013) Sandfly Fever: A Mini Review. Virol Mycol 2: 109)



Meningococcal Infection

Neisseria meningitidis	
Agent	Gram-negative diplococcal bacteria
Serogroups	12 serogroups of N. meningitidis have been identified, six of which can cause epidemics: A, B, C, W135, X and Y
Incubation period	2-10 days, commonly 3-4 days
Period of communicability	Cases should be considered infectious from the time they are exposed until 24 hours after initiation of treatment or chemoprophylaxis with appropriate antibiotics with substantial concentrations in oronasopharyngeal secretions.
Reservoir	- Humans - Asymptomatic carriage in nasopharynx is common.
Modes of transmission	- Person-to-person by direct contact with respiratory droplets of infected people - Most cases acquired through exposure to asymptomatic carriers.
Carrier	- 5-10% asymptomatic carriage
Vaccine	- Meningococcal A conjugate vaccine, C conjugate vaccine, tetravalent A, C, Y and W135 conjugate vaccines and meningococcal polysaccharide vaccines - No vaccine available for serogroup B
Clinical presentation	- Bacterial meningitis - Septicemia: rare and severe with purpura - Complications: cerebral lesion, hearing loss, learning disorders among 10-20% of survivors - Case fataliry rate: 8-15% despite treatment

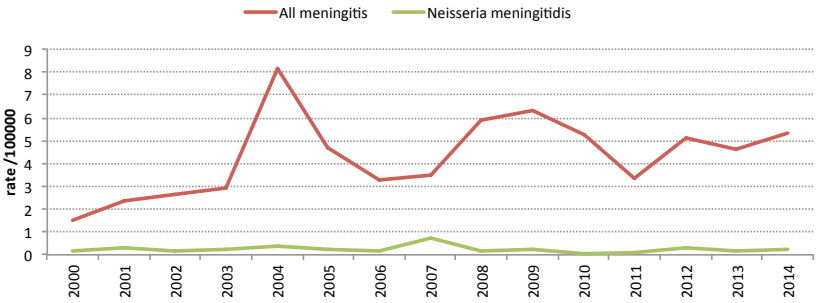
Worldwide	- The meningitis belt of sub-Saharan Africa, from Senegal in the West to Ethiopia in the East, has the highest rates of the disease. - 80–85% of all cases in the meningitis belt are due to group A meningococcus, with epidemics occurring at 7–14 years interval. - In the 2009 epidemic season, 88199 suspected cases, including 5352 deaths were reported from 14 African countries.
Lebanon	Sporadic cases
Control objective	To control and reduce the occurrence of secondary cases
Surveillance and Investigation	
Surveillance approach	Disease approach & syndromic approach (meningitis)
Collect data about case	Patient identification, demographic data, clinical symptoms, nationality, hospitalization, laboratory results, immunization status, travel history, occupational status...
Collect specimen from case	CSF, blood, isolates
Collect data about contacts	Identify close contacts and their age, search for similar cases among contacts...
Collect specimen from contacts	No
Test	- Culture - Soluble antigen detection - Serogroup identification - PCR
Laboratories	- Culture: clinical laboratories - Serogroup identification: RHUH, AUB-MC
Outbreak level	At least three confirmed cases epi-linked with same agents / types

Notification to WHO	To notify confirmed cases to WHO if outbreak
Control	
Primary prevention	Vaccination: - If living or travelling to endemic area (quadrivalent ACYW135 - and bivalent AC) - If travelling to KSA - For specific groups: military
Case management	Penicillin, ampicillin, chloramphenicol, 3rd generation cephalosporin or vancomycin
Isolation	- Respiratory isolation up to 24 hrs after starting antibiotics treatment - Disinfecting nasal and throat discharges and contaminated articles
Contact prevention	Prophylactic antibiotics: rifampicine, ceftriaxone and ciprofloxacine
Mass prevention	Vaccination if outbreak of serotype with available vaccine
Meningococcal infection case definition (MOPH circular no. 63 dated on the 14th April 2007)	
Confirmed case	A case of meningitis or a suspected or probable case of meningococcal disease with laboratory confirmation: - Isolation of N. meningitidis from normally sterile fluids (CSF or blood) - Or detection of N. meningitidis antigens from normally sterile fluids (CSF or blood) - Or positive test with PCR
Probable case	- A case of meningitis or a suspected case of meningococcal disease with demonstration of Gram-negative diplococci - Or ongoing epidemic or epidemiological link to a confirmed case
Suspected case	A case of meningitis or septicemia with petechial or purpural rash

Forms	
Reporting	Specific meningitis reporting form (MOPH circular no. 53 dated on the 27th May 2002) or standard reporting form
Investigation	Meningitis investigation form (MOPH circular no. 76 dated on the 31st July 2013)

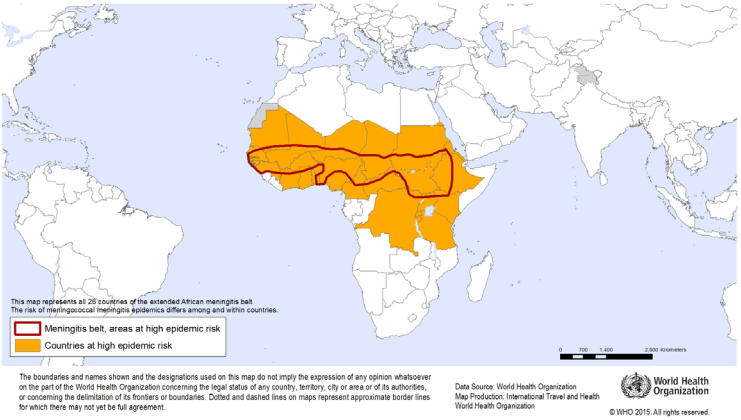
National figures

Figure 1: Reported meningitis incidence rates, Lebanon, 2000 – 2014 (Source: MOPH)



International figures

Figure 2: Countries at risk of meningococcal meningitis, worldwide, 2015 (Source: WHO)



Mumps

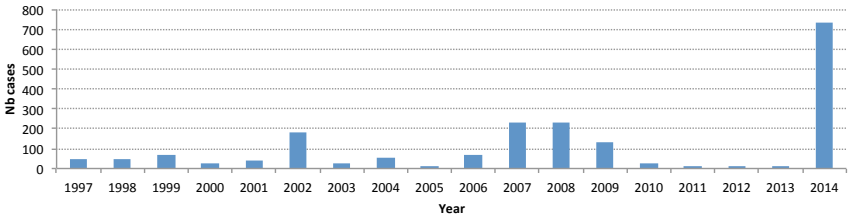
Mumps	
Agent	Mumps virus, genus Rubulavirus, family Paramyxoviridae
Incubation	16-18 days (range 12-25 days)
Period of communicability	- Virus present in saliva 7 days prior and 9 days after parotitis onset - Virus present in urine 6 days prior and 15 days after onset - Max 2 days prior and 4 days after onset
Reservoir	Humans
Modes of transmission	Person-to-person transmission: droplet and airborne
Clinical presentation	- Common manifestation: parotitis (30-40%) - Asymptomatic in 20% - Complications: orchitis, oophoritis, sensoneuronal loss, hearing loss, pancreatitis, aseptic meningitis/ encephalitis. Rarely nephritis, arthropathy, cardiac abnormalities, death
Worldwide	Worldwide. Usually no outbreaks
Lebanon	- Annual average of reported cases 73 (14-233) from 1997 to 2013 - National outbreak in 2014-2015
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Symptoms, complications, vaccination status, setting, profession...
Collect specimen from case	- Serum, urine, oral fluid (1-6 weeks after onset) - CSF if meningitis

Collect data about contacts	Cases among contact
Collect specimen from contacts	Specimen if the contact developes symptoms
Test	IgM, PCR, virological culture
Laboratories	- IgM serology at RHUH - Virus culture: supranational laboratories
Outbreak level	At least 3 confirmed cases epidemiologically-linked
Notification to WHO	To notify to WHO if outbreak
Control	
Primary prevention	At least 2 doses of vaccine > 1 year
Case management	Symptomatic treatment
Isolation	Droplet and respiratory precautions for 5 days from onset
Contact prevention	Vaccination of susceptible contacts
Mass prevention	Vaccination
School eviction	5 days after onset of parotitis
Mumps case definition (MOPH circular no. 110 dated on the 6th September 2006)	
Confirmed case	A suspected case confirmed by laboratory by one of the following tests: - Isolation of mumps virus from clinical specimen (throat swab, urine or CSF) - Seroconversion or significant rise (at least fourfold) in serum mumps IgG titre (in the absence of mumps immunization in the preceding 6 weeks) - Positive serological test for mumps–specific IgM antibodies (in the absence of mumps immunization in the preceding 6 weeks).
Probable case	A suspected case with link with laboratory-confirmed case

Suspected case	Acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland, lasting 2 or more days without other apparent cause.
Forms	
Reporting	Standard reporting form
Investigation	Specific mumps investigation form (MOPH circular no. 152 dated on the 15th October 2007)

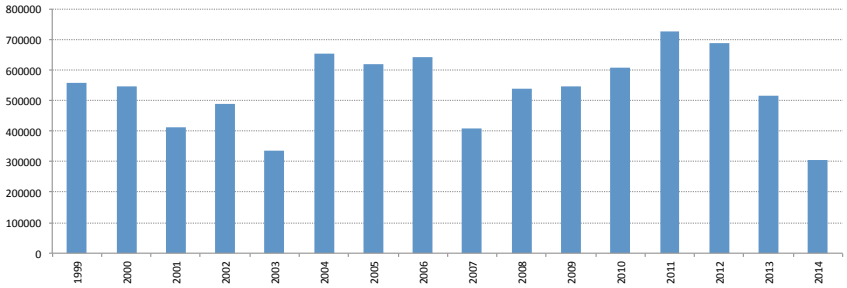
National figures

Figure 1: Reported cases of mumps, Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Reported mumps cases (nb), worldwide, 1999-2014 (Source: WHO)



Pertussis

Pertussis	
Agent	Bacteria: Bordetella pertussis (the bacillus of pertussis) or Bordetella parapertussis (causes parapertussis)
Incubation	9-10 days (6-20 days)
Period of communicability	- During early catarrahal phase (up to 3 weeks) - No longer after 5 days of antibiotic treatement
Reservoir	- Humans for B. pertussis - Ovins for B. parapertussis
Modes of transmission	Person-to-person: direct contact with droplets & respiratory discharges, rarely by indirect contact though contaminated objects or air
Clinical presentation	- Upper respiratory infection - Complications: apnea (<1 y), encephalopathy, hernias, death - Mis-diasgnosed among adults
Worldwide	- Worldwide. Outbreak every 3-4 years (in prevaccine era) - In high coverage area: incidence for under 15 y is <1/100000.
Lebanon	Annual average of 31 cases (1-65)
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Symptoms, complications, vaccination status
Collect specimen from case	Throat swab
Collect data about contacts	Presence of children under 1 year among close contacts

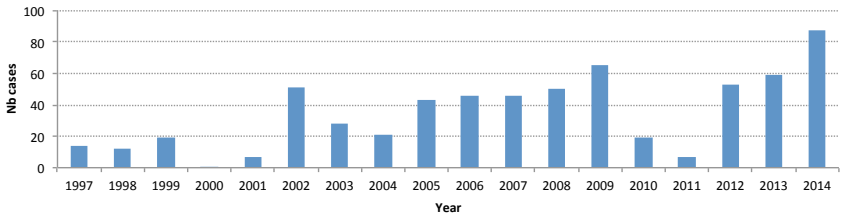
Collect specimen from contacts	None
Test	Bacteriological culture
Laboratories	RHUH
Outbreak level	At least 3 confirmed cases epidemiologically-linked
Notification to WHO	If outbreak
Control	
Primary prevention	Vaccination in childhood and adulthood (acellular vaccine for adults)
Case management	Erythromycin or clarythromycin...
Isolation	Standard and droplet precautions
Contact prevention	- Vaccination - Erythromycin specific conditions
Contact quarantine	Inadequately immunized household contacts <7 y may be excluded from schools & public gatherings for 21 days after last exposure or until the cases & contacts have received 5 days of a minimum 7-day course of antibiotics
Mass prevention	Vaccination
School eviction	Until the case have received 5 days of a minimum 7-day course of appropriate antibiotics
Pertussis case definition (MOPH circular no. 109 dated on the 6th September 2006)	
Confirmed case	A suspected case that is laboratory confirmed with: - Isolation of Bordetella pertussis (or parapertussis) - Or detection of genomic sequences by polymerase chain reaction (PCR) - Or positive paired serology

Suspected case	- A person with a cough lasting at least 2 weeks with at least one of the following:
	  - Paroxysms (fits) of coughing
	  - Inspiratory “whooping”
	  - Post-tussive vomiting (vomiting immediately after coughing)
	- Or a case diagnosed as pertussis by a physician

Forms	
Reporting	Standard reporting form
Investigation	Pertussis investigation form (MOPH circular no. 192 dated on the 2nd November 2007)

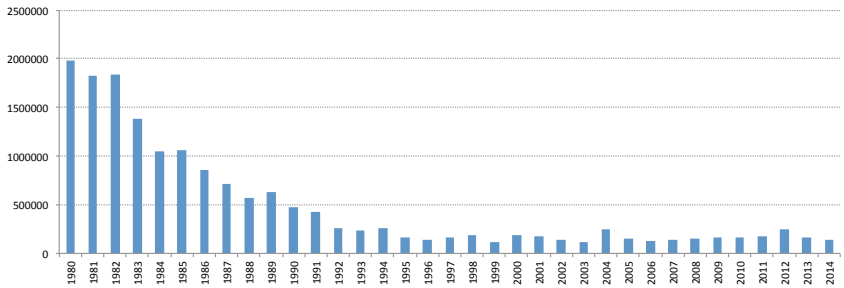
National figures

Figure 1: Reported pertussis in Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Reported pertussis cases (nb), worldwide, 1980-2014 (Source: WHO)



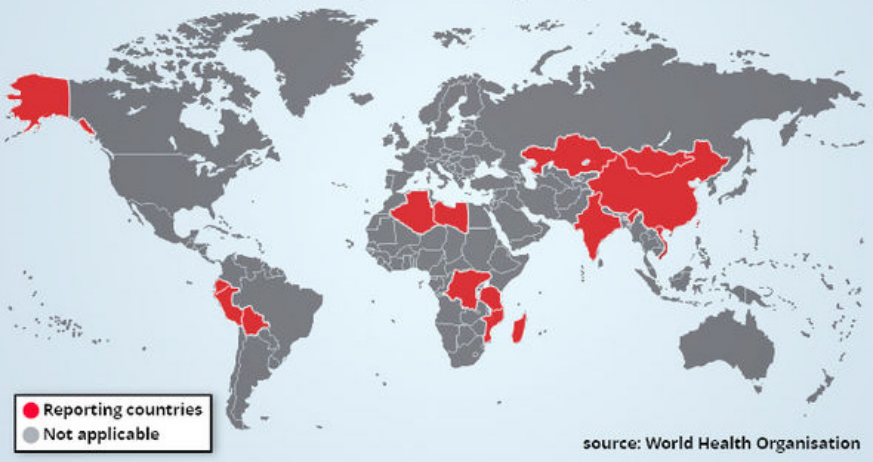
Plague

Plague	
Agent	Bacteria: Yersinia pestis
Incubation	1-7 days
Period of communicability	- Pneumonic plague: during the active phase - Bubonic phase (rare): if contact with pus from suppurative buboes
Reservoir	Wild rodents, lagomorphs (rabbits, hares), wild carnivores and domestic cats
Modes of transmission	- Most common: bite of infected rodent fleas (Xenopsylla cheopis): • Wild rodent fleas linked to zoonotic/sylvatic cycle • Commensal rodent fleas infected by peri-domestic mammals & linked to poor hygiene - Handling of infected animals - Contact with infected cats via bites or droplets - Laboratory exposure - Person-to-person: • Airborne droplets from patients with pneumonia or pharyngitis plague • Pulex irritans fleas (human flea) - Aerosol: deliberate use
Clinical presentation	- Bubonic plague (90%): febrile lymph nodes that become swollen, inflamed, tender and may suppurate. Inguinal area is more concerned than axillary & cervical areas. Complications: septicemic plague, meningitis, disseminated intravascular coagulation, pneumonia, mediastinitis, pleural effusion, endotoxin shock... Case fatality is 50-60% if untreated. - Secondary pneumonic plague is source of primary pneumonic or pharyngitis plague, causing outbreaks. Fatal if untreated.

Worldwide	- Urban plague: Africa - Wild plague: America, Africa, Asia, Europe - Endemic in China, India, Laos, Mongolia, Myanmar, Vietnam, and Indonesia
Lebanon	Cases were reported during the 14th century. No report was found since 1994.
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Clinical presentation, complications, occupation, exposure...
Collect specimen from case	Blood, buboes, sputum, CSF
Collect data about contacts	Identify contacts and ensure needed follow up
Collect specimen from contacts	If symptom
Test	Culture, PHA test, seroconversion
Laboratories	WHO reference laboratories
Outbreak level	At least 1 confirmed case
Notification to WHO	Yes
Control	
Primary prevention	- Avoiding flea bites by use of insecticides and repellents - Environmental measures: fleas and rodents control
Post-exposure prevention	Chemoprophylaxis: tetracycline, doxycycline or chloramphenicol for 1 week after exposure
Case management	Streptomycin, gentamicin, tetracycline and chloramphenicol

Isolation	- Standard and contact precautions for patients with bubonic plague for 48 hrs after starting treatment - Strict isolation with airborne precautions for patients with pneumonic plague until 48 hrs after completing antibiotic therapy - Disinfecting sputum and purulent discharge and soiled articles
Contact prevention	- Chemoprophylaxis - Disinfect close contacts with insecticides
Contact quarantine	- Contacts' identification & monitoring for 7 days - For pneumonic plague contacts: those who refused chemoprophylaxis are put in strict quarantine with careful surveillance for 7 days.
Plague case definition (MOPH circular no. 113 dated on the 6th September 2006)	
Confirmed case	A suspected or probable case that is laboratory-confirmed by: - Isolation of Yersinia pestis in cultures from buboes, blood, CSF or sputum - Or passive haemagglutination (PHA) test, demonstrating an at least 4-fold change in antibody titre specific for F1 antigen of Y. pestis (haemagglutination inhibition test in paired sera)
Probable case	Suspected case with: - Positive direct fluorescent antibody (FA) test for Yersinia pestis in clinical specimen - Or passive haemagglutination test, with antibody titre of at least 1:10, specific for the F1 antigen of Y. pestis as determined by the haemagglutination inhibition test (HI) - Or epidemiological link with a confirmed case

Suspected case	Rapid onset of fever, chills, headache, severe malaise, prostration with: - For the bubonic form: extreme painful swelling of lymph nodes (buboes) - For the pneumonic form: cough with blood-stained sputum, chest pain and difficult breathing Both forms can progress to a septicaemic form with toxaemia.
Forms	
Reporting	Standard reporting form
Investigation	Plague investigation form (MOPH circular no. 8 dated on the 7th January 2015)
National figures	
No cases reported in Lebanon during the last 2 centuries.	
International figures (Source: www.who.int)	
400 cases reported to WHO in 2012 in 5 countries from Africa & America.	
Figure 1: Countries reporting human plague 2002-2014 (Source: WHO)	



Rabies

Rabies	
Agent	Rabies virus, genus Lyssavirus, family Rhabdoviridae
Incubation period	3-8 weeks (few days to several years)
Period of communicability	- Rabid dogs/cats are infectious 3-7 days before onset and up to death - Rabid bats are infectious 12 days before onset and up to death - Person-to-person transmission is possible but have never been confirmed
Reservoir	- Wild and domestic canidae (dogs, foxes, wolves...) and other carnivores (cats...) - In some countries: bats
Modes of transmission	- Usually: virus-laden saliva of rabid animal introduced through wound (scratch, bite, existing wound) - Possible: mucous membranes (eyes, nose, mouth) contaminated with saliva - Airborne in cave with rabid bats
Clinical presentation	Encephalomyelitis, with hydrophobia, fatal within 1-2 weeks from onset
Worldwide	Worldwide
Lebanon	- Annual average of 430 exposures managed by the anti-rabies centers - Annual 0-2 cases of reported human rabies
Control objective	Control via post-exposure prophylaxis
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Symptoms, exposure history, post exposure prophylaxis, occupation...
Collect specimen from case	CSF, serum, saliva, skin biopsy
Collect data about contacts	If other exposed persons

Collect specimen from contacts	If symptoms
Test	Serology, antigen detection, PCR, virus culture
Laboratories	Supranational laboratories
Outbreak level	At least one case
Notification to WHO	If cross-border case or cross-border origin, based on IHR (2005)
Control	
Primary prevention	- Human vaccination for high risk group - Animal vaccination
Post-exposure prevention	- Clean and wash the wound - Immunoglobulins: Human (20 IU/Kg) or equine (40 IU/Kg) rabies immunoglobulin at the site of the bite as soon as possible after exposure. It should be infiltrated around the bite wound and what remains should be given IM. - Vaccination: Vaccine at different sites and different days (day 0, 7, 21, 90)
Case management	Intensive supportive medical care
Isolation	- Standard and contact precautions - Avoid contact with saliva of infected persons
Contact prevention	Post-exposure prophylaxis for close contacts (vaccination)
Mass prevention	Animal vaccination
Case definitions	
Rabies exposure case definition (MOPH circular no. 50 dated on the 26th April 2005)	
Confirmed case	A person who had a close contact (usually a bite or a scratch) with a laboratory-confirmed rabid animal
Possible case	A person who had a close contact (a bite or a scratch) with a rabies-susceptible animal in/or originating from a rabies-infected area

Rabies case definition (MOPH circular no. 109 dated on the 6th September 2006)	
Confirmed case	A suspected case that is laboratory-confirmed by one or more of the following: - Detection of rabies viral antigens by direct fluorescent anti-body (FA) in clinical specimens, preferably brain tissue (collected post-mortem) - Detection of rabies viral antigens by FA on skin or corneal smear (collected ante-mortem) - FA positive after inoculation of brain tissue, saliva or CSF in cell culture, or after intracerebral inoculation in mice or in suckling mice - Detectable rabies-neutralizing antibody titre in CSF of an unvaccinated person - Identification of viral antigens by PCR on fixed tissue collected post-mortem in a clinical specimen (brain tissue or skin, cornea or saliva) - Isolation of rabies virus from clinical specimens & confirmation of rabies viral antigens
Probable case	A suspected case with a history of contact with a suspected rabid animal
Suspected case	A case with acute neurological syndrome (encephalitis) dominated by forms of hyperactivity (furious rabies) or paralytic syndromes (dumb rabies) progressing towards coma and death, usually by respiratory failure, within 7 to 10 days after the first symptoms if no intensive care is instituted
Forms	
Reporting of exposure	Rabies exposure form (MOPH circular no. 90 dated on the 19th September 2005): filled by the anti-rabies centers
Reporting of human case	Standard reporting form for communicable diseases
Investigation	Rabies investigation form (MOPH circular no. 74 dated on the 31st July 2012)

National figures

Figure 1: Reported rabies human cases, Lebanon, 1997-2014 (Source: MOPH)

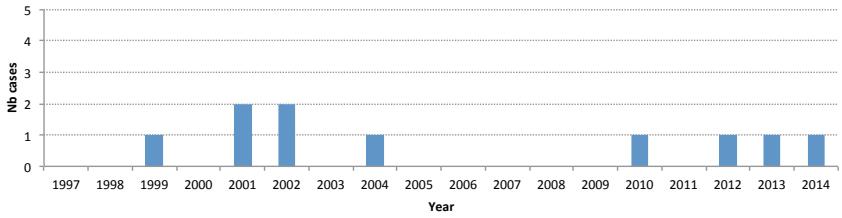
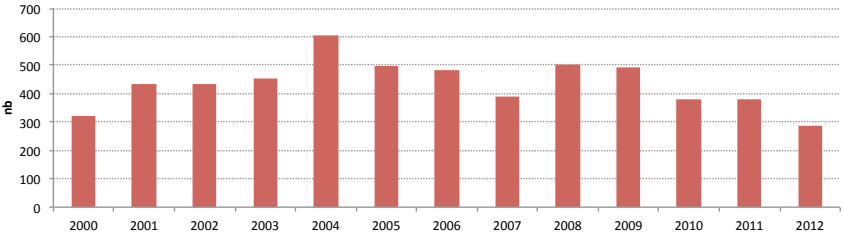
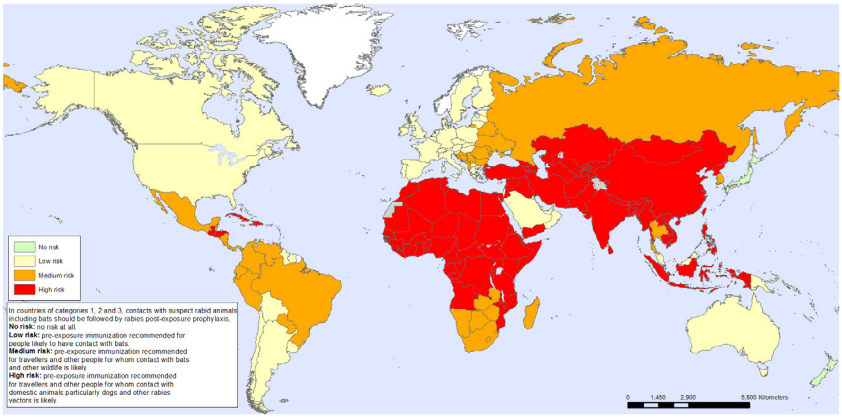


