REPUBLIC OF LEBANON
MINISTRY OF PUBLIC HEALTH
Epidemiology Surveillance Program

Measles Surveillance Guideline

2015

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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Tel: 01 - 614 194
Fax: 01 - 610 920
Hotline: 1214

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

Reference: MOPH circular no.13 (2015)

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Introduction

الدليل الوطني لترصد الحصبة

المقدمة

ما زلنا نذكر فاشية الحصبة في الشمال خلال خريف وشتاء 1997-1998. سجلت وقتها الف حالة، وتوفي منها ثلاثة اطفال. ولا ننسى الفاشيات السنوية للحصبة من 2003 لغاية 2007، تارة في الشمال وطورا في المناطق الاخرى. وكانت اشدها فاشية الحصبة عام 2013، حيث سجلت 1760 حالة حاصدة اربع وفيات.

في اطار المبادرة الاقليمية للقضاء على فيروس الحصبة، تقوم وزارة الصحة العامة بتعزيز تلقيح الاطفال عبر التلقيح الروتيني وحملات التلقيح. جرعتين من اللقاح فوق عمر سنة هي ضمانة للطفل. وتتطلب مبادرة القضاء على الحصبة الكشف عن اية حالة مشتبه بها للتقصي والتثبيت منها وتلقيح المخالطين للحد من انتشار الفيروس. ويتضمن التقصي تحديد الانماط الفيروسية المتواجدة على الاراضي اللبنانية. ففي حين كان النمط "D4" منتشرا في حقبة 2003-2007، ظهر مؤخرا النمط "D8" في 2013. ان البيانات التي يقدمها نظام ترصد الحصبة يساعد في توجيه الجهود الوطنية لتلقيح الاطفال.

عند قراءة هذا الدليل، ستتعرفون على استراتيجية ترصد حالات الحصبة. تعتبر اي حالة حمى مع طفح بقعي حطاطي (maculo-papular) حالة مشتبه بها وتتطلب التقصي والتثبيت المخبري.

نشكر كل طبيب ومؤسسة صحية تقوم بالابلاغ عن حالات الحصبة. ونشكر مختبر مستشفى رفيق الحريري الذي يؤمن الفحوص المخبرية للحصبة بعيد اغلاق المختبر المركزي للصحة العامة. ونشكر منظمة الصحة العالمية في سعيها لتعزيز انشطة القضاء على الحصبة.

كما ننوه بمن قام باعداد هذا الدليل من قبل برنامج الترصد الوبائي، وترجمته 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 عمار

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I. Background

A. Worldwide situation

Measles remains the leading cause of child mortality among vaccine preventable diseases, despite the availability of a safe, effective and relatively inexpensive vaccine for over 40 years.

Before 2001, the World Health Organization (WHO) estimated that more than 750,000 measles related deaths occurred annually among children worldwide.

Following the implementation of the Measles Initiative in 2001, WHO estimated a decrease of measles deaths by 78%, reaching 122,000 measles deaths globally in 2012.

B. Worldwide measles initiative

The measles initiative launched in 2001 by a collaborative effort of WHO, Unicef, and partners includes:

1. Strong routine immunization for children by their first birth day
2. A 'second opportunity' for measles immunization through mass vaccination campaigns, to ensure that all children receive at least one dose
3. Effective surveillance to quickly recognize and respond to measles outbreaks
4. Better treatment of measles cases, to include vitamin A supplements, antibiotics if needed, and supportive care that prevents complications.

In 2010, the World Health Assembly (WHA) endorsed the objective towards measles elimination and later towards measles eradication by achieving the following targets:

- Ensuring 90% immunization coverage nationally and 80% in all districts
- Reducing measles incidence to <5 