Figure 2: Exposed persons to rabies as reported by anti-rabies centers, Lebanon, 2000-2012 (Source: MOPH)



International figures

Figure 3: Areas at risk of rabies in the world (Source: WHO, 2013)



Rubella

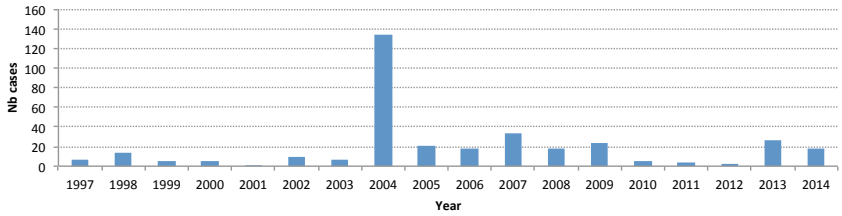
Rubella	
Agent	Rubella virus, genus Rubivirus, family Togaviridae
Incubation period	14-17 days (14-21 days)
Period of communicability	7 days before rash and 4 days after rash onset
Reservoir	Humans
Modes of transmission	- Person-to-person: direct contact with droplets - Infants with CRS shed large quantities of virus in their pharyngeal secretions and urine.
Clinical presentation	- Febril maculo-papular rash - Asymptomatic: up to 50% of rubella infection - Complications: thrombocytopenia (1/3000), post-infectious encephalitis (1/6000), rarely chronic arthritis, CRS if pregnant women
Worldwide	Worldwide
Lebanon	Outbreak in 2004
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Syndromic: febril macuplo-papular rash
Collect data about case	Symptoms, vaccination status, travel history, contact, pregnancy...
Collect specimen from case	Serum, urine, oral fluid, dried blood, throat swab
Collect data about contacts	- Cases among contacts, pregnant women among contacts - Vaccination status of contacts
Collect specimen from contacts	If cases among contact
Test	IgM, PCR, culture, genomic sequencing

Laboratories	- IgM and PCR: RHUH - Culture: Tunis Pasteur and the Central Public Health Laboratory in Sultanat of Oman
Outbreak level	At least 3 confirmed cases epidemiologically-linked
Notification to WHO	- To report to WHO if outbreak - Routine monthly dataset sharing
Control	
Primary prevention	At least 1 dose during childhood
Post-exposure prevention	Vaccination of susceptible persons
Case management	Symptomatic treatment
Isolation	- Contact and droplet isolation - Prevent exposure to pregnant women
Contact prevention	Vaccination of susceptible contacts
Mass prevention	Vaccination
School eviction	For 5 days after onset of rash
Rubella case definition (MOPH circular no. 12 dated on the 23rd February 2013)	
Laboratory-confirmed case	A suspected case with laboratory confirmation with presence of rubella-specific IgM antibodies or positive PCR test
Epidemiologically-confirmed case	A suspected case who has not had a laboratory test and has an epidemiological link with a laboratory-confirmed case of rubella
Suspected case / clinical case	- Any person with: • Fever • And maculopapular (non vesicular) rash - Or any person in whom a clinician suspects rubella infection

Forms	
Reporting	Specific measles/rubella reporting form (MOPH circular no. 13 dated on the 23rd February 2013) or standard reporting form
Investigation	Measles/rubella investigation form (MOPH circular no. 74 dated on the 31st July 2013)

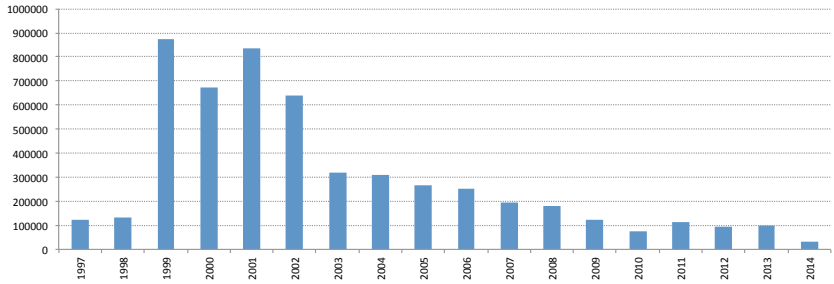
National figures

Figure 1: Reported rubella cases, Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Reported rubella cases (nb), worldwide, 1997-2014 (Source: WHO)

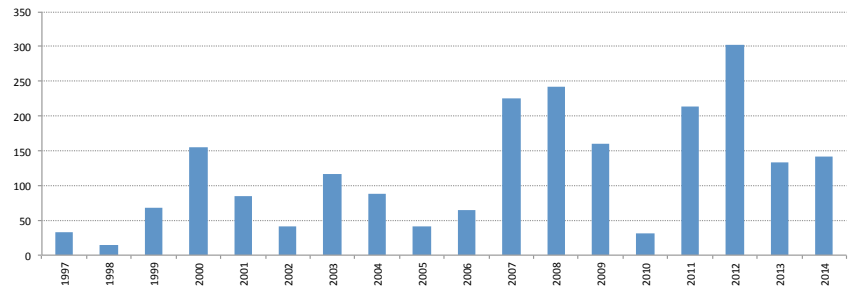


Congenital Rubella Syndrome

Congenital Rubella Syndrome (CRS)	
Agent	Rubella virus, genus Rubirirus, family Togaviridae
Period of communicability	Several months after birth
Reservoir	Humans
Modes of transmission	- Materno-foetal transmission: 90% of infants born to women infected with rubella during the first 10 weeks of pregnancy. The risk of transmission is 10-20% by the 16th week, and rare after the 20th week.
Clinical presentation	- Intrauterine death, spontaneous abortion - Congenital malformations: deafness, cataract, microphtalmia, congenital glaucoma, pigmentary retinopathy, nystagmus, microcephaly, meningo-encephalitis, mental retardation, patent ductus arteriosus, atrial or ventricular septal defects, other congenital heart disease,purpura, hepatosplenomegaly, jaundice, radiolucent bone disease
Worldwide	Worldwide
Lebanon	Rare
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Clinical symptoms: eye, ear, cardiac and neurology malformations, outcomes
Collect specimen from case	Serum, urine, CSF
Collect data about contacts	Rubella history, vaccination status, mother history (vaccination status, rubella history, rash during pregnancy...)

Collect specimen from contacts	If symptoms appear among contacts
Test	IgM, virus culture
Laboratories	RHUH
Outbreak level	At least 2 confirmed cases of CRS following a rubella outbreak (6-9 months after)
Notification to WHO	If outbreak
Control	
Primary prevention	Vaccination
Case management	Treatment of congenital malformations
Isolation	Contact precautions should be used with infants with CRS till urine and pharyngeal virus culture is negative (after three months of age)
Contact prevention	Immunization of susceptible contacts
Contact quarantine	None
Mass prevention	Vaccination
Congenital Rubella Syndrome case definition (MOPH circular no. 45 dated on the 3rd April 2007)	
Laboratory-confirmed case	An infant with a positive blood test for rubella IgM who has clinically-confirmed Congenital Rubella Syndrome
Clinical-confirmed case	A case in whom a qualified physician detects: - At least 2 of the following: cataract(s), congenital glaucoma, congenital heart disease, loss of hearing, pigmentary retinopathy - Or at least one of the following: purpura, splenomegaly, microcephaly, mental retardation, meningoencephalitis, radiolucent bone disease, jaundice with onset less than 24 hours after birth

Suspected case	- Any child under 1 year in whom a health worker suspects CRS when the child presents with: • Heart disease • And/or suspicion of deafness • And/or one or more of the following eye signs: white pupil (cataract), diminished vision, pendular movement of the eyes (nystagmus), squint, small eye ball (microphthalmos), enlarged eye ball (congenital glaucoma) - Or any child where there is a maternal history of suspected or confirmed rubella during pregnancy, even if the child shows no signs of CRS
Congenital Rubella Infection (CRI)	An infant with a positive blood test for rubella IgM who does not have clinically-confirmed Congenital Rubella Syndrome
Forms	
Reporting	CRS reporting form (MOPH circular no. 80 dated on the 6th August 2013) or standard reporting form
Investigation	CRS investigation form (MOPH circular no. 6 dated on the 7th January 2015)
National figures	
One case in 2010.	
International figures	
Figure 1: Reported CRS (nb), worldwide, 1997-2014 (source: WHO)	



Smallpox

Smallpox	
Agent	- Variola virus of Orthopoxvirus species - Can be used in biological warfare
Incubation period	7-19 days (commonly 10-14 days for illness, and 2-4 days more for rash)
Period of communicability	3 weeks from onset of skin lesions
Reservoir	Humans
Modes of transmission	- Person-to-person: direct contact with droplets or skin lesions - Conjunctiva or placenta may be points of entry.
Clinical presentation	- Prodomic phase with fever and flu-like illness - Classical form includes fever with characteristic centrifugal deep-seated skin eruption: succession of macules, papules, vesicles, and pustules then crusted scabs. The lesions appear first on the face, extremities, including the palms and soles, and subsequently on the trunk. Skin lesions are at same stage in same area. - Two forms: minor with a CFR < 1% and major with CFR 20-50%. In less than 3%, the major shows bleeding into the skin and mucous membranes (hemorrhagic smallpox).
Worldwide	Smallpox was declared eradicated in 1979. Two laboratories still have smallpox virus for essential research: - The US-CDC, Atlanta, USA - The State Research Center for Virology and Biotechnology, Koltsovo, Novosibirsk region in Russian federation
Lebanon	No cases
Control objective	Eradication

Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Clinical presentation, complications, occupation, exposure, intentional release, similar cases among contacts…
Collect specimen from case	Vesicular/pustular fluid, scab biopsy, pharyngeal swab, clotted blood
Collect data about contacts	Contacts tracing and follow up
Collect specimen from contacts	If symptoms appear
Test	Virological culture, PCR
Laboratories	WHO reference laboratories
Outbreak level	At least one confirmed case
Notification to WHO	Immediate notification according to the International Health Regulations (2005)
Control	
Primary prevention	- Laboratory containment - Vaccination (vaccinia virus) with a booster dose within 10 years for specific high risk groups (military…)
Post-exposure prevention	Vaccination within 3 days after exposure
Case management	Symptomatic treatment
Isolation	Contact and airborne isolation
Contact prevention	Vaccination
Contact quarantine	Contact identification and follow up
Mass prevention	Vaccination if outbreak

Smallpox case definition (MOPH circular no. 37 dated on the 5th May 2012)	
Confirmed case	An individual of any age presenting with acute onset of fever (≥38.3°C), malaise, and severe prostration with headache and backache occurring 2 to 4 days before rash onset, - And subsequent development of a maculo-papular rash starting on the face and forearms, then spreading to the trunk and legs, and evolving within 48 hours to deep-seated, firm/hard and round well-circumscribed vesicles and later pustules, which may become umbilicated or confluent - And lesions that appear in the same stage of development (i.e. all are vesicles or all are pustules) on any given part of the body (e.g. the face or arm) - And no alternative diagnosis explaining the illness - And laboratory confirmation by virological culture or PCR
Probable case	A suspected case with: - An epidemiological link to a confirmed case of smallpox - Or a documented smallpox environmental exposure

Suspected case	An individual of any age presenting with acute onset of fever (≥38.3°C), malaise, and severe prostration with headache and backache occurring 2 to 4 days before rash onset - And subsequent development of a maculo-papular rash starting on the face and forearms, then spreading to the trunk and legs, and evolving within 48 hours to deep-seated, firm/hard and round well-circumscribed vesicles and later pustules, which may become umbilicated or confluent - And lesions that appear in the same stage of development (i.e. all are vesicles or all are pustules) on any given part of the body (e.g. the face or arm) - And no alternative diagnosis explaining the illness
Forms	
Reporting	Standard reporting form
Investigation	Smallpox investigation form (MOPH circular no. 174 dated on the 31st December 2015)
National figures	
No cases	
International figures	
Eradication certified in 1979. The last minor case was in 1977 in Somalia. The last major case was in Bangladesh in 1976. An accidental laboratory release was documented in 1978 (United Kingdom).	

Tetanus

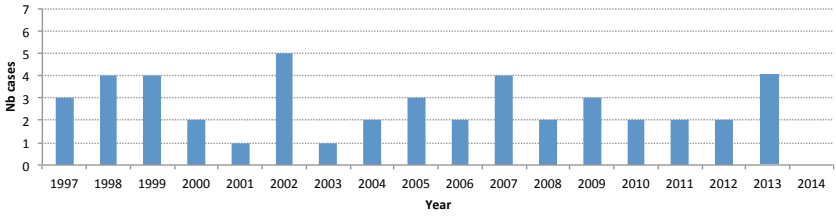
Tetanus	
Agent	- Bacteria: Clostridium tetani or Tetanus bacillus - Toxin producer
Incubation period	3-21 days (1 day to several months), with an average of 10 days
Period of communicability	No person-to-person transmission
Reservoir	- Intestines of horses, animals, and humans - Tetanus spores are ubiquitous in environment and soil.
Modes of transmission	- Skin entry: Introduction of spores through wound contaminated with soil, street dust or animal/human feces - Rarely by injectable contaminated drugs
Clinical presentation	- Muscle contraction, trismus (masseter contraction), neck/ trunk spasms, opisthotonos - Case fatality from 10% to 80% depending on availability of intensive care
Worldwide	- Worldwide - WHO estimates 290000 deaths in 2006 - Risk factors: Agriculture work, intra-veinous drug users...
Lebanon	0-5 cases per year
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Wound history, vaccination status, use of injectable drugs...
Collect specimen from case	None
Collect data about contacts	If use of injectable drugs: vaccination status

Collect specimen from contacts	None
Test	None
Laboratories	None
Outbreak level	- If the observed incidence exceeds the expected one - Or if there is a cluster with at least 2 epi-linked cases
Notification to WHO	According to IHR(2005) criteria
Control	
Primary prevention	Vaccination 3 primary doses and 2 boosters in childhood, and one booster every 10 years for adults
Post-exposure prevention	- Immunoglobulin and toxoids depending on vaccination status and tetanus-prone wounds - Tetanus-prone wounds: wounds or burns that require surgical interventions; wounds or burns that show a significant degree of devitalized tissue or a puncture type injury, particularly where there has been contact with soil (wounds containing foreign body, compound fractures, wounds and burns in patient who have systemic sepsis)
Case management	- Immunoglobulins - Admission to critical care unit
Isolation	NA
Contact prevention	NA
Contact quarantine	NA
Mass prevention	Vaccination, search for contaminated street drugs...

Tetanus case definition (MOPH circular no. 53 dated on the 10th April 2007)	
Confirmed case	A clinically compatible case as reported by a physician: Acute onset of hypertonia and/or painful muscular contractions (usually of the muscles of the jaw leading to trismus, or the muscles of the neck), abdominal rigidity, opisthotonos, generalized muscle spasms, and occasional risus sardonicus, without other apparent medical cause.
Forms	
Reporting	Standard reporting form
Investigation	Tetanus investigation form (MOPH circular no. 98 dated on the 26th October 2010)

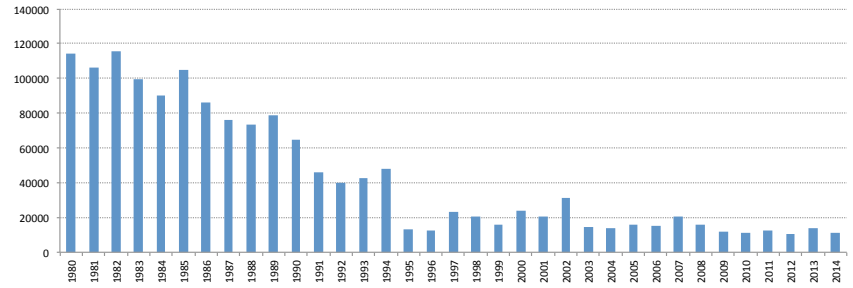
National figures

Figure 1: Reported Tetanus cases, Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Reported Tetanus cases (nb), worldwide, 1980-2014 (Source: WHO)



Tetanus Neonatorum

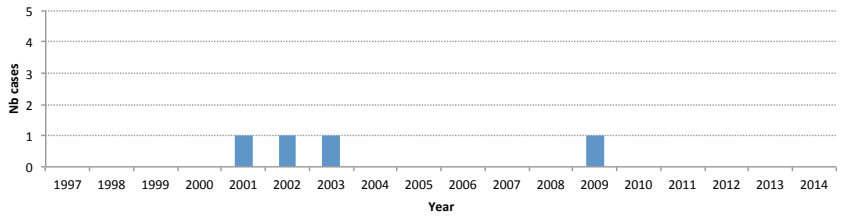
Tetanus neonatorum	
Agent	- Bacteria: Clostridium tetani or Tetanus bacillus - Toxin producer
Incubation period	6 days (3-28 days)
Period of communicability	No person-to-person transmission
Reservoir	- Intestines of horses, animals, and humans - Tetanus spores are ubiquitous in environment and soil.
Modes of transmission	- During delivery: introduction via the umbilical cord of tetanus spores through dirty hands or the use of an unclean instrument to cut the cord - After delivery: by dressing the umbilical stumps with substance heavily contaminated with tetanus spores
Clinical presentation	- Few days after birth the infant develops progressively trismus, generalized stiffness, spasms, convulsions and opisthotonos. - Typically, an infant who sucks and cries well for the first few days after birth, and then shows progressive difficulty and inability to feed. - Complications: case fatality can exceed 80%, mental retardation among survivors (5-20%)
Worldwide	- Worldwide - WHO estimates 250000 deaths in 2006, mainly in developing countries.
Lebanon	0-1 case per year
Control objective	Elimination (under 1 per 1000 live births)

Surveillance and Investigation	
Surveillance approach	Disease-based approach
Collect data about case	Delivery circumstances, umbilical wounds…
Collect specimen from case	None
Collect data about contacts	None
Collect specimen from contacts	None
Test	None
Laboratories	None
Outbreak level	At least 1 confirmed case
Notification to WHO	According to the IHR(2005) criteria
Control	
Primary prevention	Improve maternity care including: • Clean deliveries attended by trained healthcare professionnels • Tetanus toxoid for women of childbearing age
Post-exposure prevention	NA
Case management	- Symptomatic treatment - Critical care
Isolation	NA
Mass prevention	Vaccination and improve maternity care
Tetanus neonatorum case definition (MOPH circular no. 108 dated on the 6th September 2006)	
Confirmed case	Any neonate with a normal ability to suck and cry during the first 2 days of life, and: - Who, between 3 and 28 days of age cannot suck normally - Or becomes stiff or has convulsions (jerking of the muscles) or both

Suspected case	- Any neonatal death between 3 and 28 days of age in which the cause of death is unknown - Or any neonate reported as having suffered from neonatal tetanus between 3 and 28 days of age and not investigated
Forms	
Reporting	Standard reporting form
Investigation	Neonatal tetanus investigation form (MOPH circular no. 75 dated on the 27th August 2005)

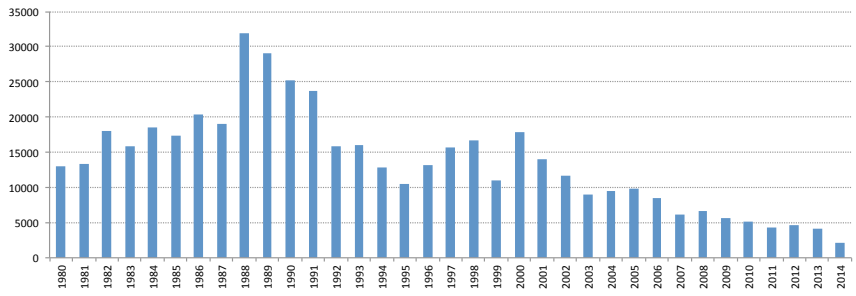
National figures

Figure 1: Reported neonatal tetanus in Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Reported neonatal tetanus (nb), worldwide, 1980-2014 (Source: WHO)



PART 2:

Weekly Notifiable Communicable Diseases

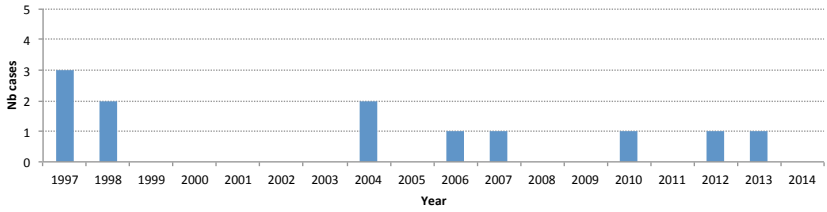
Bilharziasis	
Agent	Blood fluke (trematode): Schistosoma haematobium, S. mansoni, S. japonicum, S. intercalatum, S. mekongi, S. malayensis, S. matthhei
Incubation	2-6 weeks
Period of communicability	- No person-to-person transmission - Infected human can excrete eggs for years.
Reservoir	- Humans, rodents - Intermediate snail hosts: Bulinus (S. Haematobium), Biomphalaria (S. Mansoni)
Modes of transmission	- Skin penetration of larvae (cercariae) in contaminated water - Eggs of schistosoma leave the human body via urine and feces - Eggs hatch in water and liberate larvas (miracidia) that penetrate into freshwater snail host (genus Bulinus or genus Biomphalania). Several weeks after, larvas (cercariae) emerge from snails and penetrate human skin while swimming, wading, or washing…
Clinical presentation	- Parasite living in mesenteric / vesical veins - Urinary form: hematuria (S. Haematobium) - Intestinal/hepatic form: gastro-intestinal symptoms with or without hepato(spleno) megaly - Complications: chronic infection, malignancy
Worldwide	- Worldwide - S. Mansoni in Africa, Arabian peninsula and South America - S. Haematobium in Africa and Middle East
Lebanon	Eliminated in the 60s
Control objective	Elimination

Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Nationality, travel to endemic countries…
Collect specimen from case	Urine
Collect data about contacts	-
Collect specimen from contacts	-
Test	Microscopic urine exam
Laboratories	Clinical laboratories
Outbreak level	At least 1 local case
Notification to WHO	According to International Health Regulations (2005)
Control	
Primary prevention	- Snail control - Individual protection: prevent exposure to contaminated water
Post-exposure prevention	Apply 70% alcohol immediately to skin to kill surface cercariae
Case management	Praziquantel
Isolation	- Standard precautions - Sanitary disposal of feces and urine
Mass prevention	Snail control (reduce snail habitats, molluskicides)
Urinary schistosomiasis or Bilharziasis case definition (MOPH circular no. 130 dated on the 22nd September 2006)	
Confirmed case	Case confirmed by laboratory testing with presence of eggs of Schistosoma haematobium in urine at microscope observation.

Forms	
Reporting	Standard reporting form
Investigation	Bilharziasis investigation form (MOPH circular no. 16 dated on the 19th January 2015)

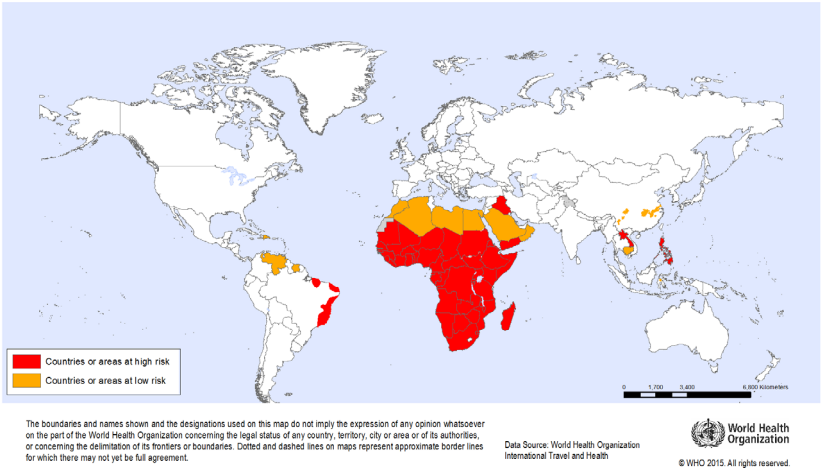
National figures

Figure 1: Reported cases of bilharziasis, Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Areas at risk of bilharziasis, worldwide, 2014 (Source: WHO)



Brucellosis	
Agent	Bacteria: Brucella abortus (biovars 1-6, 9) B. melitensis (biovars 1-3), B. suis (biovars 1-5), B. canis, B. ceti, and B. pinnepedialis
Incubation period	5-60 days (commonly 1-2 months)
Period of communicability	Rare person-to-person transmission: exposure to contaminated fomites, tissues, or massive bleeding
Reservoir	- Cattle, goats, sheep, swine - Also: camel, bison, elk, equid, deer, dog, marine mammal...
Modes of transmission	- Consumption of unpasteurized dairy products - Contact through skin breaks with infected animal tissues (placenta, blood, abortion…) - Airborne in pens, stables, laboratories, abattoirs - Accidental self-inoculation of animal vaccine
Clinical presentation	Systematic bacterial infection, with irregular fever
Worldwide	Worldwide, particularly in Mediterranean area
Lebanon	Endemic with seasonal pattern in summer
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Risk factors: occupation, animal-related exposure, consumption of dairy products...
Collect specimen from case	Blood, serum...
Collect data about contacts	Search of similar cases
Collect specimen from contacts	If there are other similar cases

Test	Culture, PCR, serological tests for agglutinating antibodies (Wright, Rose Bengale) and non agglutinating antibodies (Coombs, Elisa)
Laboratories	Clinical laboratories
Outbreak level	- If observed incidence exceeds the expected - If cluster linked to common food product
Notification to WHO	If meeting the IHR (2005) criteria
Control	
Primary prevention	- Avoid products from unpasteurized milk. Pasteurize milk and dairy products from cows, sheep and goats. - Protective equipment for animal-related occupations and laboratory workers - Exercise care in handling and disposal of placenta, discharges and fetuses, in addition to disinfect contaminated areas - Eliminate infected animal or vaccinate animal
Case management	- Combination therapy : Streptomycin and doxycycline or rifampin and doxycycline - For children less than 8 years old: TMP/SMX and rifampin
Isolation	Draining and secretion precautions if draining lesions
Mass prevention	Animal vaccination program
Brucellosis case definition (MOPH circular no. 55 dated on the 10th April 2007)	
Confirmed case	- A suspected or probable case that is lab-confirmed with isolation of Brucella sp. from blood or other clinical specimens - Or a probable case with positive reaction ELISA, Coombs or 4-fold increase or greater rise in SAT levels in paired sera (acute and convalescent 15 days later)
Probable case	A suspected case that has: - A positive Rose Bengale test - Or positive Brucella agglutination: SAT $\geq$1/ 160

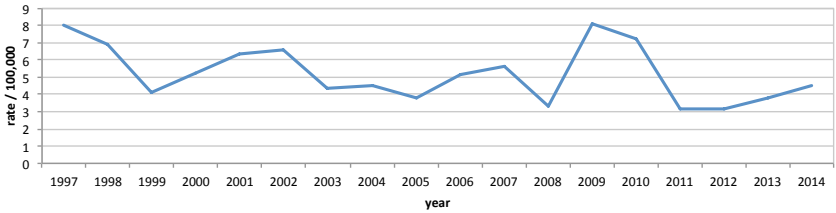
Suspected case	Case presenting with: - Clinical description: acute or insidious onset, with continued, intermittent or irregular fever of variable duration, profuse sweating particularly at night, fatigue, anorexia, weight loss, headache, arthralgia and generalized aching. Local infection of various organs may occur with abscess formation. - And epi-linked to suspected/ confirmed animal cases or contaminated animal products.

Forms

Reporting	Standard reporting form
Investigation	Brucellosis investigation form (MOPH circular no. 150 dated on the 15th October 2007)

National figures

Figure 1: Annual incidence of brucellosis, Lebanon, 1997-2014 (Source: MOPH)



International figures

Table 1: Annual incidence (per 100000) of Brucellosis in selected countries (Source: Dean AS, Crump L, Greter H, Schelling E, Zinsstag J. Global Burden of Human Brucellosis: A Systematic Review of Disease Frequency. PLoS NeglTrop Dis 6 (10): e1865. 2012)

Region		World	
Egypt	0.28 - 70.0	Germany	0.03
Iraq	52.29 - 268.81	Argentina	12.84
Iran	0.73 - 141.6	Chad	34.86
Jordan	25.7 - 130.0	Greece	4.00 - 32.49
Oman	11.01	Italy	1.4
Palestine	8	Kyrgystan	88
Saudi Arabia	137.61	Mexico	25.69
Turkey	11.93 - 49.54	USA	0.02 - 0.09

Creutzfeldt-Jakob Disease /Prion-related Encephalopathies	
Agent	- Abnormal form of self-replicating host-encoded protein or prion protein - 4 forms: sporadic (sCJD), iatrogenic (iCJD), genetic familial (gCJD) and new variant (vCJD)
Incubation	- For iCJD: 15 months – 30 years - For vCJD: may be 6-9 years
Period of communicability	As long as prions are present, found in lymphoid tissues, blood and the CNS
Reservoir	- sCJD/iCJD: Humans - vCJD: cattle affected with Bovine Spongiform Encephalopathy (BSE)
Modes of transmission	- sCJD: unknown - iCJD: transmission from sCJD via human pituitary hormone therapy, human dura mater grafts, corneal grafts, neurosurgical instruments - gCJD: hereditary mutation on chromosome 20 - vCJD: blood transfusion, hypothesis of consumption of food from BSE infected animal
Clinical presentation	- sCJD/iCJD: subacute spongiform encephalopathy (confusion, progressive dementia, ataxia, myoclonic jerking...) with typical EEG, fatal within 3-12 months - vCJD: subacute spongiform encephalopathy in younger age group, without typical EEG, with longer clinical course & behavioral disturbance - gCJD: Fatal Familial Insomnia FFI, Gerst-mann-Sträussler-Scheinker Syndrome GSSS - Case fatality: 100%
Worldwide	- Worldwide sCJD annual incidence: 1-2/million - gCJD: familial clusters were observed in Chile, Occupied Palestine and Slovakia - vCJD: diagnosed since 1996 in United Kingdom (with more than 130 cases) - Kuru: consumption of infected tissues including brain in Papua New Guinea

Lebanon	- The annual reported sporadic cases: 0 to 3 - No new variant diagnosed in Lebanon
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Demography, clinical presentation, EEG, CSF 14-3-3 protein, brain MRI, occupation, family history, medical and surgical history, meat consumption…
Collect specimen from case	EEG, CSF, neuro-biopsy/autopsy
Collect data about contacts	Family history
Collect specimen from contacts	-
Test	CSF protein 14-3-3, neuropathology
Laboratories	Supranational reference laboratories
Outbreak level	- At least 1 case of vCJD or iCJD - Or if observed incidence exceeds the expected
Notification to WHO	Based to International Health Regulations (2005)
Control	
Primary prevention	- Absolute avoidance of organ or tissue transplants from CJD patients and avoidance of reuse of potentially contaminated surgical instruments - Preventing and eliminating bovine spongiform encephalopathy in livestock population - Blood transfusion safety
Case management	- No specific treatment for CJD - Symptomatic treatment

Isolation	- Universal precautions - Disinfection: specific procedures for prion inactivation
Mass prevention	Avoid BSE agent in human/animal food chain
CJD Case definitions	
Sporadic Creutzfeldt-Jakob Disease (MOPH circular no. 42 dated on the 3rd April 2007)	
Sporadic CJD: definite case	A suspected or probable CJD case with: - Neuropathological confirmation: • Spongiform encephalopathy in cerebral and/or cerebellar cortex and/or subcortical grey matter • And/or encephalopathy with prion protein (PrP) immunoreactivity (plaque and/or diffuse synaptic and/or patchy/perivacuolar types) - And/or confirmation of protease-resistant prion protein (PrP) by immunocytochemistry or Western Blot - And/or presence of scrapie-associated fibrils
Sporadic CJD: probable case	Case presenting, in the absence of an alternative diagnosis from routine investigation: - Progressive dementia - And at least 2 of the following 4 clinical features: myoclonus, visual or cerebellar disturbance, pyramidal or extrapyramidal dysfuntion, akinetic mutism - With a typical EEG (generalized triphasic periodic complexes at approximately one per second), whatever the clinical duration of the disease - And/or a positive 14-3-3 assay for CSF and a clinical duration leading to death in < 2 years

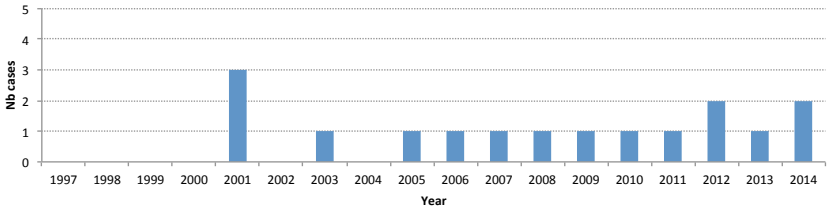
Sporadic CJD: possible case	- Progressive dementia - And EEG atypical or not carried out - And duration < 2 years - And at least 2 out of the following clinical features: myoclonus, visual or cerebella disturbance, pyramidal or extrapyramidal dysfunction, akinetic mutism
Genetic/Familial Creutzfeldt-Jakob Disease (MOPH circular no. 42 dated on the 3rd April 2007)	
Familial CJD: definite case	- A recognized pathogenic PRNP mutation - And/or presence of definite or probable CJD in a first-degree relative - And/or definite Gerstmann-Sträussler-Scheinker (GSS) syndrome or the fatal familial insomnia (FFI) with specific mutations and/or specific neuropathological findings
Iatrogenic Creutzfeldt-Jakob Disease (MOPH circular no. 42 dated on the 3rd April 2007)	
Iatrogenic CJD: definite case	Definite CJD with a recognized iatrogenic risk
Iatrogenic CJD: probable case	- Progressive cerebellar syndrome in a recipient of human cadaver-derived pituitary hormone - Or probable CJD with a recognized iatrogenic risk (graft of human dura mater, human corneal transplant, or exposure to neurosurgical instruments used for patient with definite or probable CJD
New variant of Creutzfeldt-Jakob Disease - vCJD (MOPH circular no. 44 dated on the 3rd April 2007)	
vCJD: clinical features	Group I features: A. Progressive psychiatric disorder B. Clinical duration > 6 months C. Routine investigations do not suggest an alternative diagnosis D. No history of potential iatrogenic exposure E. No evidence of a familial form of TSE (transmissible spongiform encephalopathy)

	Group II features: A. Early psychiatric symptoms (depression, anxiety, apathy, withdrawal, delusions) B. Persistant painful sensory symptoms (frank pain and/or dysaesthesia) C. Ataxia D. Chorea/ dystonia or myoclonus E. Dementia Group III features: A. EEG unkown or does no show the typical appearance of sporadic CJD (generalized triphasic periodic complexes at approximately one per second) B. Bilateral symmetrical pulvinar high signal on MRI brain scan (relative to other deep gray-matter nuclei) Group IV features: A. Positive tonsil biopsy (evidence of PrP)
vCJD: definite case	- A patient with the item A under (I) above - And neuropathological confirmation of vCJD: spongiform encephalopathy with abundant PrP deposition, in particular multiple fibrillary PrP plaques surrounded by a halo of spongiform vacuoles (“florid” plaques, “daisy-like” plaques) and other PrP plaques, and amorphous pericellular and perivascular PrP deposits especially prominent in the cerebellar molecular layer.
vCJD: probable case	A patient with: - Items under group (I) above - And at least 4 items under (II) - And the item A under (III)
vCJD: possible case	A patient with: - Items under group (I) above - And at least 4 items under (II) - And the item B under (III) Or a case with: - Items under (I) above - And the item A under (IV)

Forms	
Reporting	Standard reporting form
Investigation	CJD investigation form (MOPH circular no. 43 dated on the 3rd April 2007)

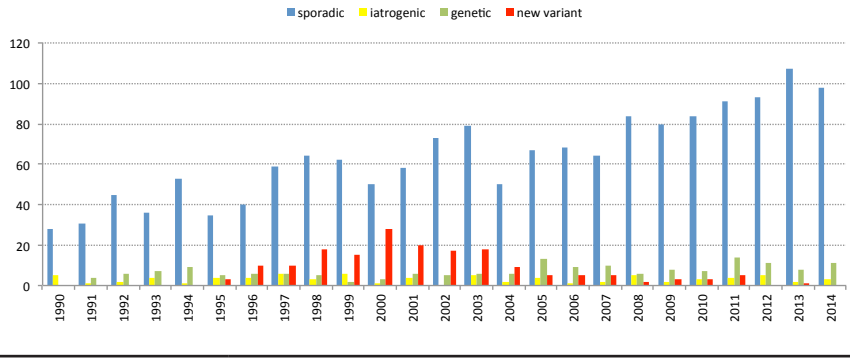
National figures

Figure 1: Reported sporadic CJD in Lebanon, 2000-2014 (Source: MOPH)



International figures

Figure 2: Reported CJD (nb), in the United Kingdom, 1990-2014 (Source: http://www.cjd.ed.ac.uk/documents/figs.pdf)



Gonococcal Infection

Gonorrhea	
Agent	Bacteria: Neisseria gonorrheae (gonococcus)
Incubation	- 1-14 days - For gonococcal neonatorum: 1-5 days
Period of communicability	- For months if untreated - Effective treatment ends communicability within hours. - For gonococcal neonatorum: as long as discharge persists, if untreated. Transmissibility stops 24 hours after ATB treatment.
Reservoir	- Humans - For gonococcal neonatorum: infection of maternal cervix
Modes of transmission	- Contact with exudates from mucous membranes of infected people, secondary to sexual intercourse - For gonococcal neonatorum: contact with infected birth canal during childbirth
Clinical presentation	- For males: acute purulent urethritis - For females: cervicitis, that may be asymptomatic. Complications: endometritis, salpingitis, peritonitis, infertility, ectopic pregnancy, congenital conjunctivitis. - Other form: pharyngeal, anorectal infection - General complications: septicemia, arthritis, skin lesions, endocarditis, meningitis, death. - For gonococcal neonatorum: acute conjunctivitis with pus. Complications: corneal ulcer, blindness
Worldwide	Worldwide
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach

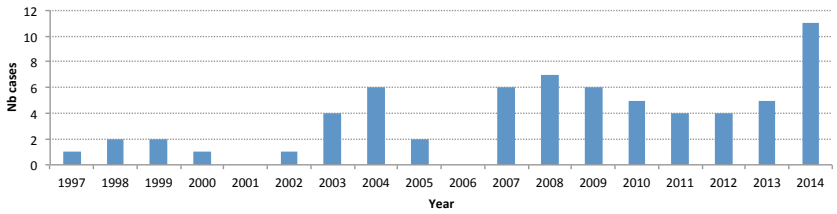
Collect data about case	- Clinical presentation, risk factors, case management, pregnancy, other sexual transmitted diseases … - For gonococcal neonatorum: prophylaxis at birth…
Collect specimen from case	- Genital discharge - For gonococcal neonatorum: conjunctival discharge
Collect data about contacts	- Sexual partners and case management - For gonococcal neonatorum: mother medical history
Collect specimen from contacts	- From sexual partners: genital discharge - For gonococcal neonatorum: genital discharge from mother
Test	Bacteriological culture on selected media (modified Thayer-Martin agar), detection of gonococci nucleic acid, ATB susceptibility profile
Laboratories	Clinical laboratories
Outbreak level	- If observed incidence exceeds the expected - For gonococcal neonatorum: at least one confirmed case
Notification to WHO	According to IHR (2005)
Control	
Primary prevention	- Safer sexual practices - Treatment of patients and partners - Gonococcal ophtalmia: 1) Applying prophylactic agents in the eyes of newborn within 1 hour of birth; 2) Diagnose gonococcal infection in pregnant mother & ensure adequate treatment for mother and partner
Case management	- Ceftriaxone, cefixime, ciprofloxacin or levofloxacin (even for uncomplicated ophtalmia neonatorum) - Treatment against genital chlamydial infection is recommended for patients diagnosed with gonorrhoea

Isolation	- Refrain from sexual intercourse: until antibiotherapy is completed - Gonococcal ophtalmia: contact isolation until 24 hrs after antibiotic therapy - Appropriate disposal of discharges from lesions and contaminated articles
Contact prevention	Detect infection & ensure treatment
Case definitions	
Gonorrhea case definition (MOPH circular no. 61 dated on the 14th April 2007)	
Confirmed case	A case presenting with: - Clinically: a sexually transmitted infection commonly manifested by urethritis, cervicitis or salpingitis. Other sites can be affected of the urogenital tract, oropharynx, rectum. Infection may be asymptomatic. - And laboratory confirmation: • Observation of typical Gram-negative, oxidase-positive diplococci from a clinical specimen • Or observation of Gram-negative intracellular diplococci in a urethral smear obtained from a male • Or positive bacteriological culture on selective media (modified Thayer-Martin MTM or New York City NYC) • Or detection of antigen or nucleic acid-based of Neisseria gonorrhoeae in a clinical specimen
Probable case	Observation of Gram-negative intracellular diplococci in an female endocervical smear or male urethral smear.
Gonococcal conjunctivitis neonatorum case definition (MOPH circular no. 60 dated on the 14th April 2007)	
Confirmed case	A new-born (<=30 days old) presenting: - Conjunctivitis - And lab-confirmation: ocular specimen positive for Neisseria gonorrhoeae

Probable case	A new-born (<=30 days old), who has not received ocular prophylaxis, presenting with conjunctivitis within 2 weeks of delivery.
Forms	
Reporting	Standard reporting form
Investigation	Gonococcal infection investigation form in case of alert/outbreak or gonococcal neonatorum (MOPH circular no. 171 dated on 31st December 2015)

National figures

Figure 1: Reported gonococcal infections, Lebanon, 1997-2014 (Source: MOPH)



International figures

Table 1: Estimates of incidence & prevalence of Gonococcia among adults (15-49y), 2008. (Source: WHO. Global incidence & prevalence of selected curable sexually transmitted infections, 2008)

WHO Region	Incidence /1000		Prevalence %	
	M	F	M	F
South-East Asian	37.0	16.2	1.2	0.8
The Americas	27.6	18.5	0.7	0.8
African	60.3	49.7	2.0	2.3
European	7.0	8.3	0.2	0.3
Eastern Mediterranean	11.6	8.1	0.3	0.3
Western Pacific	49.9	34.9	1.3	1.5

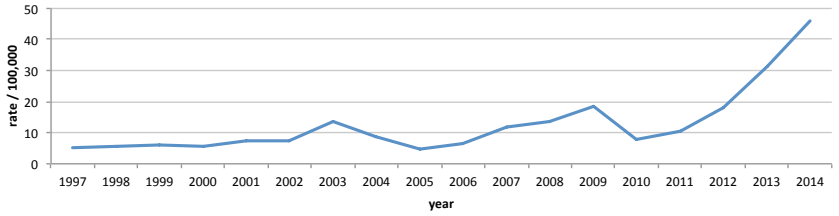
Hepatitis A Virus

Hepatitis A Virus	
Agent	Hepatitis A virus HAV, family Picornaviridae
Incubation	28-30 days (range 15-50 days)
Period of communicability	During the second half of the incubation period, and up to one week after jaundice onset
Reservoir	Humans, rarely chimpanzees & other primates
Modes of transmission	- Person-to-person transmission: feco-oral route - Ingestion of contaminated food: prepared by infected food-handler, undercooked mollusks harvested from contaminated water, contaminated produce - Ingestion of contaminated water or drinks - Transfusion of blood & clotting factor concentrates obtained from viremic donors - Injectable drug-use
Clinical presentation	- Febrile jaundice - Asymptomatic in childhood - Case fatality: 0.1-0.3 % (1.8% for >50 years) secondary to fulminant acute hepatitis
Worldwide	Worldwide, related to food/water safety, hygienic and sanitary conditions. Three profiles: - High endemicity: in childhood, no outbreaks - Middle endemicity: outbreaks among adults - Low endemicity: cases among households, sexual contacts, day care centers, travellers, injecting drug-users…
Lebanon	Endemic with middle endemicity profile
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Syndromic approach (acute jaundice) and disease approach
Collect data about case	Water exposure, food exposure, occupation...
Collect specimen from case	Serum, oral fluid, stool

Collect data about contacts	Search of similar cases among contacts
Collect specimen from contacts	If there is suspected cases among contacts
Test	Serology IgM, virus culture, PCR, genotyping
Laboratories	- Clinical laboratories for IgM - WHO reference laboratories for virus identification and genotyping
Outbreak level	If the observed incidence exceeds the expected
Notification to WHO	Based on IHR (2005) criteria
Control	
Primary prevention	- Educate public on proper sanitation & personal hygiene - Ensure water safety, food safety, & adequate sewage disposal - Hepatitis A vaccine: for population with increased risk of infection
Case management	Symptomatic treatment
Isolation	- Enteric isolation during the first 2 weeks of illness - Sanitary disposal of feces, urine & blood
Contact prevention	- Vaccination of contacts up to 2 weeks after exposure - If the case is a food handler: vaccination of other food-handlers. - Immunoglobulins for high risk patients
Contact quarantine	NA
Mass prevention	- Hepatitis A vaccine - Ensure water and food safety & rise awareness on personal hygiene
School eviction	Until clinical remission

Hepatitis A Virus case definition (MOPH circular no. 47 dated on the 10th April 2007)	
Confirmed case	- A suspected or probable case that is confirmed by laboratory testing with presence of IgM anti-HAV antibodies - Or a suspected or probable case who has an epidemiological link with a laboratory-confirmed case of viral hepatitis A (household or sexual contact with an infected person during the 15-50 days before the onset of symptoms)
Probable case	Case of acute jaundice with: - Negative results for viral hepatitis B (negative IgM anti-HBc or HbsAg antigens) - And negative or unknown results for viral hepatitis C (negative anti-HCV)
Suspected case	A clinically compatible case as reported by a physician: acute illness typically including fever, acute jaundice, dark urine, anorexia, malaise, extreme fatigue, and right upper quadrant tenderness. Biological signs include increased urine urobilinogen and >2.5 times the upper limit of serum alanine aminotransferase.
Forms	
Reporting	Standard reporting form
Investigation	HAV investigation form (MOPH circular no. 191 dated on the 2nd November 2007)
National figures	

Figure 1: Annual incidence of reported HAV in Lebanon, 1997-2014 (Source: MOPH)



International figures

Table 1: Incidence of HAV, worldwide (source: WHO. The global prevalence of hepatitis A virus infection and susceptibility: a systematic review. WHO/IVB/10.01 2010)

	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Child Immunity rate	Adult susceptibility rate
High Income Asia Pacific	0	2	10	17	25	36	51	66	81	98	100	100	Low	High
Central Asia	42	60	68	72	76	81	85	89	91	94	96	97	Medium	Low-Medium
East Asia	24	44	56	63	69	75	82	87	91	94	97	100	Low-Medium	Low-Medium
South Asia	61	75	82	87	91	96	100	100	100	100	100	100	High-Medium	Very Low
South East Asia	16	30	43	52	60	72	85	94	98	99	100	100	Low-Medium	Low-Medium
Australasia	3	7	11	15	18	22	30	39	49	60	72	86	Low	High
Caribbean	14	31	42	50	57	65	76	86	95	100	100	100	Low-Medium	Medium
Central Europe	21	35	41	46	51	58	67	75	82	87	92	96	Low-Medium	Medium
Eastern Europe	20	33	40	47	54	64	76	86	95	100	100	100	Low-Medium	Medium
Western Europe	1	6	18	28	35	45	56	66	75	82	88	94	Low	High
Andean Latin America	54	69	78	85	91	97	100	100	100	100	100	100	High-Medium	Very Low
Central Latin America	59	73	80	85	89	93	97	100	100	100	100	100	High-Medium	Low
Southern Latin America	36	53	62	68	73	78	83	87	91	94	96	98	Medium	Low-Medium
Tropical Latin America	28	51	64	72	79	86	93	99	100	100	100	100	Medium	Low
North Africa / Middle East	37	58	70	77	83	89	96	100	100	100	100	100	Medium	Low
High Income North America	0	2	6	9	13	20	30	41	54	69	83	100	Low	Medium
Oceania	17	45	61	71	78	87	96	100	100	100	100	100	Medium	Very Low
Central sub-Saharan Africa	40	90	98	99	100	100	100	100	100	100	100	100	High	Very Low
East sub-Saharan Africa	73	86	91	95	98	100	100	100	100	100	100	100	High	Very Low
South sub-Saharan Africa	67	84	94	100	100	100	100	100	100	100	100	100	High	Very Low
West sub-Saharan Africa	59	75	84	90	95	100	100	100	100	100	100	100	High-Medium	Low

Hepatitis B Virus

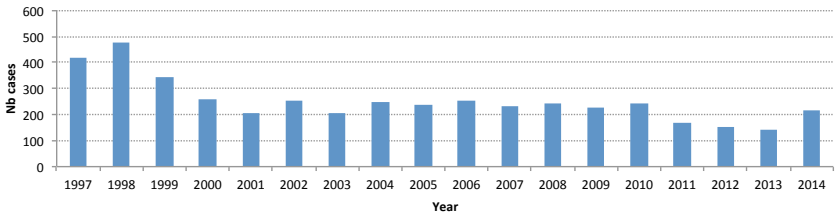
Hepatitis B Virus	
Agent	- Hepatitis B virus HBV, hepadnavirus - 4 main subtypes: adw, ayw, adr, ayr - 8 genotypes: A-H
Incubation	45-180 days (average 60-90 days)
Period of communicability	If HBs Ag(+) or HBe Ag(+)
Reservoir	Humans
Modes of transmission	- Person-to-person transmission: body fluids (blood, blood products, saliva, CSF, pleura, peritonial, percardial, synovial fluid, amniotic liquid, semen, vaginal secretions). - Modes: percutaneous & mucosal exposure to infective body fluids, sexual, perinatal, injectable drugs, nosocomial...
Clinical presentation	- Clinical jaundice. May be asymptomatic - Complications: chronic hepatitis, cirrhosis, hepatocarcinoma. Chronic infection varies by age: 90% if infected <1 year, 20-50% if infected at 1-5 y, 1-10% if infected at older ages
Worldwide	- Worldwide. 80% of hepatocarcinoma cancer are due to HBV infection. - Three profiles: High endemicity (HBsAg seroprevalence ≥ 8%), intermediate endemicity (HBsAg= 2-7%), low endemicity (HBsAg <2%)
Lebanon	HBsAg seroprevalence: 1.9% (Baddoura, 2002), 1.6% (Saab, 2007)
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease. Investigation is done if outbreak or case <10 y. It is done via treating physician.
Collect data about case	Clinical presentation, complications, occupation, vaccination status, exposure to blood, STD risky behavior, use of intra-veinous drugs, sharing needles, blood transfusion...

Collect specimen from case	Blood
Collect data about contacts	Maternal transmission, sexual partners, family members, intra-veinous drug partners...
Collect specimen from contacts	Blood
Test	HbsAg, anti-HBs, HbeAg, anti-HBe, anti-HBc, HBV-DNA
Laboratories	Clinical laboratories
Outbreak level	if observed incidence exceeds the expected
Notification to WHO	Based on IHR (2005) criteria
Control	
Primary prevention	- Vaccination: routine universal newborn & infant immunization, persons at risk - Adequate sterilization of syringes/needles & use disposable mono-use equipment - Screening: blood donors, pregnant women - Infection control practice - Safer practices: sexual, avoid needles sharing
Post-exposure prevention	Vaccination and immunoglobulins HBIG as soon as possible after exposure
Case management	Chronic infection: Alpha interferon, nucleoside or nucleotide analogue (Lamivudine, Adefovir...)
Isolation	- Universal precautions to prevent exposure to blood and body fluids - Disinfection of contaminated equipments
Contact prevention	Vaccination
Mass prevention	Vaccination
Hepatitis B Virus case definition (MOPH circular no. 111 dated on the 6th September 2006)	
Confirmed case	Case confirmed by laboratory testing: - Positive hepatitis B surface antigen (HbsAg) - Or presence of IgM antibody to hepatitis B core antigen (anti-HBc)

Chronic infection	HbsAg positivity for more than 6 months
Forms	
Reporting	Standard reporting form
Investigation	Hepatitis B/C/D investigation form if alert (MOPH circular no. 23 dated on the 19th January 2015)

National figures

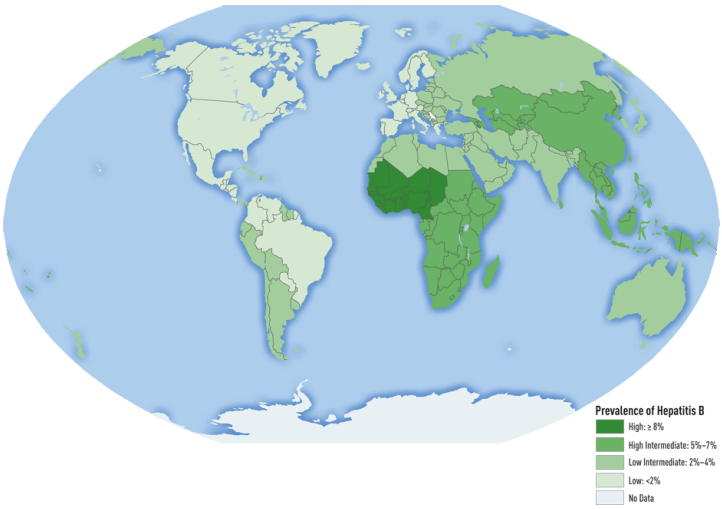
Figure 1: Reported HBV in Lebanon, 1997-2014 (Source: MOPH)



International figures

High hepatitis B prevalence is observed in Sub-Saharan Africa, East Asia, Amazon and Eastern and Central Europe. Chronic infection is observed in 5-10% among adults. In the Middle East & the Indian subcontinent, 2–5% of the general population is chronically infected. In Western Europe & North America, less than 1% of the population is chronically infected. (WHO website)

Figure 2: Prevalence of HBV in the world (Source: USA-CDC, 2015)



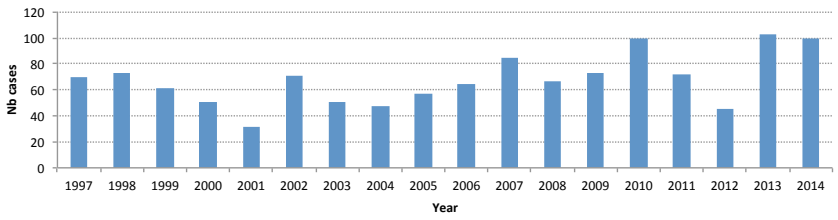
Hepatitis C Virus

Hepatitis C Virus	
Agent	Hepatitis C virus, genus Hepacivirus, family Flaviviridae
Incubation period	2 weeks to 6 months
Period of communicability	From 1 or more weeks before onset, and may persists indefinitely
Reservoir	Humans
Modes of transmission	Person-to-person: - Primary parenterally: transfusion of blood/ blood products, parental exposure to contaminated instruments, nosocomial... - Rarely: sexual, mother to child
Clinical presentation	- Accute jaundice - Asymptomatic in 90% - Complications: chronic infection (50-80%), cirrhosis, liver cancer
Worldwide	Worldwide
Lebanon	Seroprevalence of anti-HCV: 0.7% (Baddoura, 2002)
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Symptoms, risk factors, occupation, medical procedures, sexual transmitted diseases…
Collect specimen from case	Blood
Collect data about contacts	Similar cases among contacts, sexual partners, household members
Collect specimen from contacts	Blood
Test	Serological tests
Laboratories	Clinical laboratories

Outbreak level	If the observed incidence exceeds the epxected
Notification to WHO	According to International Health Regulations (2005)
Control	
Primary prevention	- Adequate sterilize of syringes and needles & use disposable mono-use equipment - Blood donors screening and routine virus inactivation of plasma and derived products - Infection control practice - Safer practices: sexual, avoid needles sharing, avoid sharing of personal items...
Post-exposure prevention	NA
Case management	For chronic infection: combination of ribavirin and slow-release interferons
Isolation	- Universal precautions to prevent exposure to blood and body fluids - Disinfection of contaminated equipments
Contact prevention	Avoid sharing of personal items
Mass prevention	Infection control practice, blood safety...
Hepatitis C Virus case definition (MOPH circular no. 131 dated on the 22nd September 2006)	
Confirmed case	Case confirmed by laboratory testing with presence of anti-HCV antibodies
Forms	
Reporting	Standard reporting form
Investigation	Hepatitis B/C/D investigation form if alert/ outbreak (MOPH circular no. 23 dated on the 19th January 2015)

National figures

Figure 1: Reported HCV in Lebanon, 1997- 2014 (Source: MOPH)



International figures

The most affected regions are Central and East Asia and North Africa (as Egypt). The hepatitis C epidemic can be concentrated in certain high-risk populations as intra-venous drug users (Source: WHO HCV fact sheet).

Figure 2: Prevalence of HCV infection, 2013 (Source: USA-CDC)

Hepatitis D Virus

Hepatitis D Virus/ Delta Hepatitis	
Agent	Hepatitis D virus, virus-like particle
Incubation period	2-8 weeks
Period of communicability	Blood is infectious during all the phase of active delta hepatitis.
Reservoir	Humans
Modes of transmission	Person-to-person: - Exposure to infected blood and serous body fluids - Contaminated needles, syringes - Contaminated plasma derivatives - Sexual transmission
Clinical presentation	- Febrile jaundice - Always associated with HBV infection - Complications: fulminant hepatitis
Worldwide	Worldwide
Lebanon	Not reported
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Hepatitis B virus infection history and case management, risk factors…
Collect specimen from case	Blood
Collect data about contacts	Sexual partners, family members, intra-venous drug users…
Collect specimen from contacts	Blood
Test	Serological testing
Laboratories	Clinical laboratories

Outbreak level	- At least 2 confirmed cases epi-linked - Or if the observed incidence exceeds the expected one
Notification to WHO	Notification to WHO if meeting the criteria of the International Health Regulations (2005)
Control	
Primary prevention	- Prevent infection with hepatitis B virus - Infection control practice - Safer practices: sexual, avoid needles sharing, avoid sharing of personal items...
Post-exposure prevention	No vaccination
Case management	Symptomatic treatment
Isolation	- Universal precautions to prevent exposure to blood and body fluids - Disinfection of contaminated equipments
Contact prevention	Avoid sharing of personal items
Mass prevention	HBV prevention
Hepatitis D Virus case definition (MOPH circular no. 123 dated on the 13th September 2006)	
Confirmed case	Case confirmed by laboratory testing: - Positive hepatitis B surface antigen (HbsAg) or presence of IgM antibody anti-HBc (as co-infection of hepatitis B) - And presence of anti-HDV
Forms	
Reporting	Standard reporting form
Investigation	Hepatitis B/C/D investigation form if alert/ outbreak (MOPH circular no. 23 dated on the 19th January 2015)

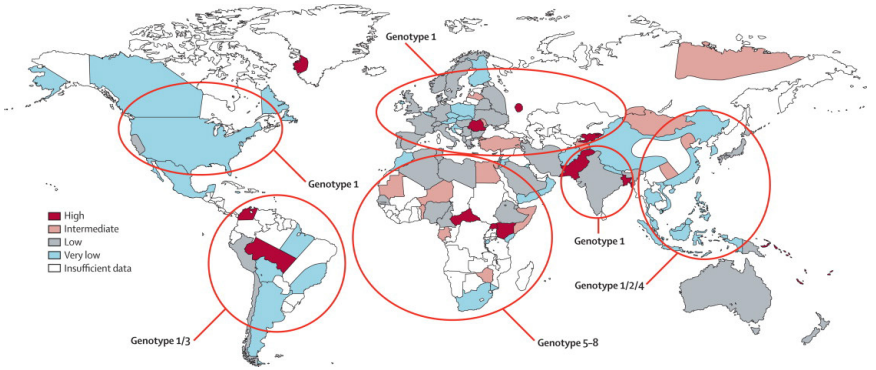
National figures

- No case was reported in Lebanon since 1995.
- Article (Ramia): Among HBV infected persons, 1,2% were anti-HDV positive. HDV genotype I seems to be the predominant genotype in Lebanon and the Middle East.

International figures

High prevalence is observed in the Mediterranean Basin, the Middle East, Central Asia, West Africa, the Amazon Basin of South America and certain South Pacific islands (Source: WHO fact sheet).

Figure 1: Worldwide prevalence of HDV and the geographic distribution of its genotypes (Source: Hepatitis delta virus. S. Hughes, H. Wedemeyer, Ph. M Harrison. The Lancet, Volume 378, Issue 9785, Pages 73 - 85, 2 July 2011)



Hepatitis E Virus

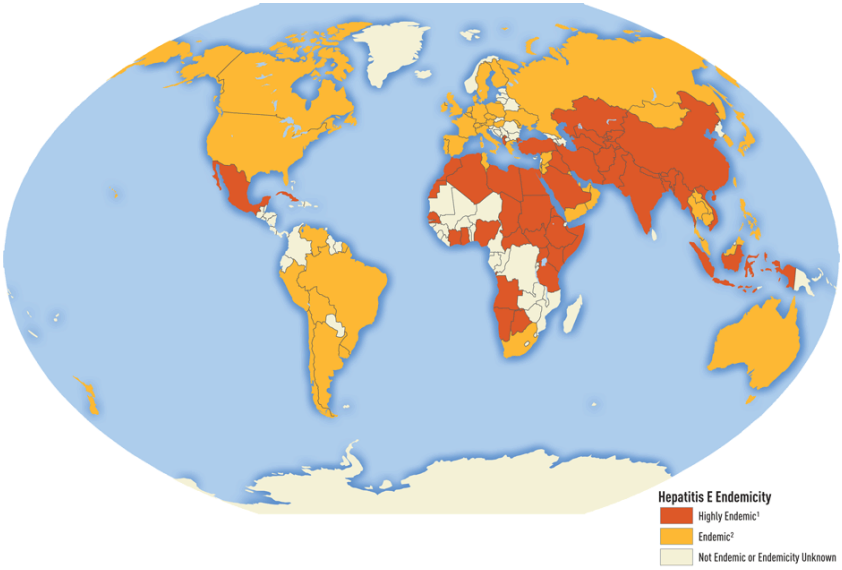
Hepatitis E Virus	
Agent	Hepatitis E virus, Hepevirus, family Hepeviridae. There are at least 5 genotypes.
Incubation period	15-64 days (median 26-42 days)
Period of communicability	Virus is present in stool up to 2 weeks after jaundice onset.
Reservoir	- Humans - Also non-human primates, cows, sheep, goats
Modes of transmission	- Dinking contaminated water - Person-to-person transmission: fecal-oral route
Clinical presentation	- Febrile jaundice, similar to HAV - No chronic infection - Case fatality: 20% among pregnant women infected during the 3rd trimester
Worldwide	Worldwide
Lebanon	Not diagnosed yet
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease (HEV) and syndromic (acute jaundice) approaches
Collect data about case	Clinical presentation, complications, pregnancy, sources of drinking water, occupation…
Collect specimen from case	Blood
Collect data about contacts	Similar cases among contacts, presence of pregnant women
Collect specimen from contacts	If symptoms
Test	Serology
Laboratories	Reference laboratories
Outbreak level	At least 1 confirmed case

Notification to WHO	Based on IHR (2005) criteria
Control	
Primary prevention	Personal hygiene, water safety, food safety, adequate sanitation
Case management	Symptomatic treatment
Isolation	- Contact and enteric precautions - Avoid contact with pregnant women
Contact prevention	NA
Mass prevention	Ensure water/food safety, rise awarness on hygiene
Viral Hepatitis E case definition (MOPH circular no. 35 dated on the 30th March 2007)	
Confirmed case	Case confirmed by laboratory testing with presence of IgM anti-HEV antibodies
Probable case	Case of acute jaundice with negative results for viral hepatitis A (negative IgM anti-HAV) and viral hepatitis B (negative IgM anti-HBc or HbsAg antigens) and viral hepatitis C (negative anti-HCV antibodies)
Forms	
Reporting	Standard reporting form
Investigation	HEV investigation form (MOPH ciruclar no. 3 dated on the 7th January 2015)
National figures	
No cases were reported in Lebanon. However a study conducted in 1998 (Irani Hakime, 1998) on blood donors, detected HEV antibodies in 4% of the sample.	

International figures

Hepatitis E is found worldwide, but the prevalence is highest in East & South Asia. In the Eastern Mediterranean region, outbreaks were documented in Algeria, Jordan, Libya, Morocco, & Turkey. Seroprevalence studies of anti-HEV found antibodies from 4% to 80%.

Figure 1: Hepatitis E virus infection (Source: USA-CDC)



Human Immunodeficiency Virus /HIV	
Agent	- Human Immunodeficiency Virus, retrovirus, Retroviridae family, Lentivirus genus - 2 serotypes 1 and 2. HIV-1 is the most common with 3 groups (M, N, O)
Incubation period	- Antibodies appear within 1-3 months - Acquired Immuno-Deficiency Syndrome (AIDS) appears within 1-15 years (if untreated)
Period of communicability	Early after infection throughout life
Reservoir	Humans
Modes of transmission	1) Person-to-person transmission: - Sexual - Contact of abraded skin or mucosa with infected body fluid (blood, CSF, semen) - Organ transplantation - Vertical transmission - Breastfeeding - Pre-mastication of food by HIV(+) 2) Transfusion with contaminated blood or blood products 3) Contaminated instruments: needles, syringes, sharp objects (razor blade, dentistry instruments, tattoo instrument…), intraveinous drug-use, dialysis...
Clinical presentation	- Infection: asymptomatic, or mild self-limited mononucleosis-like illness (acute seroconversion) - Advanced HIV - AIDS: opportunistic infection, cancer… Case fatality: 80-90% within 3-5 years if untreated
Worldwide	Worldwide. First case described in 1981
Lebanon	The annual average of reported cases is 98. The cumulative number of HIV (to 2014) was 1780 cases. The UNAIDS estimates the number of people living with HIV (PLHIV) to be 3600 [2700-4800].

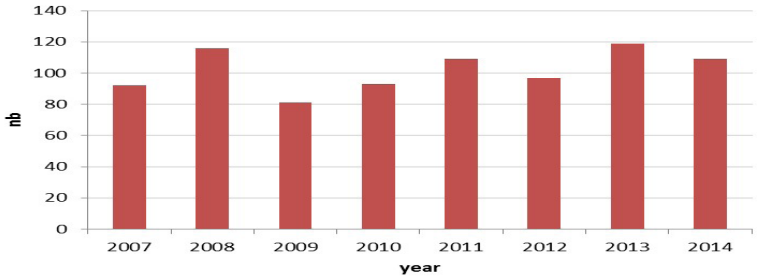
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Demography, clinical presentation, opportunistic infections, disease stage (HIV/AIDS), risk factors, case management…
Collect specimen from case	Blood
Collect data about contacts	Sexual partners, drug users, sharing sharp equipment (health professionals, barber, tattoo…)
Collect specimen from contacts	Blood
Test	- Rapid test at Voluntary Counselling & Testing centers (VCT) - Serological tests (Elisa, Western blot, P24 antigen, PCR...)
Laboratories	Clinical laboratories
Outbreak level	- Cluster of cases epi-linked - Or if observed incidence exceeds the expected
Notification to WHO	According to the International Health Regulations (2005) criteria
Control	
Primary prevention	- Safety of blood transfusion - Infection control practice - Reduce HIV related risk behavior: safe sexual practices, avoid syringes/needles sharing - Identification of cases: screening of pregnant women, pre-marital screening, blood donors, HIV counselling …
Post-exposure prevention	Post-exposure prophylaxis with combination of antiretroviral drugs

Case management	- Symptomatic treatment - Treatment of the complications - Antiretroviral treatment (ART) used to prolong life of persons living with HIV and prevent HIV acquisition.
Isolation	Universal precautions for blood and body secretions
Contact prevention	Partner screening
Mass prevention	Awareness campaign
HIV case definition (MOPH circular no. 74 dated on the 17th September 2012)	
Confirmed case for 18 months and above	A person aged 18 months or above with: - Positive test result for HIV antibody by 2 different methods (e.g. repeatedly reactive enzyme immunoassay). If conflicting, this must be followed by a positive result on a confirmatory test (e.g.Western blot). - Or positive result or report of a detectable quantity on the following HIV virologic (non-antibody) tests: • HIV nucleic acid detection (e.g. DNA PCR, or plasma HIV-1 RNA) • Or HIV p24 antigen test
Confirmed HIV infection for under 18 months	A child under 18 months with positive results on 2 separate specimens (excluding cord blood) using one or more of the following HIV virologic (non-antibody) tests: - HIV nucleic acid (DNA or RNA) detection - HIV p24 antigen test including neutralization assay, in a child greater than or equal to 1 month of age
Presumptive HIV infection for under 18 months	A child under 18 months who has: - Positive results on only one specimen (excluding cord blood) using the above HIV virological detection tests (non-antibody) - And no subsequent negative HIV (either virologic detection or antibodies detection)

Forms	
Reporting	HIV reporting form
Investigation	HIV investigation form (if case of alert/outbreak)

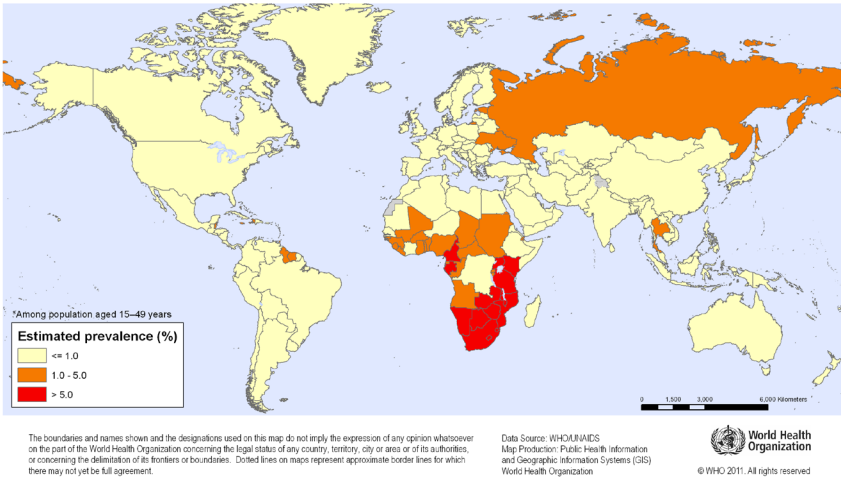
National figures

Figure 1: Reported HIV cases, Lebanon, 2007-2014 (Source: MOPH)



International figures

Figure 2: HIV estimated prevalence, worldwide, 2009 (Source: WHO)

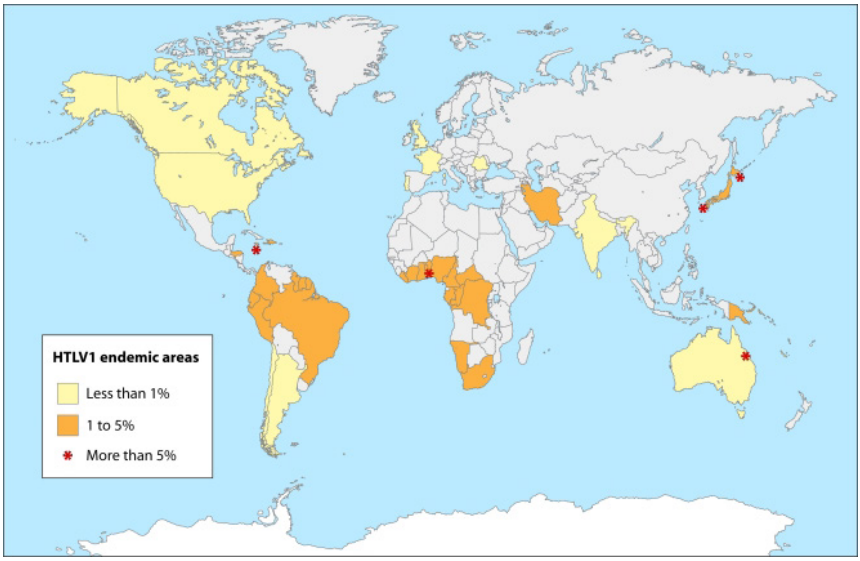


Human T cell Lymphotrophic Virus 1

HTLV1	
Agent	Virus Human T-cell lymphotrophic virus-1, family Retrovirus
Incubation period	- Adult T-cell leukemia/lymphoma: few decades - HTLV1-associated myelopathy/tropical spastic paraparesis: 3.3 years (median)
Period of communicability	As long as the infection persists
Reservoir	Humans
Modes of transmission	Person-to-person: - Vertical transmission: placenta-fetal, or via breastfeeding - Sexual intercourse - Blood: blood and blood products transfusion, intra-venous drug users, blood accidents…
Clinical presentation	- Asymptomatic carrier - Adult T-cell leukemia/lymphoma (2-4%) - HTLV1-associated myelopathy/tropical spastic paraparesis (<1%) - Other: HTLV1-associated uveitis, infective dermatitis, polymyositis, chronic arthropathy, panbronchiolitis
Worldwide	Endemic in Japan, Iran, Caribbean bassin, America, Equatorial Africa
Lebanon	Some cases were diagnosed in Lebanon
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Clinical presentation, travel history, blood transfusion, blood donation, blood transfusion, blood accidents, sexual risky behavior…
Collect specimen from case	Blood

Collect data about contacts	Family medical history, sexual contacts, blood transfusion…
Collect specimen from contacts	Blood
Test	Serological tests
Laboratories	Reference laboratories
Outbreak level	At least 2 confirmed cases epi-linked
Notification to WHO	According to the International Health Regulations (2005) criteria
Control	
Primary prevention	- Safe sexual practices - Screening of all blood donors - Prenatal screening - For seropositive pregnant women: cesarean section delivery, avoid breast-feeding
Post-exposure prevention	NA
Case management	- Supportive treatment - If Adult T cell lymphoma: chemotherapy, Interferon alpha, zidovudine - If myelopathy: corticosteroids, plasmapheresis, cyclophosphamide and interferon
Isolation	Blood and body fluids precautions
Contact prevention	Contact identification and follow up
HTLV1 case definition (MOPH circular no. 176 dated on the 31st December 2015)	
Confirmed case	A person presenting positive confirmatory test with one of the following: - Western Blotting WB - Immunofluorescence assay IFA - Radioimmunoprecipitation assay RIPA - Polymerase Chain Reaction PCR

Probable case	A person presenting positive screening test with one of the following: - Enzyme-linked immunoassay EIA - Particle agglutination PA
Forms	
Reporting	Standard reporting form
Investigation	Specific investigation form for case and contacts (MOPH circular no. 22 dated on the 19th January 2015)
National figures	
2 cases were reported in 2007.	
International figures	
Figure 1: worldwide endemicity of HTLV1 (Source: Epidemiology, Treatment, and Prevention of Human T-Cell Leukemia Virus Type 1-Associated Diseases. D UtschGonçalves, F Augusto Proietti, J Gabriel Ramos Ribas, M GrossiAraújo, S Regina Pinheiro, A. Carlos Guedes, and A. B. F. Carneiro-Proietti. Clinical Microbiology Reviews, July 2010, p. 577–589)	



Hydatid Disease/ Cystic Echinococcosis

Cystic Hydatid Disease / Cystic Echinococcosis	
Agent	Tapeworm: Echinococcus granulosus
Incubation period	12 months to years
Period of communicability	No person-to-person transmission
Reservoir	- Definitive hosts: dogs and other canides - Intermediate hosts: herbivores (sheep, cattle...) - Canines are infected by eating viscera from infected herbivores which are infected while gazing in areas contaminated by infected dog feces
Modes of transmission	- Direct hand-to-mouth transfer of worm eggs after contact with infected dogs - Consumption of contaminated food, water, soil, or fomites - Flies may disperse eggs after feeding on infected feces.
Clinical presentation	Symptoms depend on cysts location/size/number, and compatible with slowly growing tumour.
Worldwide	Worldwide except Antarctica
Lebanon	Annual average of reported cases: 18 cases
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Demography, clinical presentation, case management, ultrasonography results…
Collect specimen from case	Blood, biopsy (specimens obtained by surgery or percutaneous aspiration)
Test	Serological tests, histopathology
Laboratories	Clinical laboratories, histopathology laboratories

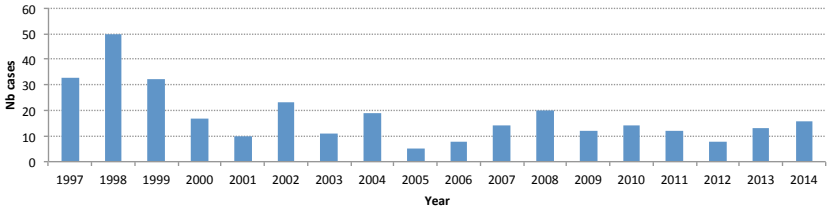
Outbreak level	If the observed incidence exceeds the expected
Notification to WHO	According to the International Health Regulations (2005) criteria
Control	
Primary prevention	- Food safety: avoid ingestion of raw vegetables and water that have been contaminated with the feces of infected dogs. - Emphasize basic hygiene practices as hand-washing and washing fruits and vegetables. - Interrupt transmission from intermediate to definitive hosts: prevent dogs to access to contaminated viscera (inspection of livestock carcasses and organ after slaughter and safe disposal of infected viscera) - Treat dogs in high risk areas - Biosafety at laborateries
Case management	- ATB: Salyselite Bozmate, Norfloxacine, Levaxacine, mebendazole, albendazole, praziquantel... - Surgical resection of isolated cysts - PAIR: puncture/aspiration/injection/reaspiration
Hydatid disease case definition (MOPH circular no. 76 dated on the 10th May 2007)	
Non-surgical confirmed case	A suspected case with at least 1 of the following: - Positive detection of specific antibodies using secondary immunodiagnostic test: detection of a precipitation line designated as arc 5, identification of IgG subclasses, IgG4 by Elisa, immunoblotting demonstrating reactivity of serum antibodies with subunits of E. granulosus antigens - Or positive examination of material obtained by non surgical diagnostic/therapeutic puncture or biopsy puncture or other methods: hydatid fluid for Echinococcus protoscoleces or hooks, protoscoleces for DNA by PCR, antigen 5 from sterile cysts, and histology examination of cyst wall material…

Surgical confirmed case	A suspected case with positive examination of material obtained by surgery: macroscopic identification of cysts and/or histological examination of the parasite tissue
Probable case	A case presenting: - Clinically: symptoms vary according to site, size and number of cysts. Commonly symptoms are related to liver, lung, cyst rupture into biliary tree, cyst rupture into bronchial tree and less commonly to heart, bone and muscles, brain and spine, eyes - And one or more of the following: • Positive imaging identifying cysts structures by ultrasonography US, computed tomography CT, Xray, MRI… In US, pathognomonic signs of hepatic cysts are unilocular anechoic lesions which are round or oval with a clearly visible cyste wall (laminated layer) with snowflake-like inclusions or floating laminated membranes; or multivesicular or multiseptate cysts with a wheel-like appearance; or unilocular cysts with daughter cysts with honey comb appearance. In CT, pathognomonic signs of hepatic cysts are membrane detachment; daughter cysts (spherical formations with in a larger “mother cyst” scattered or located at the peripheral of the cyst); or completely calcified cysts with the typical “egg-shell” pattern; • Or positive detection of specific antibodies using primary immunodiagnostic tests: latex agglutination test LAT, indirect haemagglutination test IHAT, IgG Elisa, immunofluorescence antibody test IFAT, immunoelectrophoresis IEP...

Forms	
Reporting	Standard reporting form
Investigation	Hydatic disease investigation form (MOPH circular no. 172 dated on the 31st December 2015)

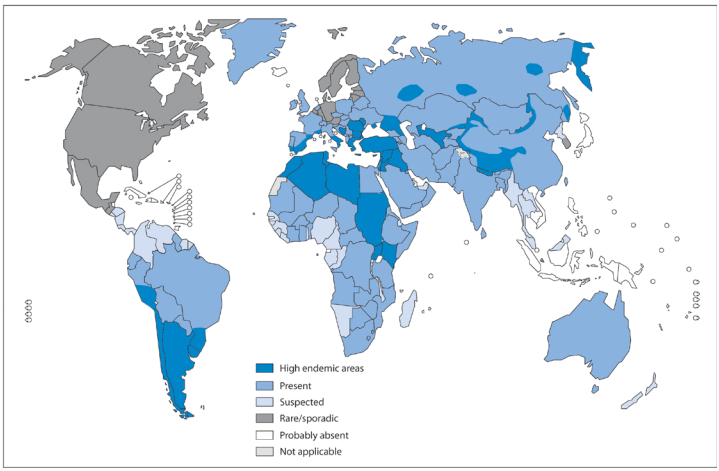
National figures

Figure 1: Reported hydatid disease, Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Distribution of hydatid disease in the world, 2009 (Source: WHO)



Intestinal infections	
Agent	Several agents can cause intestinal infections. Some are listed below, other are listed in “Food poisoning” chapter. 1) Main bacteria: - Salmonella: Non-typhoid salmonella serotypes - Shigella: Shigella dysenteriae, S. flexneri, S. boydii, S. sonnei - Campylobacter: spiral-shaped bacteria with 17 species including C. jejuni and C. coli - Escherichia coli with 4 types: • EHEC Enterohaemorrhagic Escherichia coli: known as Verocytotoxin producing E. coli VTEC, or Shiga-toxin producing E.coli STEC. It includes the serogroups O26, O45, O111, O103, O121 • ETEC Enterotoxigenic: elaborates enterotoxines, includes the serogroups O6, O8, O15, O20, O25, O27, O63, O78, O80, O114, O115, O128ac, O148, O153, O157, O159, O167, O169 • EIEC Enteroinvasive: includes the serogroups O28ac, O29, O112, O124, O136, O143, O144, O152, O164, O167 • EPEC Enteropathogenic: includes the serogroups O55, O86, O111, O119, O125, O126, O127, O128ab, O142... 2) Main virus: - Rotavirus: family Reoviridae. It includes several groups A-F. Group A is the most common and includes several serotypes. - Other viruses... 3) Main parasites: - Entamoeba histolytica: protozoa - Giardiasis: Giardia intestinalis (formely lamblia or duodenalis)...

<table>
<tr><td>Incubation period</td><td>The incubation varies with the agent.
<table>
<tr><th>Agent</th><th>Incubation period</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Salmonella</td><td>6-48 hours</td></tr>
<tr><td>Shigella</td><td>1-3 days (up to 1 week for S. dysenteriae)</td></tr>
<tr><td>E. coli: EHEC / VTEC/STEC</td><td>3-8 days (median 4 days)</td></tr>
<tr><td>E. coli: ETEC</td><td>10-12 hours (24-72 hours)</td></tr>
<tr><td>E. coli: EIEC</td><td>10-18 hours (1-3 days)</td></tr>
<tr><td>E. coli: EPEC</td><td>12-36 hours (1-6 days)</td></tr>
<tr><td>Campylobacter</td><td>2-5 days (1-11 days)</td></tr>
<tr><td colspan="2">Virus</td></tr>
<tr><td>Rotavirus</td><td>1-3 days</td></tr>
<tr><td colspan="2">Parasites</td></tr>
<tr><td>Entamoeba histolytica</td><td>2-4 weeks</td></tr>
<tr><td>Giardia intestinalis</td><td>7-10 days (4-25 days)</td></tr>
</table></td></tr>
<tr><td>Period of communica-bility</td><td>The period of communicability varies with the agent.
<table>
<tr><th>Agent</th><th>Period of communicability</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Salmonella</td><td>As long as the bacteria is in feces, from several days to several weeks. Carrier can last for months.</td></tr>
<tr><td>Shigella</td><td>As long as bacteria is excreted in feces, usually up to 4 weeks. Appropriate treatment reduces carriage to few days.</td></tr>
<tr><td>E. coli</td><td>As long as bacteria is excreted in feces: 1 week for adults, 3 weeks for children</td></tr>
<tr><td>Campylobacter</td><td>As long as bacteria is excreted: several days to several weeks.</td></tr>
</table></td></tr>
</table>

	Virus
	Rotavirus: As long as the virus is excreted in feces during the acute phase up to 8 days. For immune-compromised, virus may be excreted for 1 month.
	Parasites
	Entamoeba histolytica: Years, as long as cysts of E. histolytica cysts are passed.
	Giardia intestinalis: Months, during the entire period of infection
Reservoir	The reservoir varies with the agent.

Agent	Reservoir
Bacteria	
Salmonella	- Domestic and wild animals including poultry, pigs, cattle, rodents, pets - Also humans (patients and carriers)
Shigella	Humans
E. coli: EHEC	- Cattle, and other animals (deer..) - Humans
E. coli: ETEC	Humans
E. coli: EIEC	Humans
E. coli: EPEC	Humans
Campylobacter	Domestic animals (cats/ dogs), livestock (cattle, sheep, pigs), birds (poulty), polluted water.
Virus	
Rotavirus	- Humans - Animals: the animal viruses do not produce disease in humans.
Parasites	
Entamoeba histolytica	- Humans, also dogs and rats - Sewage used for irrigation
Giardia intestinalis	Humans and animals

<table>
<tr><td>Modes of transmission</td><td>The modes of transmission vary with the agent.
<table>
<tr><th>Agent</th><th>Modes of transmission</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Salmonella</td><td>- Ingestion of contaminated food as milk, meat, poultry, eggs derived from infected animals, or contaminated by food-handlers, pets or by cross-contamination
- Person-to-person: feco-oral route</td></tr>
<tr><td>Shigella</td><td>- Consumption of contaminated under-cooked food with extensive handling
- Consumption of food or water contaminated with feces
- Person-to-person transmission: feco-oral route</td></tr>
<tr><td>E. coli: EHEC</td><td>- Consumption of contaminated food as raw/undercooked meat products, unpasteurized dairy products from infected animals
- Consumption of contaminated food during preparation
- Consumption of contaminated produce and vegetables
- Consumption of contaminated drinking water or during activities in recreational waters
- Direct person-to-person transmission: feco-oral route</td></tr>
<tr><td>E. coli: ETEC</td><td>- Contaminated food and water
- Contaminated weaning foods</td></tr>
<tr><td>E. coli: EIEC</td><td>Contaminated food</td></tr>
</table></td></tr>
</table>

	E. coli: EPEC	- Contaminated infant formula and weaning foods - In nurseries: by fomites and contaminated hands
	Campylobacter	- Ingestion of contaminated food as raw milk or raw/undercooked poultry/beef/pork. Spread to other foods by cross-contamination or by untreated water - Consumption of contaminated water - Contact with live animals (pets and farm animals) - Person-to-person may occur: fecal-oral transmission
	Virus	
	Rotavirus	- Fecal-oral transmission - Possible via respiratory secretions
	Parasites	
	Entamoeba histolytica	- Ingestion of contaminated food as fruits, vegetables… - Consumption of fecally contaminated water - Person-to-person transmission: fecal-oral route
	Giardia intestintalis	- Ingestion of fecally contaminated food or water - Swalling contaminated water while swimming - Person-to-person contact: care, sexual contact

<table>
<tr><td>Clinical presentation</td><td>The clinical presentation varies with the agent.
<table>
<tr><th>Agent</th><th>Clinical presentation</th></tr>
<tr><td colspan="2">Bacteria</td></tr>
<tr><td>Salmonella</td><td>- Gastro-enteritis
- Complications: arthirits, septicaemia, aortitis, cholecystitits, colitis, meningitis, myocarditis, osteomyelitis, pancreatitis…</td></tr>
<tr><td>Shigella</td><td>- Gastro-enteritis, with mainly bloody/mucoid diarrhea
- S. sonnei shows more watery diarrhea.
- Complications: haemolytic uraemic syndrome, splenic abscess, erythe ma nodosum, synovitis…</td></tr>
<tr><td>E. coli: EHEC</td><td>- Gastro-enteritis with water diarrhea that may evolve to bloody diarrhea (haemorrhagic colitis)
- Complications: haemolytic uraemic syndrome HUS (10%) with acute renal failure, haemolytic anaemia and thrombocytopenia. Other complications include erythema nodosum and thrombotic thrombo-cytopenic purpura.</td></tr>
<tr><td>E. coli: ETEC</td><td>- ETEC produces enterotoxins.
- Symptoms include diarrhea (mild to severe, cholera-like), abdominal cramps, vomiting. It may lead dehydration & shock.</td></tr>
<tr><td>E. coli: EIEC</td><td>- EIEC causes inflammatory disease of the mucosa and submucosa by invading and multiplying in the epithelial cells of the colon.
- Symptoms include fever, severe abdominal pain, vomiting & watery diarrhea. In <10% of cases stools may become muco-bloody.</td></tr>
</table></td></tr>
</table>

	E. coli: EPEC	EPEC adheres to the mucosa, changes its absorption capacity, and causes vomiting, diarrhea, abdominal pain and fever.
	Campylobacter	- Gastro-enteritis: fever, abdominal pain, nausea and diarrhea varying from slight to profuse watery, or muco-bloody diarrhea. - Complications: 2-10% Guillain Barré Syndrome, haemolytic uraemic syndrome, meningitis, pancreatitis, cholecystitis, colitis…
	Virus	
	Rotavirus	- Gastro-enteritis. - Complication: dehydration
	Parasites	
	Entamoeba histolytica	- Severe bloody diarrhea, stomach pain, fever and vomiting - Most infections remain symptomless. - Complications: liver abscess
	Giardia intestinalis	- May be asymptomatic - Acute diarrhea (often with foul-smelling, greasy stools), abdominal cramps, bloating, flatulence, fatigue, anorexia, and nausea - Chronic diarrhea: steatorrhea, malabsorption, weight loss - Fever and vomiting are uncommon. - Complications: Reactive arthritis, irritable bowel syndrome…
Worldwide	**Agent**	**Global epidemiology**
	Bacteria	
	Salmonella	Worldwide
	Shigella	Worldwide
	E. coli: EHEC	Worldwide. Causing outbreaks in industrialized countries

	E. coli: ETEC	Worldwide. Common in developing countries and during the first 3 years of life. In industrialized countries, the infection occurs mainly among travelers to developing countries.
	E. coli: EIEC	- Endemic in developing countries - Rare in industrialized countries
	E. coli: EPEC	Worldwide. Infant diarrhea in developing countries
	Campylobacter	Worldwide
	Virus	
	Rotavirus	Worldwide
	Parasites	
	Entamoeba histolytica	Worldwide
	Giardia intestinalis	Worldwide
Lebanon	Salmonella is endemic, and found in several food poisoning episodes. Shigella causes sporadic cases or small outbreaks. Entamoeba histolytica is endemic with increases during summer.	
Control objective	Control	
Surveillance and Investigation		
Surveillance approach	Syndromic approach (acute diarrhea: watery or bloody) and disease approach	
Collect data about case	Clinical presentation, travel history, food consumption habits, sources of drinking water, activities in recreational water, occupation, vaccination status (Rotavirus) …	
Collect specimen from case	Stool specimen	

Collect data about contacts	Search of similar cases among contacts
Collect specimen from contacts	If cases
Test	- Direct exam - Bacteriological culture - Virus antigens detection - Virus culture - PCR - Identification of types and subtypes...
Laboratories	- Clinical laboratories: direct exam, bacteriological culture, virus antigen detection - Reference laboratories: identification of types and subtypes, virus culture
Outbreak level	If observed incidence exceeds the expected one
Notification to WHO	According to the International Health Regulations (2005) criteria
Control	
Primary prevention	- Hand hygiene, food safety, water safety, adequate sanitation - Vaccination for some agents (Rotavirus…)
Case management	- Symptomatic treatment - Hydration in case of diarrhea - Antibiotics or antiparasites if bacterial/parasitic agents
Isolation	Enteric precautions
Mass prevention	Awareness campaign, food and water safety

Case definitions for confirmed cases	
Shigellosis: confirmed case (MOPH Circular 51, year 2007)	A case presenting acute diarrhoea with visible blood in stools, with: - Laboratory confirmation through isolation of Shigella sp. from stools - Or, during epidemic situation, presence of an epidemiological link to a lab-confirmed case
Salmonellosis: confirmed case	A case presenting acute diarrhoea with laboratory confirmation through isolation of Salmonella sp. from stools
E. coli: confirmed case	Watery or bloody diarrhea with laboratory confirmation through E. coli isolation from stool specimen
Campylobacter: confirmed case	A case presenting acute diarrhoea watery or bloody with Campylobacter isolation in a stool specimen
Rotavirus: confirmed case	A case presenting watery diarrhea with laboratory confirmation through: - Detection of rotavirus antigen in stool with an enzyme immunoassay (EIA) - Or reverse transcriptase polymerase chain reaction (RT-PCR) methods
Amebic dysentery: confirmed case (MOPH Circular 51, year 2007)	A case presenting acute diarrhoea with bloody or mucoid diarrhea with laboratory confirmation through microscopic demonstration of trophozoites or cysts of Entamoeba histolytica in fresh or suitable preserved faecal specimens or other clinical specimens
Giardia intestinalis: confirmed case	Watery diarrhea with laboratory confirmation using one of the following: - Demonstration of G. intestinalis cysts in stool - Demonstration of G. intestinalis trophozoites in stool, duodenal fluid, or small-bowel biopsy - Demonstration of G. intestinalis antigen in stool by a specific immunodiagnostic test (e.g., enzyme-linked immunosorbent assay)

Forms

Reporting	Standard reporting form
Investigation	Dysenteria investigation form

National figures

Figure 1: Reported shigellosis, Lebanon, 2005-2014 (Source: MOPH)

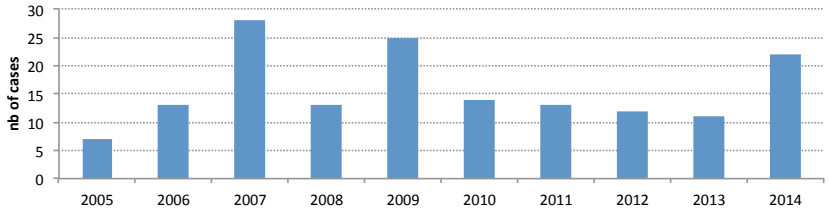


Figure 2: Reported amebiasis, Lebanon, 2005-2014 (Source: MOPH)

International figures

Table 1: Estimated incidence of salmonellosis (Source: Majowicz S et al., Clin Inf Dis 2010;50:882-889)

WHO regions	Cases (millions)	Deaths (thousands)	Incidence rate /100 pyr
WHO South East Asia Region	29.8	49.1	4.0
WHO Eastern Mediterranean Region	0.56	0.9	0.1
WHO Americas Region	2.2	3.7	0.3
WHO European Region	5.0	8.4	0.8
WHO Western Pacific Region	53.6	88.5	3.2
WHO African Region	2.5	4.1	0.3
Total	94.8	155.0	1.1

Legionellosis

Legionellosis	
Agent	- Legionella, Gram negative bacilli, including 20 different species. 80% of human infections are due to L. Pneumophila serogroup 1. - Other species: L. micdadei, L. bozemanii, L. longbeachae, L. dumoffii…
Incubation period	- For Legionaires' disease: 5-6 days (2-10 days) - For Pontiac fever: 24-48 hours (5-66 hours)
Period of communicability	No person-to-person transmission
Reservoir	- Water: Legionella is a waterborne, found in water system, air conditionning cooling tower, whirpool spas... Legionella growth increases with warm water temperature (25-42ºC), sale and sediment, and low biocide levels. - Potting soil may be reservoir for certain spp (L. longbeachar)
Modes of transmission	- Inhalation of contaminated aerosols - Microaspiration of contaminated water
Clinical presentation	Two forms: - Legionaires' disease: pneumonia with non productive cough. Case fatality: 15% - Pontiac fever: self-limited flu-like illness without pneumonia
Worldwide	First described in 1976
Lebanon	Notifiable disease since 2014
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Clinical presentation, travel history, case management, nosocomial factors, itinerary during the past 10 days before onset
Collect specimen from case	Respiratory specimens, blood, urine

Collect data about contacts	Similar cases among contacts at household, workplace…
Collect other specimens	- Contacts: If symptoms - Environmental: water samples
Test	Culture, antigen detection, serology, immunofluorescent antibody test...
Laboratories	Reference laboratories
Outbreak level	At least one confirmed case acquired locally
Notification to WHO	- According to IHR (2005) - If travel-related: need to notify the WHO and the concerned country
Control	
Primary prevention	- Regular cleaning and disinfection of water supply system and cooling towers. Avoid conditions known to enhance legionella growth: use proper disinfectant, maintain proper temperature, use of biocides… - Tape water must not be used for respiratory devices
Case management	For Legionaires' disease: fluoroquinolones (levofloxacin), macrolide (azithromycin), rifampicin...
Isolation	NA
Legionaires' disease case definition (MOPH circular no. 175 dated on the 31st December 2015)	
Confirmed case	A person presenting pneumonia with positive confirmatory laboratory test of at least one of the following: - Isolation of Legionella spp. from respiratory secretions or any normally sterile site - Detection of L. pneumophila antigen in urine - Significant rise in specific antibody level to L. pneumophila serogroup 1 in paired serum

Suspected case	A person presenting pneumonia with positive laboratory test for at least one of the following: - Detection of Legionella pneumophila antigen in respiratory secretions or lung tissue e.g. by DFA staining using monoclonal-antibody derived reagents - Detection of Legionella spp. nucleic acid in respiratory secretions, lung tissue or any normally sterile site - Significant rise in specific antibody level to Legionella pneumophila other than serogroup 1 or other Legionella spp. in paired serum samples - Single high level of specific antibody to Legionella pneumophila serogroup 1 in serum
Forms	
Reporting	Standard reporting form
Investigation	Legionellosis investigation form (MOPH circular no. 7 dated on the 7th January 2015)
International figures	

Figure 1: Number of standard clusters of travel-associated Legionaires' disease per destination country, reported to ECDC, 2013 (Source: ECDC)

Leishmaniasis

Leishmaniasis	
Agent	- Cutaneous/Mucosal form: Protozoa Leishamania tropica, L. major, L. aethiopica, L. braziliensis, L. mexicana, L. infantum/ chagazi, L. donovani - Visceral form: Leishamania donovani, L. infantum and L. infantum/chagazi
Incubation period	1 week to several months
Period of communicability	- Rare person-to-person transmission: via transfusion - Human is infectious to sandfly as long as parasites remain in lesion (cutaneous) or in blood (visceral)
Reservoir	Humans, wild rodents, hyraxes, edentates, marsupials, domestic/wild dogs and canidae
Modes of transmission	- Bite of infective female phlebotomines (sandflies). Female sandflies become infected by feeding from reservoir hosts: animals (zoonotic cycle), or humans (anthroponotic cycle). - The sandflies are from genus phlebotomus in the Old World, and genus Lutzoma in the New World.
Clinical presentation	- Cutaneous/Mucosal form: Intracellular parasite in humans causing single or multiple macule skin lesions then papules that enlarge and become indolent ulcers. Involvement of the mucosa of the nasopharynx is characterized by progressive tissue destruction. - Visceral form: Chronic systematic disease characterized by fever, hepato-splenomegaly, lympho-anedopathy, anemia, leukopenia, thrombocytopenia. Fatal if untreated.

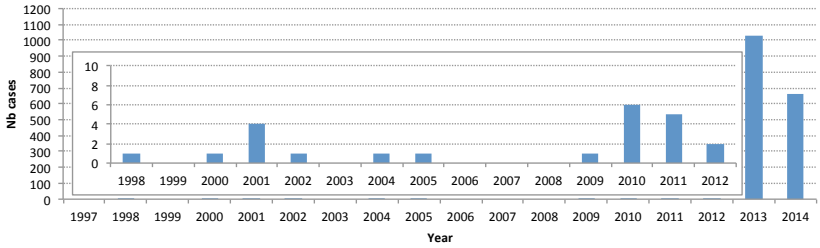
Worldwide	Asia, Middle East, Sub-Saharan Africa, Central and South America
Lebanon	- Before 2013: less than 10 per year of local cases - In 2013: >1000 per year of Syrian cases
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Clinical presentation, residence, travel history...
Collect specimen from case	- Cutaneous/mucosal form: skin smear/biopsy - Visceral form: blood, biopsy (bone marrow...)
Collect data about contacts	Similar cases among family
Collect specimen from contacts	Specimen collection if symptoms appear
Test	Histopathology, smear, culture, serology tests, PCR, intradermal test...
Laboratories	- Confirmation: clinical histopathology laboratory - Identification of L. types: national reference laboratory
Outbreak level	- If observed incidence exceeds the expected - If modification of characteristics of parasite, vector or host
Notification to WHO	According to International Health Regulations (2005) criteria
Control	
Primary prevention	- Personal measures: avoid sandfly bites - Environmental: vector control, ecological measures to reduce reservoir and animal infection (use of insecticide-impregnated collar for dogs…)

Case management	- Pentavalent antimonials: Sodium stibogluconate, meglumine antimonite - Others: pentamidine, imidazoles, ketoconazole, itraconazole, amphotericine B, miltefosine...
Isolation	- Cutaneous form: Avoid contact with lesions - Visceral form: Body fluids precautions
Mass prevention	Vector control, ecological measures
Case definitions	
Cutaneous/musocal leishmaniasis case definition (MOPH circular no. 34 dated on the 4th April 2013)	
Confirmed case	A suspected case with laboratory confirmation: - Parasitological confirmation: positive stained smear or positive culture from lesion of Leishmania - And/or for mucosal leishmaniasis only, serological confirmation: immunofluorescent assay, ELISA
Suspected case	A person with clinical signs: skin or mucosal lesions (nodule, indolent ulcer, depressed scar…). The skin lesions: appearance of one or more lesions typically on uncovered parts of the body. The face, neck, arms, and legs are the commonest site. At the site of inoculation, a papule appears which may enlarge to become an indolent ulcerated nodule or plaque. The sore remains in this stage for a variable time before healing and typically leaves a depressed scare. Other atypical forms may occur. In some individuals, certain strains can disseminate and cause mucosal lesions. These sequelae involve nasopharyngeal tissues and can be disfiguring.

Visceral leishmaniasis case definition (MOPH circular no. 122 dated on the 13th Sep 2006)	
WHO definition	A person showing: - Clinical signs: prolonged irregular fever, splenomegaly and weight loss - With laboratory confirmation: • Parasitological: stained smears from bone marrow, spleen, liver, lymph node, blood or culture of Leishmania from a biopsy or aspirated material • Or serological: immunofluorescent assay, ELISA, Direct Agglutination Test
Forms	
Reporting	Standard reporting form
Investigation	- Leishmania investigation form (MOPH circular no. 25 dated on the 19th January 2015). - Leishmania case management form (MOPH memo no. 28 dated on the 22nd April 2013)

National figures

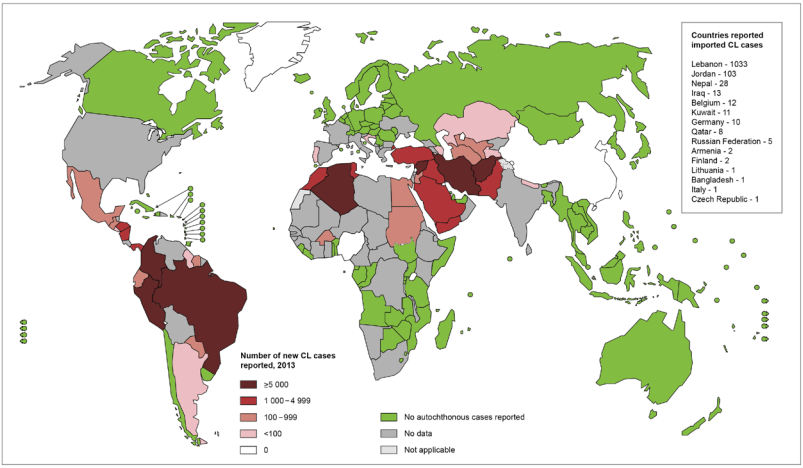
Figure 1: Reported Leishmaniasis cases, Lebanon, 1997-2014 (Source: MOPH)



International figures

Disease present in all continents except in Australia & Antarctica.
- Cutaneous/mucosal form: 90% of worldwide cases are in America (Brazil & Peru), and Asia (Afghanistan, Iran, Kingdom of Saudia Arabia, Syria)
- Visceral form: 90% of worldwide cases are in Africa (Sudan), America (Brazil), and Asia (Bangladesh, India, Nepal)

Figure 2: Incidence of cutaneous leishmaniasis, worldwide, 2013 (Source: WHO)



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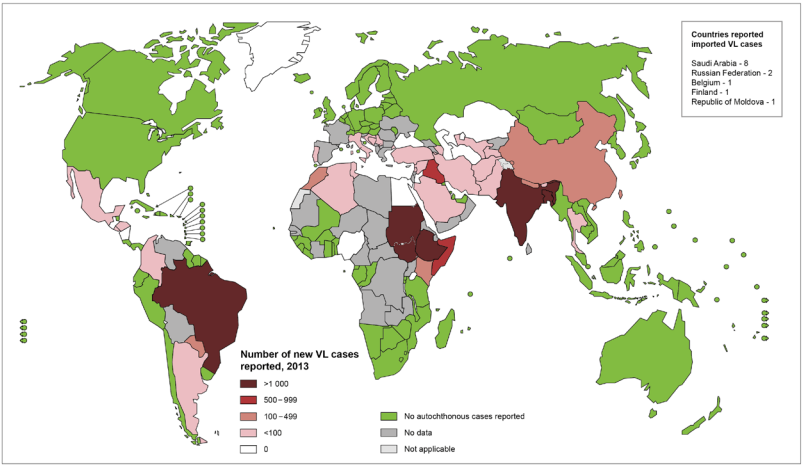
Data Source: World Health Organization
Map Production: Control of Neglected Tropical Diseases (NTD)
World Health Organization

World Health Organization

Figure 3: Incidence of visceral leishmaniasis, worldwide, 2013 (Source: WHO)



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Data Source: World Health Organization
Map Production: Control of Neglected Tropical Diseases (NTD)
World Health Organization

World Health Organization

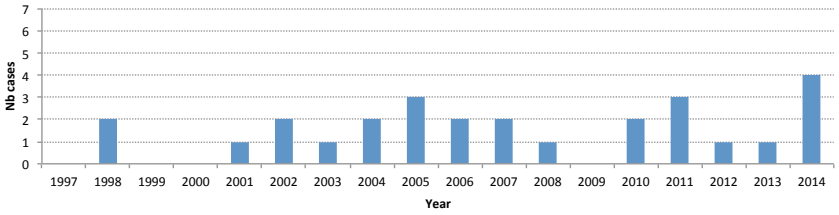
Leprosy	
Agent	Bacteria: Mycobacterium leprae
Incubation period	From 9 months to 20 years
Period of communicability	- During active disease - Effective antibiotherapy treatment stoppes transmission within one day of treatment
Reservoir	Humans, but also observed in monkeys
Modes of transmission	Person-to-person transmission: close contact with nasal mucosa of a patient to the skin or respiratory tract of another person
Clinical presentation	- Chronic bacterial disease of the skin, peripheral nerves and upper airway, characterized by skin lesions (hypo-pigmentation with loss of sensation), thicknesses of peripheral nerves and signs of peripheral nerves involvement. - Two forms are described: • Lepromatous multibacillary form (>5 skin lesions): symmetrical and bilateral nodules, papules, diffuse infiltrations, involvement of nasal mucosa, ocular involvement … • Tuberculoid paucibacillary form (1-5 skin lesions): single or few skin lesions, sharply demarcated, anaesthesic or hypoaesthesic, bilateral asymmetrical involvement of peripheral nerves
Worldwide	In 2012, more than 100000 cases were reported.
Lebanon	0-3 cases per year
Control objective	WHA resolution 44.9: elimination (less than 1/10000 population) by 2000
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Clinical presentation, case management...

Collect specimen from case	Skin biopsy
Collect data about contacts	Family history (parents and grand-parents), search of skin lesions, follow up
Collect specimen from contacts	Specimen collection if symptoms appear
Test	Histopathology exam
Laboratories	Clinical histopathology laboratories
Outbreak level	- Cluster of cases - If observed incidence exceeds the expected one
Notification to WHO	According to International Health Regulations (2005) criteria
Control	
Primary prevention	- Early case detection and antibiotic treatment - BCG vaccination against the tuberculoid form
Case management	- Combined chemotherapy regimen (Rifampicine, Dapsone, Clofazimine) - Supportive treatment for leprosy reactions/ulcers
Isolation	Unnecessary
Contact quarantine	Family contact identification and monitoring
Leprosy case definition (MOPH circular no. 38 dated on the 30th March 2007)	
Operational definition	A person having one or more of the following: - Hypopigmented or reddish skin lesion(s) with definite loss of sensation - Involvement of the peripheral nerves, as demonstrated by definite thickening with loss of sensation - Skin smear positive for acid-fast bacilli (Mycobacterium leprae) Case definition includes: - Retrieved defaulters with signs of active disease - Relapsed cases who have previously completed a full course of treatment.

	It does not include cured persons with late reactions or residual disabilities. On clinical ground, leprosy cases can be classified as follows: - Multibacillary leprosy: >5 patches or skin lesions or involvement of several peripheral nerves - Paucibacillary leprosy: 1 to 5 patches or lesions on the skin or involvement of one peripheral nerve
Forms	
Reporting	Standard reporting form
Investigation	Leprosy investigation form (MOPH circular no. 173 dated on the 31st December 2015)

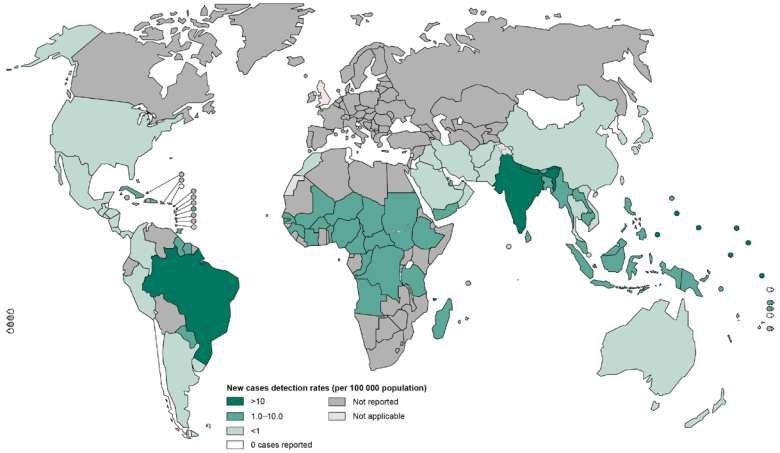
National figures

Figure 1: Reported Leprosy, Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Incidence of leprosy per 100000 population, worldwide, 2013 (Source: WHO)



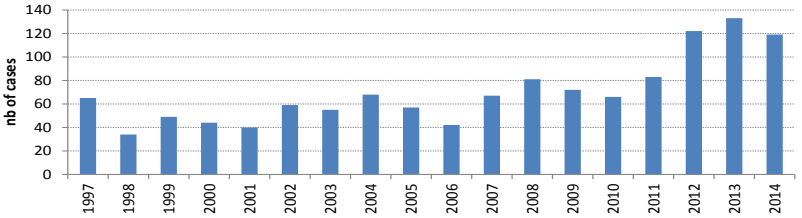
Malaria	
Agent	Protozoan parasites: Plasmodium falciparum, P. vivax, P. ovale, P. malariae
Incubation period	- P. falciparum: 9-14 days - P. vivax/ovale: 12-18 days - P. malariae: 18-40 days - Some strains: 6-12 months
Period of communicability	- Rare person-to-person transmission - Human infectivity to mosquitoes: up to 5 years for P. vivax, 1 year for P. falciparum, and to 40 y for P. malariae - Mosquitoes are infective for life
Reservoir	- Humans - For P. malariae: humans and apes
Modes of transmission	- Bite of infective female Anophele - Induced: from person-to-person via contaminated blood, blood products or organ transplant - Congenital: from mother to fetus
Clinical presentation	- Fever and chills with non-specific symptoms: headache, back pain, sweating, myalgia, nausea, vomiting - Anemia, splenomegaly - Complications: encephalopathy (P. falciparum), renal failure, respiratory distress, hypoglycemia, lactic acidosis, coagulation defects, shock…
Worldwide	Tropical and subtropical areas
Lebanon	Malaria was eliminated in the 1960s. Currently most cases are imported with rare local cases.
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	- Clinical presentation, travel history, anti-malarial treatment, medical history, blood transfusion… - Is the case locally acquired or imported?

Collect specimen from case	Blood smear, blood
Collect data about contacts	Similar cases among contacts, travel to malaria countries
Collect specimen from contacts	If similar cases: blood smear, blood
Test	Microscopic examination of blood smear, rapid diagnostic tests, serological tests, PCR
Laboratories	Clinical laboratories
Outbreak level	At least one local case
Notification to WHO	According to the International Health Regulations (2005) criteria
Control	
Primary prevention	- Avoid mosquito bites: use of insecticide-treated mosquitoes net, indoor insecticide spraying, avoid outdoor between dusk and dawn, use of insect repellent... - Vector control including elimination of mosquito breeding sites - Chemoprophylaxis - Blood transfusion safety - Disinsectization of ship, aircraft, airport, port
Case management	- Drugs used for the treatment against the parasites in the blood: chloroquine, atovaquone-proguanil, artemether-lumefantrine, mefloquine, quinine, quinidine, doxycycline (with quinine), clindamycin (with quinine), artesunate… - Uncomplicated P. Falciparum: ACT (artemisinin-based combination therapy), primaquine - P. vivax: chloroquine and ACT for 14 days in order to prevent relapse.
Isolation	Blood precautions
Malaria case definition	
Confirmed case	- Demonstration of malaria parasites in blood film - Or by PCR

Autochthonous/ case	Malaria acquired by mosquito transmission in an area where malaria is a regular occurance
Imported case	Malaria acquired outside the area in which it is found
Introduced case	Malaria acquired by mosquito transmission from an imported case in an area where the malaria is not a regular occurrence
Induced case	Malaria acquired through artificial means (e.g., blood transfusion, common syringes …)
Probable case	A person with signs and /or symptoms of malaria, and who receives antimalarial treatment
Forms	
Reporting	Malaria reporting form or standard reporting case
Investigation	Malaria investigation form

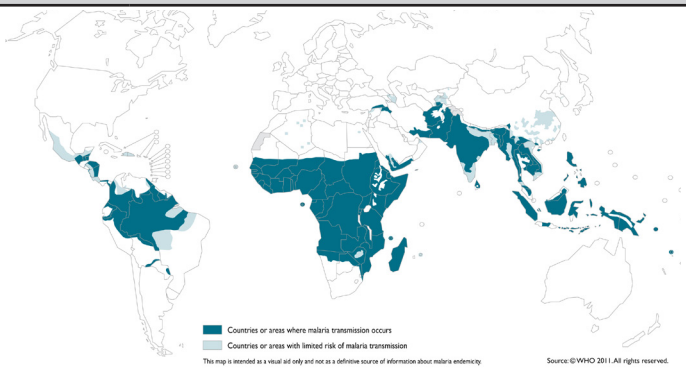
National figures

Figure 1: Reported malaria cases, Lebanon, 1997-2014 (Source: MOPH)



International figures

Figure 2: Countries at risk of malaria, 2010 (Source: WHO)



Syphilis

Venerael Syphilis	
Agent	Spirochete: Treponema pallidum, subsp. pallidum
Incubation period	10 days to 3 months (usually 3 weeks)
Period of communicability	Druing the primary and secondary syphilis
Reservoir	- Humans
Modes of transmission	Person-to person: - Sexual transmission with direct contact with infectious exsudats from skin lesions or mucous membranes - Transplacental infection - Blood transfusion - Direct contact following unprotected clinical examination of infectious lesions
Clinical presentation	- Primary lesion: chancre appears as indurated painless ulcer with serous exsudate - Secondary skin eruption: maculopapular of the palms and soles with lymphadenopathy - Tertiary: meningitis, meningovascular syphilis, cardiovascular syphilis, gummas on skin, viscera, bones or mucosa - Fetal infection: congenital syphilis with generalized systemic disease, with CNS involvement. Congenital syphilis may be asymptomatic in the first weeks of life. Late manifestations include: involvement of the CNS, Hutchinson teeth (small, wide-spaced, grayish incisors), saddlenose, sabre shins (periostitis), interstitial keratitis, and deafness
Worldwide	Worldwide
Lebanon	Average of 13 reported cases per year
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach

Collect data about case	Demographic data, clinical presentation, risk factors, other sexual transmitted diseases, blood donation, treatment, pregnancy…
Collect specimen from case	Blood, exsudates from, aspirates from lymph nodes
Collect data about contacts	- Sexual partners, case management… - Congenital form: maternal history & treatment
Collect specimen from contacts	Blood
Test	Serological tests
Laboratories	Clinical laboratories
Outbreak level	- If observed incidence exceeds the expected - Congenital form: at least one confirmed case
Notification to WHO	According to International Health Regulations (2005) criteria
Control	
Primary prevention	- Safe sexual practices - Early detection and treatment of cases - Blood transfusion safety
Post exposure prevention	Congenital: all infants born to seroreactive mothers should be treated with penicillin
Case management	- Long-acting penicillin G, doxycycline, tetracycline - Congenital: Aqueous crystalline penicillin G...
Isolation	- Universal precautions for body fluids secretions, care of discharges from open lesions and contaminated articles - Refrain from sexual intercourse until treatment is completed
Contact prevention	- Partner screening and treatment - Congenital: Mother treatment
Syphilis case definition (MOPH circular no. 62 dated on the 14th April 2007)	
Confirmed case I/II (Primary/ Secondary)	A probable case of syphilis I/II with demonstration of Treponema pallidum in clinical specimens by darkfield microscopy, direct fluorescent antibody (DFA-TP), nucleic acid test, or equivalent methods

Probable case I/II (Primary/ Secondary)	A person presenting: - Clinically, sexually transmitted infection with: • Ulcers (primary syphilis) • Or mucocutaneous lesions (secondary syphilis) - And a positive serologic test: • Non-treponemal: venereal disease research laboratory (VDRL) or rapid plasma reagin (PRP) • Or treponemal: fluorescent treponemal antibody absorbed (FTA-ABS) or microhe-magglutination assay for antibody to Treponema pallidum (MHA-TP)
Probable latent case	Person, without clinical signs of syphilis, with: - In a patient with no prior syphilis diagnosis: a reactive nontreponemal and treponemal test - In a patient with a prior syphilis diagnosis: a non-treponemal test titer demonstrating four-fold or greater increase from the last non-treponemal test titer
Congenital syphilis case definition (MOPH circular no. 64 dated on the 18th April 2007)	
Confirmed congenital syphilis	Demonstration of Treponema pallidum in clinical specimens by darkfield microscopy, direct fluorescent antibody (DFA-TP), or other specific stains in specimens from lesions, placenta, umbilical cord or autopsy material.
Probable congenital syphilis	- An infant whose mother had untreated or inadequately treated syphilis during pregnancy (regardless of signs in the infant) - Or an infant or child with a reactive treponemal test & any one of the following: evidence of congenital syphilis on physical examination, long bone X-rays compatible with congenital syphilis, reactive VDRL-CSF, elevated CSF cell count or protein (without other cause), reactive FTA-Abs 19S-IgM antibody test, reactive IgM ELISA, or reactive IgM treponemal Western blot.

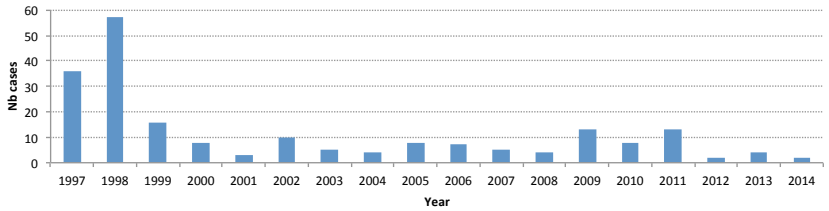
Stillbirth	- A fetal death that occurs after a 20 week gestation or in which the fetus weights > 500g - And the mother had untreated or inadequately treated syphilis at delivery

Forms

Reporting	Standard reporting form
Investigation	Syphilis investigation form if alert/outbreak (MOPH circular no. 24 dated on the 19th January 2015)

National figures

Figure 1: Reported syphilis cases, Lebanon, 1997-2014 (Source: MOPH)



International figures

Table 1: Estimates of incidence and prevalence of Syphilis among adults (15-49y), for 2008. (Source: WHO. Global incidence and prevalence of selected curable sexually transmitted infections, 2008)

WHO Regions	Incidence /1000		Prevalence %	
	M	F	M	F
South-East Asia	3.1	3.2	1.3	1.3
The Americas	6.4	5.3	1.5	1.3
African	9.4	8.5	3.9	3.5
European	0.6	0.6	0.1	0.1
Eastern Mediterranean	2.1	2.1	0.5	0.5
Western Pacific	0.5	0.5	0.1	0.1

Tuberculosis

Tuberculosis	
Agent	Bacteria: Acid-fast bacilli (AFB) Mycobacterium tuberculosis complex, including M. tuberculosis, M. africanum, M. canettii, M. bovis, M. microti, M. pinnipedii
Incubation period	- 2-10 weeks - PPD reaction within 1-2 days
Period of communicability	- As long as viable tubercle bacilli are discharged in sputum - Effective antibiotherapy eliminates communicability within 2 weeks.
Reservoir	- Humans, rarely other primates - M. bovis: cattle
Modes of transmission	- Person-to-person transmission: usually air borne (aerolized droplet nuclei), rarely direct contact with mucous or skin breaks - For M. bovis: consumption of unpasteurized contaminated dairy products
Clinical presentation	- Primo-infection: usually asymptomatic - 10% of infected persons will develop active disease: with pulmonary TB (70%) or extra-pulmonary TB (30%). - Meningitis and disseminated form: in infants and immuno-compromised
Worldwide	- Worldwide, in particular in developing countries, and among HIV patients - Outbreaks were reported in enclosed spaces. - Multi-Drug resistance (MDR): in 4.8% of cases - Extensively resistant (XDR): 6% of MDR
Lebanon	400-500 cases per year. The incidence increased since 2013 following the Syrian crisis.
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach

Collect data about case	Clinical presentation, occupation, vaccination, case management
Collect specimen from case	Sputum, body fluids (CSF...)
Collect data about contacts	Cases among contacts and family, PPD testing, chest X ray results
Collect specimen from contacts	Sputum if abnormal results or symptoms
Test	Direct microscopy, culture (specific media), PCR
Laboratories	- TB centers: direct microscopy - Clinical labs: direct microscopy, culture - Reference laboratories: multi-drug resistance
Outbreak level	- At least 2 cases in same setting - Or observed incidence exceeding the expected
Notification to WHO	According to the International Health Regulations (2005) criteria
Control	
Primary prevention	- Early case detection and adequate treatment - Reduce social conditions that increase TB risk - BCG immunization in some countries (protective against TB meningitis) - Screening HIV patients for TB infection - Eliminate bovine tuberculosis among dairy cattle, and boil/ pasteurize milk for human consumption
Post-exposure prevention	Isoniazid for 6-12 months may prevent progression of TB infection to TB disease
Case management	-For pulmonary TB with smear (+): Direct Observation Treatment Strategy (DOTS) - Combined ATB: A 6 months regimen: Isoniazid, Rifampicin, Pyrazinamide and Ethambutol for 2 months followed by INH and RIF for 4 months associated with frequent sputum smear monitoring
Isolation	For pulmonary TB with smear (+): 1) airborne isolation with negative pressure ventilation, 2) regular sputum monitoring (smear, culture)

Contact prevention	- Contact identification and screening - Chemoprophylaxis or treatment of latent TB infection for non-immunized contacts
School eviction	For pulmonary TB with positive smear
Tuberculosis case definition (MOPH circular no. 73 dated on the 17th September 2012)	
Pulmonary tuberculosis, sputum smear positive	A patient having one of the following: - At least two smear examinations positive for acid-fast bacilli on microscope - Or one smear examination positive for acid-fast bacilli on microscope, with pulmonary radiological changes suggesting TB disease - Or one smear examination positive for acid-fast bacilli and a positive culture for Mycobacterium tuberculosis complex - Or one smear examination positive for acid-fast bacilli and positive PCR
Pulmonary tuberculosis, sputum smear negative	A patient having: - Two smear examination negative for acid-fast bacilli, but with chest X-ray modifications suggesting of tuberculosis diseases - Or one smear examination negative for acid-fast bacilli, with a positive culture for the Mycobacterium tuberculosis complex - Or one smear negative for acid-fast bacilli, and a positive PCR.
Extra-pulmonary tuberculosis	A patient having one of the following: - Anatomical and/or histological and/or radiological and/or clinical symptoms leading to suspecting or confirming the diagnosis of the extra-pulmonary tuberculosis. TB can be present in: pleura, pericardial effusion, lymph nodes, abdomen, genito-urinary tract, skin, joints and bones, meninges, etc. - Or positive culture for the complex of Myco-bacterium tuberculosis from an extra-pulmonary clinical specimen - Or positive PCR from an extra-pulmonary clinical specimen.

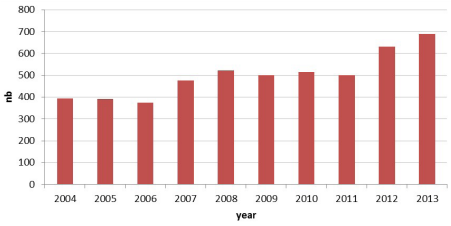
Confirmed case	A patient with one of the following: - Positive culture for one of the Mycobacterium tuberculosis complex. The complex of Mycobacterium tuberculosis includes: M. tuberculosis; M. bovis; M. africanum; M. microtti; M.canetti; M.caprae; M. pinnipedii - Positive Polymerase Chain Reaction PCR
Probable case	- A patient with clinical and/or radiological signs compatible with tuberculosis - And medical decision to treat with anti-TB drugs

Forms

Reporting	Tuberculosis reporting form
Other	- TB case management form - TB contact follow up

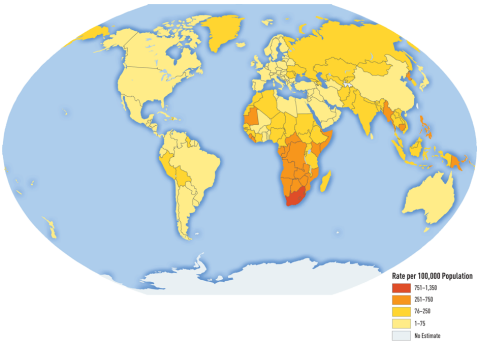
National figures

Figure 1: Reported tuberculosis, Lebanon, 2004-2013 (Source: MOPH)



International figures

Figure 2: Incidence of tuberculosis in the world, 2012 (Source: USA-CDC)



Typhoid Fever

Typhoid fever	
Agent	Bacteria: salmonella enterica subsp. enterica serovar Typhi or Paratyphi A, B or C
Incubation period	- Typhi: from 3 to 60 days (8-14 days) - Paratyphi: 1-10 days
Period of communicability	- The disease is communicable for as long as the infected person excretes S.typhi in their excreta, usually after the 1st week of illness through convalescence. - Approximately 10% of untreated cases will excrete S. typhi for 3 months and 2-5% of cases become chronic carriers.
Reservoir	Humans
Modes of transmission	- Consumption of contaminated food: shellfish, fruits /vegetables, milk and milk products - Consumption of contaminated water - Food can be contaminated by flies. - Sexual transmission
Clinical presentation	a) Systemic bacteria infection: - Mild illness (60-90%): low grade fever, malaise, dry cough, disturbances of bowel function (constipation or diarrhea), headache, malaise and anorexia. Bronchitic cough is common in early stage of the illness. During the period of fever, up to 25% of patients show a rash or rose spots on the chest, abdomen and back. - Severe illness: abdominal discomfort, altered mental status. Complications as intestinal perforation, hemorrhage or peritonitis. - Case fatality: 10-20% if untreated, 1% if treated - 15-20% of patients may have relapse b) Carrier state: 2-5% of patients, become chronic carriers harboring S.typhi in the gallbladder. Possible chronic urinary carrier combined with bilharziasis or kidney stones.

Worldwide	- Worldwide - WHO estimates annual incidence as 22 million cases with 200000 deaths worldwide.
Lebanon	Endemic with annual incidence is 8-21 reported cases per 100,000
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Clinical presentation, laboratory tests, sources of drinking water, occupation…
Collect specimen from case	Blood, bone marrow, stool, urine
Collect data about contacts	Similar cases among contacts
Collect specimen from contacts	-
Test	- Serological tests, bacteriological cultures - The definitive diagnosis of typhoid fever depends on the isolation of S. typhi organisms from the blood, bone marrow or stool. - The classical Widal test measuring agglutinating antibody titres in serum has moderate sensitivity and specificity. It can be negative in up to 30% of culture proven cases of typhoid fever and can be falsely positive in many circumstances.
Laboratories	- Detection and isolation: clinical laboratory - Identification of serotypes: reference laboratories
Outbreak level	If observed incidence exceeds the expected one
Notification to WHO	According to International Health Regulations (2005) criteria

Control	
Primary prevention	- Hand washing, food safety, water safety, adequate sanitation - Vaccination applied in some countries - Fly control - Exclude carriers from handling food
Case management	- Fluoroquinolones are the drug of choice in adults. Alternatives: oral chloramphenicol, amoxicillin, trimethoprim-sufoxazole... - Praziquantel for patients with schistosomiasis to eliminate possible schistosome carriage of S.typhi - Intensive care and surgical intervention to treat any intestinal perforation
Isolation	- Enteric precautions - Disinfecting articles soiled with feces and urine
Typhoid fever case definition (MOPH circular no. 46 dated on the 10th April 2007)	
Confirmed case	Case with acute fever (at least 38º C) during 3 days or more with laboratory confirmation through isolation of Salmonella enterica serovar Typhi ou Paratyphi (new nomenclature) from clinical specimens: blood, bone marrow, stool…
Probable case	Case with acute fever (at least 38º C) during 3 days or more with positive serodiagnostic or antigen detection test but without isolation of Salmonella enterica Typhi ou Paratyphi. Widal test is considered as positive if the title is at least 1/160.
Suspected case	A clinically compatible case as reported by a physician. The clinical presentation may vary from a mild illness with low-grade fever and malaise to a severe picture of sustained fever, diarrhoea or constipation, malaise, anorexia, severe headache, splenomegaly and relative bradycardia. Intestinal ulceration can produce intestinal haemorrhage or perforations.

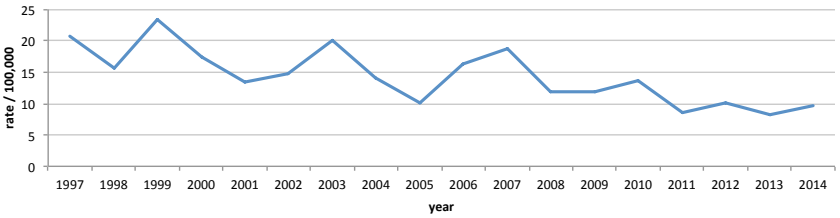
Carrier	Presence of Salmonella enterica serovar Typhi or Paratyphi in stool or urine for more than one year from the date of disease onset

Forms

Reporting	Standard reporting form
Investigation	Typhoid fever investigation form (MOPH circular no. 201 dated on the 15th November 2007)

National figures (salmonella non typhi excluded)

Figure 1: Reported typhoid fever incidence rate (per 100000), Lebanon, 1997-2014 (Source: MOPH)



International figures

Table 1: Incidence of Typhoid fever worldwide (Source: G C. Buckle, C L Fisher Walker, R E Black. Typhoid fever and paratyphoid fever: systematic review to estimate global morbidity and mortality for 2010. Journal of Global health, June 2012, vol 2 no 1)

		Typhoid fever		Paratyphoid fever	
		Meidan Incidence/ 100,000 per year	Mortality/ 100,000 per year	Meidan Incidence/	Mortality/ 100,000 per year
Super Region 1	Australia, New Zealan, Southern Latin America, North America, Asia Pacific, Western Europe	0.3 (0.1, 0.4)	<0.1	8.0 (0.3, 20.6)	<0.1
Super Region 2	Central Europe, Eastern Europe, Central Asia	<0.1	<0.1	8.0 (0.3, 20.6)	<0.1
Super Region 3	Sub-Saharan Africa	724.6 (603.6, 845.6)	7.2 (6.0, 8.5)	77.4 (42.0, 130.3)	0.4 (0.2, 0.7)
Super Region 4	North Africa and Middle East	48.2 (12.7, 58.7)	0.5 (0.1, 0.6)	0.8	<0.1
Super Region 5	South Asia	394.2 (209.6, 407.1)	3.9 (2.1, 4.1)	77.4 (42.0. 130.3)	0.4 (0.2, 0.7)
Super Region 6	East Asia and South East Asia	29.2 (22.0, 180.3)	0.3 (0.2, 1.8)	17.9 (8.8, 27.4)	0.1 (0. 0.1)
Super Region 7	Caribbean, Latin America	22.3 (16.4, 28.1)	0.2 (0.2, 0.3)	17.9 (8.8, 27.4)	0.1 (0. 0.1)

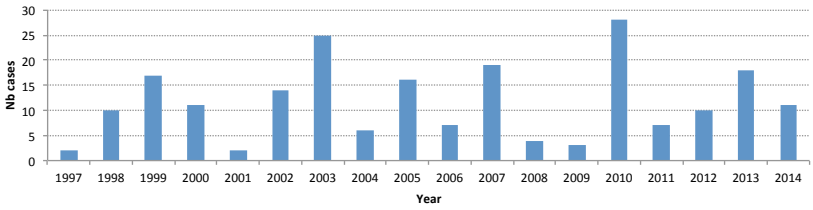
Typhus fever

Typhus fever	
Agent	- Rickettsia prowazekii: agent of epidemic louse-borne typhus (T. exanthematicus, classic typhus fever) - Rickettsia typhi, R. felis: agent of endemic flea-borne typhus or murine typhus - Orientia tsutsugamushi: agent of scrub typhus (or mite-borne typhus fever)
Incubation period	- R. prowazekii, R. typhi, R. felis: 12 days (1-2 weeks) - O. tsutsugumashi: usually 10-12 days (6-21 d)
Period of communicability	- No direct human-to-human transmission - R. prowazekii: patients are infective to lice up to 2-3 days after febrile illness
Reservoir	- R. prowazekii: humans and flying squirrels - R. typhus, R. felis: rats, mice, small mammals - O. tsutsugumashi: infected larval stage of trombiculid mites
Modes of transmission	- R. prowazekii: by rubbing feces or crushing infected lice (Pediculis humanus corporis) into the bite or superficial abrasions; or by inhaling dust containing infective louse feces - R. typhi, R. felis: contamination of bite site or fresh skin wounds by feces of infected rat fleas (Xenopsylla cheopis); or inhalation of dried infective flea feces - O. tsutsugamushi: bite of infected larval mites (Leptotrombidium akamushi, L. deliensis)
Clinical presentation	- R. prowazekii, T. typhus, R. felis: sudden onset of fever, chills, prostration, headache, general pain & macular rash (starting in upper trunck, then to entire body but usually not the face, palms and soles). CFR: 10-40% for untreated epidemic typhus, and <1% for murine typhus. - O. tsutsugamushi: in addition to previous symptoms, primary skin ulcer corresponding to site of attachment of infected larva. Complication: pneumonia. CFR: 1-60% if untreated.

Worldwide	- Epidemic louse-borne: Africa, America and Asia. Epidemics are related to wars & famines. - Endemic flea-borne: worldwide, in settings shared by humans and rats. - Scrub typhus: Asia, Oceania
Lebanon	2-28 reported cases per year
Control objective	Control
Surveillance and Investigation	
Surveillance approach	Disease approach
Collect data about case	Symptoms, residence, surroundings solid waste management, exposure to vectors, contact with rodents…
Collect specimen from case	Blood
Collect data about contacts	Similar cases among contacts
Collect specimen from contacts	If symptoms
Test	Serological testing, PCR, culture
Laboratories	- Clinical labs: orientation tests (Weil Felix) - Reference labs: confirmatory tests (PCR...)
Outbreak level	If incidence exceeds the expected one
Notification to WHO	According to International Health Regulations (2005)
Control	
Primary prevention	- Improve living conditions and personal hygiene: rodent control, mites control - Use insecticide powder
Case management	Tetracyclines (Doxycycline), Chloramphenicol...
Isolation	Apply insecticide to clothes and linen of patients
Contact prevention	For louse-borne: contacts identification and screening

Typhus fever case definition	
Confirmed case	a) A clinically compatible case (meets clinical criteria) that is laboratory confirmed by serology using indirect immunofluorescence assay IFA (paired sera for IgG, and single sera for IgM), PCR, antigen in tissue or skin lesion biopsy by immunohistochemistry (IHC), or cell culture b) Or a clinically compatible case that has supportive laboratory results and an epi-link to a confirmed case (e.g., was in same household/ same suspect defined exposure as a confirmed case within the past 14 days before onset of symptoms). The test will specify the type of typhus fever.
Probable case	A clinically compatible case (meets clinical evidence criteria) that has supportive laboratory results such as Weil Felix reaction
Suspected case	a) A clinically compatible case with epi-link to a confirmed case (e.g., was in same household/ same suspect defined exposure as a confirmed case within the past 14 days before onset of symptoms) but no laboratory testing b) Or a case with laboratory evidence of past or present infection but no clinical information available (e.g., a laboratory report)
Forms	
Reporting	Standard reporting form
Investigation	Typhus fever investigation form
National figures	

Figure 1: Reported typhus, Lebanon, 1997-2014 (Source: MOPH)



Abbreviations

AFP	Acute Flaccid Paralysis	IHR (2005)	International Health Regulations (2005)
AIDS	Acquired Immune Deficiency Syndrome	IPV	Inactivated Polio Vaccine
ARDS	Acute Respiratory Distress Syndrome	IVDU	Intravenous Drug User
ATB	Antibiotics	MERS-CoV	Middle East Respiratory Syndrome Coronavirus
BCG	Bacille Calmette Guerin vaccine	MOPH	Ministry of Public Health
BSE	Bovine Spongiform Encephalopathy	MRI	Magnetic Resonance Imaging
CBRN	Chemical Biological Radio-Nuclear	NEG	National Expert Group
CCHF	Crieman-Congo Hemorrhagic Fever	NIC	National Influenza Center
CFR	Case Fatality Rate	NM	Neisseria Meningitidis
CNS	Central Nervous System	OPV	Oral Polio Vaccine
CRS	Congenital Rubella Syndrome	OPV3/IPV3	Third polio vaccine (oral or inactivated)
CSF	Cerebral Spinal Fluid	PA	Particle Agglutination
cVDPV	circulating Vaccine Derived Poliovirus	PCR	Polymerase Chain Reaction
DNA	Deoxyribonucleic acid	PEP	Post-Exporure Prevention
EBS	Event-Based Surveillance	PHEIC	Public Health Event of International Concern
ECDC	European Center for Disease prevention and Control	PrP	Prion Protein
EEG	Electroencephalogram	RHUH	Rafic Hariri University Hospital
EIA	Enzyme-Linked Immunoassay	RNA	Ribonucleic acid
Elisa	Enzyme-Linked Immunosorbent assay	RT-PCR	Reverse Transcription Polymerase Chain Reaction
EMG	Electromyogram	SARI	Severe Acute Respiratory Infection
EPI	Expanded Program for Immunization	SARS-CoV	Severe Acute Respiratory Syndrome Coronavirus
Esumoh	Epidemiology Surveillance Program	SAT	Serum Agglutination Test
HAV	Hepatitis A Virus	SOP	Standard Operating Procedure
HBV	Hepatitis B Virus	SP	Streptococcus Pneumoniae
HCV	Hepatitis C Virus	STD	Sexual Transmitted Disease
HDV	Hepatitis D Virus	TB	Tuberculosis
HEV	Hepatitis E Virus	TSE	Transmissible Spongiform Encephalopathy
Hib	Haemophilus Influenza b	UNAIDS	Joint United Nations Programme on HIV/ AIDS
HIV	Human Immunodeficiency Virus	USA-CDC or CDC	United States of America, Center for Disease Control and Prevention
HTLV1	Human T-cell Lymphotropic Virus 1	WER	Weekly Epidemiological Record
IATA	International Air Transport Association	WHO	World Health Organization
IBS	Indicator-Based Surveillance	WHA	World Health Assembly
IDR	Tuberculin intradermal reaction	WPV	Wild Poliovirus

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Annex 1: Standard reporting form

الجمهورية اللبنانية
وزارة الصحة العامة

إستمارة إبلاغ عن مرض إنتقالي

إسم المريض (إسم الثلاثي)، إسم الأب، إسم الشهرة:

.....

الجنسية: مقيم ☐ زائر ☐

تاريخ الولادة:.....

الجنس: ذكر ☐ أنثى ☐

الوضع التحصيني: (للمرض المبلغ عنه)

ملقح ☐ غير ملقح ☐

عدد الجرعات:.....

البلدة/الحي:.....

المحافظة/القضاء:.....

رقم الهاتف:.....

تاريخ ظهور عوارض المرض:.....

تاريخ تشخيص المرض:.....

هل دخل المريض المستشفى: نعم ☐ لا ☐

إسم المستشفى:.....

تاريخ دخول المستشفى:.....

هل من تشخيص مخبري: نعم ☐ لا ☐

إذا نعم، حدد:.....

.....

وجود حالات مماثلة في محيط المريض: نعم ☐ لا ☐

يمارس المريض مهنة طبية/صحية: نعم ☐ لا ☐

إسم المستشفى/المركز الصحي/المختبر/عيادة خاصة/غيره:

.....

العنوان:.....

الهاتف:.....

إسم وصفة المبلغ:.....

التاريخ: / / **التوقيع**

في الحالات التي تبلغ فوراً إضافة إلى ملء الوثيقة يجب الإتصال مباشرة وخلال 24 ساعة ببرنامج الترصد الوبائي في بيروت والمناطق.
هاتف 01/614194 ,**فاكس** 01/610920

الأمراض التي تبلغ فورا/Immediately Reportable Cases
Clinical cases should be reported within 24 hours

- ☐ Acute Flaccid Paralysis / الشلل الرخو الحاد:
  Poliomyelitis, Guillain Barre, Myelitis, Myositis, Neuritis …
- ☐ Anthrax / الجمرة الخبيثة
- ☐ Cholera / الكوليرا
- ☐ Diphtheria / الخانوق
- ☐ Food Poisoning / تسمم غذائي
- ☐ Hemorrhagic Fevers / الحميات النزفية :
  Ebola-Marbrug, Dengue, Crimean Congo HF, Lassa, Yellow fever…
- ☐ Influenza new virus subtypes/ أنفلونزا ناجمة عن نميط جديد:
  Avian influenza A(H5N1), A(H7N9) …
- ☐ Invasive Coronavirus infection:
  SARS, MERS/nCoV
- ☐ Invasive Meningococcal disease
- ☐ Measles / الحصبة
- ☐ Meningitis (All agents) / إلتهاب السحايا
  Including West Nile fever …
- ☐ Mumps / أبو كعب
- ☐ Pertussis / الشاهوق
- ☐ Plague / الطاعون
- ☐ Rabies / الكلب – السعار
- ☐ Rubella / الحصبة الألمانية ☐ Congenital Rubella Syndrome
- ☐ Smallpox / الجدري
- ☐ Tetanus / الكزاز ☐ Neonatal Tetanus/ الكزاز الوليدي
- ☐ Unusual or unexpected event / حدث غير عادي أو غير متوقع
  Specify:

الأمراض التي تبلغ اسبوعيا/Weekly Reportable Cases
Laboratory-confirmed

- ☐ Bilharzia / بلهارسيا
- ☐ Brucellosis / الحمى المالطية
- ☐ Creutzfeldt-Jacob Disease / كروتسفيلد جاكوب
- ☐ Gonorrhea / السيلان ☐ Gonorrheal ophthalmia
- ☐ Hepatitis A, B, C, D, E / إلتهاب الكبد الفيروسي
- ☐ Human T-Cell Lymphotropic Virus type 1 - HTLV1
- ☐ Hydatid Cyst / الكيسيات المائية
- ☐ Intestinal Infection / التهاب معوي
  Amobiasis, Campylobacter, E. coli, Giardiasis, Rotavirus, Salmonellosis, Shigellosis …
- ☐ Legionellosis / داء الفيالقة
- ☐ Leishmaniasis/ داء الليشمانيات ☐ Cutaneous ☐ Visceral
- ☐ Leprosy / الجذام
- ☐ Malaria / الملاريا
- ☐ Syphilis / السفلس ☐ Congenital Syphilis
- ☐ Typhoid fever / الحميات التيفية

إن حالات السل او التدرن / Tuberculosis تبلغ على وثائق خاصة وترسل إلى البرنامج الوطني لمكافحة التدرن
إن حالات **السيدا** / HIV تبلغ على وثائق خاصة وترسل في ظرف مختوم مباشرة إلى البرنامج الوطني لمكافحة السيدا.

قرار وزارة الصحة العامة رقم 1/899 تاريخ 3 ايار 2014

Annex 2: Meningitis reporting form

الجمهورية اللبنانية

وزارة الصحة العامة

استمارة إبلاغ عن التهاب السحايا الحاد

رقم ESU: _ _ _ _ _ _ _ رقم M: _ _ _ _

١)- المريض

اسم المريض	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
اسم الأب	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
الشهرة	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
تاريخ الولادة	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
الجنس	: ☐ ذكر ☐ انثى

٢)- عنوان المريض

الجنسية	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
	☐ مقيم ☐ زائر
العنوان	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
القرية / المدينة	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
القضاء	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
رقم الهاتف	:

٣)- عن الاستشفاء

تاريخ ظهور العوارض	: _ _ _ _ _ _ _ _ _ _ _ _ _ _
تاريخ دخول المستشفى	: _ _ _ _ _ _ _ _ _ _ _ _ _ _
تاريخ التشخيص	: _ _ _ _ _ _ _ _ _ _ _ _ _ _
اسم المستشفى	: _ _ _ _ _ _ _ _ _ _ _ _ _ _
اسم الطبيب المعالج	: _ _ _ _ _ _ _ _ _ _ _ _ _ _
رقم الهاتف	:

٤)- نتائج الفحوصات المخبرية - في حال إجراء الفحوصات المخبرية ، ترفق النتائج.

	أجريت، ضع x	مرفقة، ضع x
CSF- direct		
CSF - chemical		
CSF - culture		
CSF - antigens		
Blood - CBC		
Blood - culture		

هل عولج المريض بالمضادات الحيوية قبل دخوله إلى المستشفى ؟

☐ نعم ☐ كلا

إذا نعم، ماذا : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

ومنذ متى : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

الجرثومة المسببة	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
ملاحظات	:

٥)- العوارض الإكلينيكية للمريض

	ضع علامة X
Fever	
Neck stiffness	
Vomiting	
Bulging fontanel	
Purpura	
Septic choc	
Gangrene	
غيره ، حدد :	

٦)- عن الوضع التلقيحي

	عدد الجرعات ونوعه	تاريخ آخر جرعة
Neisseria meningitidis		
Haemophilus influenzae b		
Pneumococcus		

٧)- هل سافر المريض أو أحد المقربين إلى الخارج، مؤخرا ؟

من سافر ؟	إلى أي البلد؟	تاريخ العودة الى لبنان؟

٨) - ما هي مهنة المريض ؟

المهنة	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
نوع المؤسسة	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
اسم المؤسسة / المدرسة / دار الحضانة / الثكنة	: _
الصف	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
العنوان	: _
رقم الهاتف	:

٩) - عن أهل الدار

عدد الأفراد في البيت	: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
هل يوجد أطفال دون ٥ سنوات : نعم / كلا	

١٠)- عن المبلغ

اسم المبلغ	:
التاريخ	:
التوقيع	:

تبلغ الاستمارة إلى وحدة الترصد الوبائي فور الاشتباه بالحالة لأخذ التدابير اللازمة للمخالطين.

تلفون: 01/614195 فاكس: 01/610920

تعميم وزارة الصحة العامة رقم ٥٣ تاريخ ٢٧ أيار ٢٠٠٣

Annex 3: Measles/Rubella reporting form

الجمهورية اللبنانية

وزارة الصحة العامة

استمارة إبلاغ عن حالة حصبة أوحصبة ألمانية

1 اسم وعنوان المريض

الاسم الثلاثي للمريض : ..... العنوان : .....

تاريخ الولادة : .....

الجنس : ☐ذكر ☐أنثى المدينة / البلدة : .....

الجنسية : ☐ لبناني ☐غير لبناني..... القضاء : .....

الاقامة : ☐مقيم ☐زائر ☐نازح/لاجئ رقم الهاتف : .....

2 المعطيات الطبية

المرض المشخص : ..... دخول مستشفى : ☐نعم ☐كلا

تاريخ ظهورالطفح : ..... اسم المستشفى : .....

تاريخ المعاينة : ..... تاريخ الدخول : .....

نوع الطفح الجلدي : ☐بقعي *Maculopapular* تضخم العقد اللمفوية : ☐خلف الأذن *Post-auricular*

☐مع حويصلات *Vesicular* ☐خلف العنق *Cervical*

☐من نوع اخر *Other rash* ☐ خلف الرقبة *Sub-occipital*

عوارض مختلفة : ☐حرارة *Fever >= 38°C* مضاعفات : ☐التهاب رئوي *Pneumonia*

☐التهاب ملتحمة العين *Conjunctivitis* ☐التهاب معوي *Gastroenteritis*

☐نزلة أنفية *Coryza* ☐غيره، حدد: .....

☐سعال *Cough* وجود حمل : ☐نعم ☐كلا

☐ألم في المفاصل *Arthralgia/ Arthritis* حدوث وفاة : ☐نعم، تاريخ الوفاة:.....☐كلا

تعريف حالة الحصبة / الحصبة الألمانية المشتبهة:

طفح جلدي بقعي maculo-papular + حرارة

تثبت الحالة مخبريا بفحصي IgM للحصبة والحصبة الالمانية، عبر جمع :

-عينة مصل serum

-أو مسحة لثوية oral fluid

-أو مسحة دم dried blood

وذلك في غضون 28 يوم من تاريخ ظهور الطفح.

وتحفظ العينة بين 4-8° C.

بالإضافة يحدّ نمط الفيروس عبر جمع عينة بول (urine) او مسحة من الزلعوم (throat swab) في غضون اسبوع من الطفح.

لمزيد من المعلومات :هاتف 01-614194

فاكس01-610920، موقع ww.moph.gov.lb

3 معطيات التقليح

نوع اللقاح	عدد الجرعات	تاريخ آخر جرعة	معلومة مدونة
الحصبة / *Measles*			
الحصبة والحصبة الالمانية / *Measles Rubella*			
الحصبة والحصبة الالمانية وابو كعب/ *MMR*			
الحصبة الالمانية / *Rubella*			

4 عينات للفحص المصلي و عزل الفيروس

	تاريخ جمع العينة	نوع العينة		
عينة أولى		☐ مصل *Serum*	☐ مسحة لثوية *Oral fluid*	☐ مسحة دم *Dried blood*
عينة ثانية		☐ مصل *Serum*	☐ مسحة لثوية *Oral fluid*	☐ مسحة دم *Dried blood*
عينة لعزل الفروس		☐ بول	☐ مسحة من الزلعوم *Throat swab*	

5 معلومات اخرى

اسم الطبيب المعالج : ..... التاريخ : .....

العنوان : ..... التوقيع والختم:

رقم الهاتف : .....

تعميم وزارة الصحة العامة رقم 13 تاريخ 23 شباط 2013

Annex 4: Malaria reporting form

الجمهورية اللبنانية - وزارة الصحة العامة - مكتب الملاريا

استمارة الابلاغ عن اصابة بمرض الملاريا

1) تعريف المريض

اسم المريض	:				
اسم الاب	:				
الشهرة	:				
الجنسية	:				
الجنس	:	□ ذكر	□ انثى		
نوع الاقامة	:	□ مقيم	□ عامل اجنبي	□ زائر	□ لاجئ
البلدة	:				
القضاء	:				
رقم الهاتف	:				

2) تشخيص المرض

تاريخ ظهور العوارض	:		
تاريخ تشخيص المرض	:		
دخول المريض المستشفى	:	□ كلا	□ نعم
اسم المستشفى	:		
تاريخ دخول المستشفى	:		
وجود تشخيص مخبري	:	□ كلا	□ نعم
فحص Blood smear	:	□ كلا	□ نعم، حدد النوع:
Rapid diagnostic test	:	□ كلا	□ نعم، حدد النوع:
غيره	:	□ كلا	□ نعم، حدد:

3) المبلغ

اسم المبلغ وصفته	:
اسم المؤسسة الصحية	:
تاريخ الابلاغ	:
الهاتف	:
التوقيع	:

يطلب الاتصال مباشرة على الرقم 01/449047 , 01/442077 .فاكس: 01/580660

Annex 5: Tuberculosis reporting form

الجمهورية اللبنانية
وزارة الصحة العامة

برنامج مكافحة التدرن

إستمارة إبلاغ عن مرض التدرن الرئوي

1- إسم المركز : .....

2- رقم الملف : .....

3- تاريخ فتح الملف : ..... / ..... / .....

4- الإسم الثلاثي : .....

5- العنوان : المحافظة : ..... قضاء: .....

البلدة : ..... هاتف: ..... / .....

6- العمر : .....

7- الجنس : ☐ ذكر ☐ أنثى

8- الجنسية : ☐ لبناني غيره، حدد .....

9- المهنة : .....

10- الوضع الإجتماعي: ☐ عازب ☐ متأهل ☐ مطلق ☐ منفصل ☐ أرمل

11- الوزن : ..... (كغ)

12- طريقة التشخيص : ☐ فحص القشع ☐ زرع القشع ☐ اختبار جلدي
☐ أشعة غيره، حدد: .....

13- تصنيف المريض : ☐ جديد ☐ انتكاسة ☐ محول
☐ اعادة معالجة غيره، حدد: .....

14- نوع السل : ☐ رئوي ☐ إيجابي ☐ سلبي
غير رئوي: حدد .....

15- إحالة المريض قبل العلاج: ☐ مستشفيات خاصة ☐ مستشفيات حكومية ☐ عيادات خاصة
☐ مراكز صحية ☐ بنفسه ☐ سجون
غيره، حدد: .....

16- تاريخ بدء العلاج: ..... / ..... / .....

17- نوع العلاج عند بدئه: .....

18-أمراض أخرى غير السل: ☐ سيدا غيره، حدد: .....

DG/HK/1304043A

Annex 6: HIV reporting form

الجمهورية اللبنانية

وزارة الصحة العامة

البرنامج الوطني لمكافحة السيدا

قسيمة ابلاغ حالات السيدا

اسم المريض: _____ اسم الأب: _____ اسم الام: _____

تاريخ الولادة: ____ / ____ / ____ الجنس: ☐ ذكر ☐ انثى

يوم شهر سنة

الجنسية: _____ العنوان: البلدة _____ القضاء _____

الوضع الاجتماعي: ☐ متزوج ☐ أعزب ☐ مطلق ☐ أرمل

المستوى التعليمي: ☐ ابتدائي ☐ ثانوي ☐ جامعي ☐ أمي

المهنة: _____

Instructions

The treating physician is kindly asked to fill this form as accurately and completely as possible. Information confidentiality is guaranteed.
Return the forms as soon as possible to the National AIDS Progamme in the sealed envelope.

(Instructions)

Le médecin traitant est prié de remplir le format, le plus complétement et exactement possible. La confidentialité de l'information incluse est guarantie. Envoyer les fiches le plus tôt possible au Programme National de Lutte contre le SIDA dans l'enveloppe fermée.

Reason for Testing/ *(Raison du Test)*

- ☐ Voluntary / *(Volontaire)*
- ☐ Blood Donation / *(Donation de Sang)*
- ☐ Routine pre-op / *(Routine pre-op)*
- ☐ Others / *(Autres)* _____
- ☐ Clinical Suspicion / *(Suspicion Clinique)*
- ☐ Premarital / *(Prenuptial)*
- ☐ Visa/Work / *(Visa/Travail)*

Reserved to the National Prog.
(Reservé au Programme National)

Serial No. : _____

File No.: _____

Type of Test/ *(Type de Test)*

☐ Rapid / *(Rapide)* ☐ ELISA / *(ELISA)* ☐ WB / *(WB)*

☐ Others / *(Autres)* _____

Testing Date / *(Date du test)*

_____

Symptoms Codes

_____

_____

_____

Family Members Tests / *(Tests des Membres de la Famille)*

- Spouse / *(Epoux/épouse)*	☐ Pos	☐ Neg	Date _____
- Children / *(Enfants) (1)*	☐ Pos	☐ Neg	Date _____
(2)	☐ Pos	☐ Neg	Date _____
(3)	☐ Pos	☐ Neg	Date _____
- Other Sexual Contacts /*(Autres Contacts Sexuels)*	☐ Pos	☐ Neg	Date _____

STD Code

_____

_____

_____

Reserved to the National Prog. *(Reservé au Programme National)*	**Symptoms Codes**	**STD Code**
	_____	_____
Serial No: _____	_____	_____
File No: _____	_____	_____

Risk Factors / ***(Facteurs de Risques)***

a - Sexual behavior / *(Comportement Sexuel)* ☐ Homosexual / *(Homosexuel)* ☐ Bisexual / *(Bisexuel)* ☐ Heterosexual / *(Heterosexuel)* ☐ None / *(Aucun)*

b - Multiple Partners / *(Partenaires Multiples)* ☐ Yes / *(Oui)* ☐ No / *(Non)*

If yes, specify _____

(Si oui, spécifier) _____

c - Sexually Transmitted Diseases / *(Maladies Sexuellement transmissibles)* ☐ Yes / *(Oui)* ☐ No / *(Non)*

If yes, specify _____

(Si oui, spécifier) _____

d - Multiple transfusions / *(Transfusions multiples)* ☐ Yes / *(Oui)* ☐ No / *(Non)*

If yes, specify reason _____

(Si oui, spécifier cause) _____

e - Recent Travel / *(Voyages Récents)* ☐ Yes / *(Oui)* ☐ No / *(Non)* Country / *(Pays)* _____

Probable way of transmission / ***(Voie de transmission probable)***

Sexual / *(Sexuelle)* ☐ Yes / *(Oui)* ☐ No / *(Non)*

IVDU *(Drogués par voie IV)* ☐ Yes / *(Oui)* ☐ No / *(Non)*

Contaminated Instruments / *(Instruments Contaminés)* ☐ Yes / *(Oui)* ☐ No / *(Non)*

Transfusion / *(Transfusion)* ☐ Yes / *(Oui)* ☐ No / *(Non)*

If yes, specify / (Si oui, spécifier) Year / (Année) _____ - Country / (Pays) _____

Perinatal Transmission / *(Transmission Périnatale)* ☐ Yes / *(Oui)* ☐ No / *(Non)*

Clinical Manifestations / *(Manifestations cliniques)*

- ☐ Asymptomatic / *(Asymptomatique)*
- ☐ Fever (> 1 month, intermittent or constant) / *(Fièvre, > 1 mois, intermittente ou constante)*
- ☐ Weight loss (> 10% body weight) / *(Perte de Poids, > 10% du poids)*
- ☐ Cryptococcal meningitis / *(Meningite à cryptocoques)*
- ☐ Tuberculosis (Pulmonary or extra-pulmonary) / *(Tuberculose, pulmonaire ou extra pulmonaire)*
- ☐ Diarrehea (> 1 month, constant or intermittent) / *(Diarrhée, > 1 mois, constante ou intermittente)*
- ☐ Toxoplasmosis / *(Toxoplasmose)*
- ☐ Kaposis Sarcoma / *(Sarcome de Kaposi)*
- ☐ Candidiasis of the oesophagus / *(Candidose de l'œsophage)*
- ☐ Invasive Cervical cancer / *(Cancer Invasif du col de l'utérus)*
- ☐ Generalized lymphadenopathy / *(Adénopathie généralisée)*
- ☐ Generalized pruritic dermatitis / *(Dermatite prurigineuse généralisée)*
- ☐ Recurrent Pneumonia / *(Pneumonies répétées)*
- ☐ Sexually transmitted diseases, Specify/ *(Maladies Sexuellement transmissibles, Specifier)*: _____
- ☐ Others, Specify / *(Autres, Specifier)*: _____

Physician / ***(Médecin)***

Name / *(Nom)* _____

Address / *(Adresse)* _____

Phone / *(Tél)* _____

Date of Reporting / ***(Date de déclaration)***

_____

Signature, Stamp

Annex 7: Hemorrhagic Reporting Form

Republic of Lebanon – Ministry of Public Health – Epidemiological Surveillance Program

Viral Hemorrhagic Fever (VHF): Reporting form / Laboratory Request form

LB-VH-|_____|-|____|

1) Health facility

Hospital name ..... Contact person .....
Ward/Unit ..... Phone .....
Treating physician ..... Date of admission .....
Phone ..... Date of reporting .....

2) Patient

Name ..... Phone .....
Date of birth ..... Address .....
Gender .....
Nationality .....
Occupation .....

3) Clinical presentation

Date of onset: |___|___|_____| Date of fever onset: |___|___|_____|

General: ☐Fever ☐Headache ☐Myalgia ☐Arthralgia
Digestive: ☐Nausea ☐Vomiting ☐Abdominal pain ☐Diarrhea
Respiratory: ☐Cough ☐Dyspnea ☐Pulmonary lesions
CNS: ☐Meningitis ☐Encephalitis
Bleeding: ☐Cutaneous ☐Mucosal ☐Internal bleeding
Specify:
Other, specify:
Evolution: ☐ Death, date:

4) Travel history in 30 days prior onset

Country	Dates (from/to)	Cities/villages	Notes

5) Exposure in 30 days prior onset

VHF cases: ☐Confirmed ☐Probable ☐Suspected ☐Death
Specify disease:
Animals: ☐Pets ☐Zoo ☐Reserve/Cave ☐Other:
Specify animals and source:
Occupation: ☐Health care worker ☐Laboratory-related ☐Animal-related ☐Other:

6) Laboratory results

Malaria test ..... Platelets .....
Blood/CSF culture ..... Other .....

7) Specimen collection for VHF diagnosis

#	Type	Date of collection	Conservation	Notes

8) Suspected disease:

9) Reporter (name, signature and date):

Annex 8: MERS-CoV Reporting Form

Republic of Lebanon – Ministry of Public Health – Epidemiological Surveillance Program

Middle East Respiratory Syndrome Coronavirus MERS-CoV Infection Reporting Form
ESU number: LB-MERS-CoV- |_____|

A. Reporter

Hospital name: ..... Physician name: .....
Date of reporting: |___|___|_____| Mobile phone: .....

B. Patient information

Name: ..... Gender: ☐ M ☐ F
Date of Birth: |___|___|_____| Nationality: .....
Caza of residence: ..... Residence: ☐ Resident ☐ Visitor ☐ Refugee
Locality of residence: ..... Occupation: .....
Phone number: ..... Institution: .....

C. Signs and symptoms

Symptoms onset: |___|___|_____|
Fever (≥ 38°c): ☐ Dyspnea ☐
Cough: ☐ Pathologic chest X-ray ☐
If other, specify: ☐ .....

D. Hospitalization

Hospitalized for this illness? ☐ Since |___|___|_____|
Patient admitted to ICU? ☐ Since |___|___|_____|
Mechanical ventilation? ☐ Since |___|___|_____|

E. Clinical and paraclinical presentation

Diagnosis of pneumonia ☐ Cardiac arrest ☐
Acute Respiratory Distress Syndrome (ARDS) ☐ Hypotension requiring vasopressors ☐
Acute Renal Failure ☐ Pregnancy ☐
Multi-organ failure ☐ Other, specify ☐ .....

F. Risk factors/Exposure in the 14 days prior to illness onset

Travel ☐ Where .....
Travel of Family member ☐ Where .....
Contact with confirmed MERS-CoV cases ☐ Who .....
Contact with non confirmed MERS-CoV ☐ Who .....
Contact with Severe Acute Respiratory Infection ☐ Who .....
Health Care Worker ☐ Where .....

G. Comorbidities

Cancer ☐ Kidney failure ☐
Diabetes ☐ Chronic liver disease ☐
Chronic lung disease ☐ Heart disease ☐
Asthma ☐ Deficient immune ☐
Hematological disorder ☐ Other, specify: ☐ .....

H. Outcome

☐ Remission ☐ Still Ill ☐ Death, date of death |____|____|_____|

I. Specimens

Sputum ☐ date |___|___|_____| Broncholavealar lavage ☐ date |___|___|_____|
Tracheal aspirate ☐ date |___|___|_____| Nasal/throat swab ☐ date |___|___|_____|
Serum (paired sera) ☐ date |___|___|_____| |___|___|_____| Blood EDTA ☐ date |___|___|_____|

J. Date and signature:

Annex 9: Congenital Rubella Syndrome Reporting Form

Republic of Lebanon – Ministry of Public Health – Epidemiological Surveillance Program

Congenital Rubella Syndrome/Infection case reporting form

A suspected case of CRS is any infant presenting with **congenital heart disease**, and/or suspicion of **deafness**, and/or one or more of **eye signs**. For any infant fitting the suspected case definition, kindly fill the following reporting form for a better ascertainment of the case.

1- Patient identification

Patient full name: ……..
Date of birth: _____/_____/_____
Gender: ☐Male ☐Female
Nationality: ☐Lebanese ☐Other, ……..
Residency: ☐Resident ☐Visitor ☐Refugee

Address: ……..
……..
Town/locality: ……..
Qada: ……..
Phone number: ……..

2- Health care providers

Physician's name: ……..
Initial diagnosis: ……..
Examination date: _____/_____/_____

Patient hospitalized: ☐Yes ☐No
Hospital name: ……..
Hospitalization date: _____/_____/_____

3- Clinical symptoms & evolution

3.1) Sensorial:

Cataract[a]: ☐Yes ☐No ☐Unknown
Glaucoma[a]: ☐Yes ☐No ☐Unknown
Pigmentary retinopathy[a]: ☐Yes ☐No ☐Unknown
Microrphtalmy: ☐Yes ☐No ☐Unknown
Nystagmus: ☐Yes ☐No ☐Unknown
Hearing impairment/Loss[a]: ☐Yes ☐No ☐Unknown

3.2) Congenital heart disease:

Atrial septal defect[a]: ☐Yes ☐No ☐Unknown
Ventricular septal defect[a]: ☐Yes ☐No ☐Unknown
Patient ductus arterosus[a]: ☐Yes ☐No ☐Unknown
Coarctation of the aorta[a]: ☐Yes ☐No ☐Unknown
Peripheral pulmonic stenosis[a]: ☐Yes ☐No ☐Unknown
Other, specify: ……..
……..

3.3) Bones:

Radiolucent bone disease[b]: ☐Yes ☐No ☐Unknown

3.4) Neuro:

Meningoencephalitis[b]: ☐Yes ☐No ☐Unknown
Microcephaly[b]: ☐Yes ☐No ☐Unknown
Mental retardation[b]: ☐Yes ☐No ☐Unknown

3.5) Spleen & blood:

Splenomegaly[b]: ☐Yes ☐No ☐Unknown
Purpura on birth[b]: ☐Yes ☐No ☐Unknown
Jaundice[b] (within 24 hours after birth): ☐Yes ☐No ☐Unknown

3.6) Other, specify: ……..
……..

3.7) Patient status:

Present status of patient: ☐ Alive ☐ Dead ☐ Unknown
If dead, date of death: _____/_____/_____
Cause of death: ……..
Autopsy conducted ☐Yes ☐No ☐Unknown
Autopsy date: _____/_____/_____
Autopsy findings: ……..

4- Laboratory investigation

Specimen collected: ☐Yes ☐No ☐ Unknown

#	Date of collection	Type of specimen	Laboratory	Result
1st		☐ Serum ☐ Throat swab ☐ Urine ☐ CSF ☐ Other ……		
2nd		☐ Serum ☐ Throat swab ☐ Urine ☐ CSF ☐ Other……		

5- Reporter

Form filled by: ……..
Function: ……..
Date: _____/_____/_____
Signature:

CASE DEFINITIONS:
- A **clinically confirmed case** of CRS presents two complications of the group (a) OR one complication from group (a) and one from group (b).
- A **laboratory-confirmed case** is a clinically confirmed CRS case with a positive blood/urine/CSF test for Rubella IgM.
- A **congenital rubella infection** (CRI) is an infant with a positive blood test for Rubella IgM who does not have clinically-confirmed CRS.

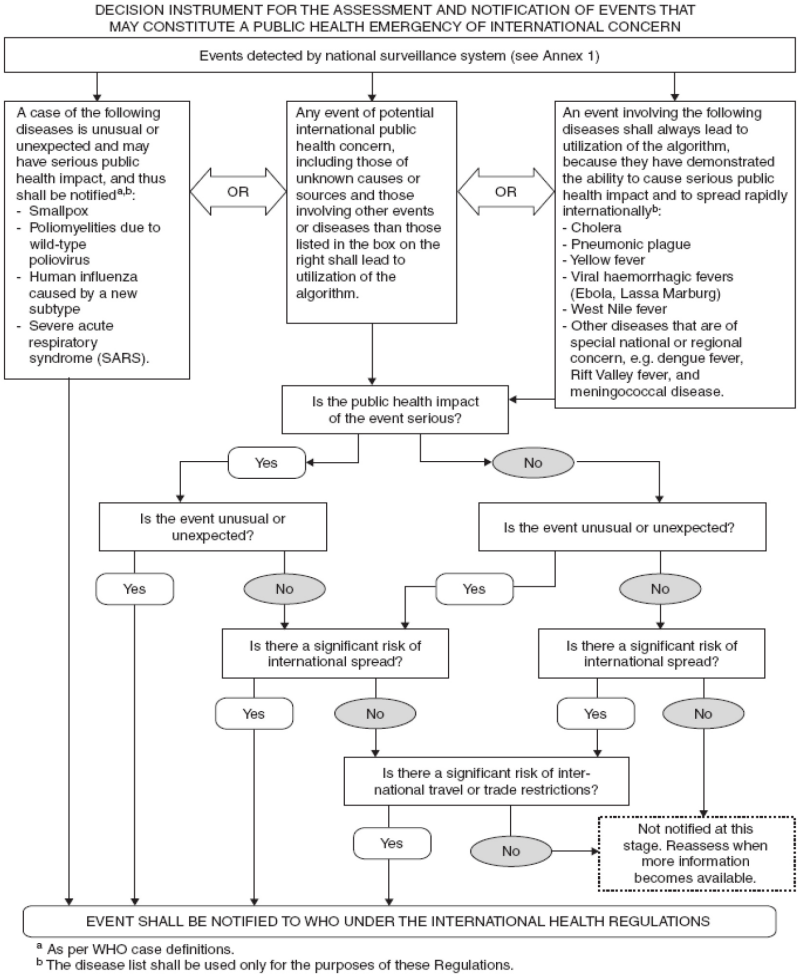
More info: www.moph.gov.lb /Tel:01.614194 / Fax:01.610920

Annex 10: Medical Coding

Part 1	
Acute Flaccid Paralysis	A80, G04, G37, G54, G56, G57, G58, G61, G62, G72, G82, G83
Acute poliomyelitis	A80
Anthrax	A22
Cholera	A00
Congenital Rubella Syndrome	P35.0
Diphtheria	A36
Food Poisoning	A05
Food poisoning: Botulism	A05.1
Food Poisoning: Trichonosis	B75
Hemorrhagic Fever	A99
Hemorrhagic Fever: CCHF	A98.0
Hemorrhagic Fever: Dengue	A91
Hemorrhagic Fever: Ebola viral disease	A98.4
Hemorrhagic Fever: Marbrug viral disease	A98.3
Hemorrhagic Fever: Rift Valley	A92.4
Hemorrhagic Fever: Yellow fever	A95
Invasive Coronavirus	(B34.2)
Measles	B05
Meningitis	A87, G00, G01, G02, G03
Meningitis: Haemophilus influenza b	G00.0
Meningitis: Listeria	A32.1
Meningitis: West Nile fever	A92.3
Meningococcal Infection	A39
Mumps	B26
Novel Influenza	(J10)
Pertussis	A37
Plague	A20
Rabies	A82
Rubella	B06
Smallpox	B03
Tetanus	A33, A34, A35
Tetanus neonatorum	A33

Part 2	
Bilharziasis	B65
Brucellosis	A23
Creutzfeldt Jakob Disease	A80.1
Gonococcal infection	A54
Gonorrheal ophtalmia neonatorum	A54.3
Hepatitis A virus	B15
Hepatitis B virus	B16
Hepatitis C virus	B17.1
Hepatitis D virus	B17.0
Hepatitis E virus	B17.2
HIV	B20, B21, B22, B23, B24, Z21
HTLV1	C91.5
Human cystic echinococcosis / Cystic hydatid disease	B67
Intestinal infection	A02, A03, A04, A06, A07, A08, B82
Intestinal infection: amibiasis	A06
Intestinal infection: shigellosis	A03
Legionellosis	A48.1, A48.2
Leishmaniasis	B55.9
Leishmaniasis: cutaneous and mucosal	B55.1, B55.2
Leishmaniasis: visceral	B55.0
Leprosy / Hansen Disease	A30
Malaria	B50, B51, B52, B53, B54
Syphilis	A51, A52, A53
Syphilis: congenital	A50
Tuberculosis	A15, A16, A17, A18, A19
Typhoid Fever	A01

Annex 11: IHR Risk Assesment Tool



[a] As per WHO case definitions.
[b] The disease list shall be used only for the purposes of these Regulations.

Annex 12: Contacts' Details

Mohafaza/Caza	Unit	Phone	Fax
Mount Lebanon	MOPH mohafaza department	05/920175	05/920211
Baabda	MOPH caza unit	05/920860	05/924113
	MOPH esumoh	05/920153	05/924113
Jbeil	MOPH caza unit / esumoh	09/540218	09/942905
Kesrwan	MOPH caza unit / esumoh	09/914923	09/644496
Metn	MOPH caza unit / esumoh	01/890916	01/879014
Aley	MOPH caza unit / esumoh	05/554614	05/559740
Chouf	MOPH caza unit / esumoh	05/506021	05/500013
Bekaa	MOPH mohafaza department	08/801512	08/822225
	MOPH esumoh	08/809148	08/809147
zahleh	MOPH caza unit	08/820601	08/822225
	MOPH esumoh	08/809148	08/809147
Hermel	MOPH caza unit / esumoh	08/201341	08/201340
Baalbeck	MOPH caza unit	08/370255	08/370255
	MOPH esumoh	08/376906	08/372309
West-Bekaa	MOPH caza unit / esumoh	08/660012	08/663021
Rashaya	MOPH caza unit / esumoh	08/595026	08/592451
South	MOPH mohafaza department	07/722056	07/724938
	MOPH esumoh	07/755008	07/755027
Saida	MOPH caza unit	07/720485	07/739182,83
	MOPH esumoh	07/755008	07/755027
Sour	MOPH caza unit / esumoh	07/740297	07/349011
Jezzine	MOPH caza unit / esumoh	07/780104	07/780104
Nabatieh mohafaza	MOPH mohafaza department	07/763210	07/763213
	MOPH esumoh	07/768149	07/769102
Nabatieh caza	MOPH caza unit	07/760014	07/760014
	MOPH esumoh	07/768149	07/769102
Hasbaya	MOPH caza unit / esumoh	07/550215,1027	07/550215
Marjeoun	MOPH caza unit	07/830008	07/830008
	MOPH esumoh	07/831026	07/831026
Bint-Jbeil	MOPH caza unit / esumoh	07/450017	07/450016
North	MOPH mohafaza department	06/433725	06/430068
	MOPH esumoh	06/423054	06/628561
Tripoli	MOPH caza unit / esumoh	06/435994	06/423064
Akkar	MOPH caza unit / esumoh	06/690079,24	06/690014
Minieh Danieh	MOPH caza unit / esumoh	06/461982,3	06/461942
Zghorta	MOPH caza unit / esumoh	06/660177	06/667018
Koura	MOPH caza unit / esumoh	06/950084	06/953802
Becharreh	MOPH caza unit	06/671045	06/671045
	MOPH esumoh	06/672709	06/672709
Batroun	MOPH caza unit / esumoh	06/740150	06/740150
Central	MOPH esumoh	01/614194-6	01/610920
	MOPH communicable disease control	01/830300	

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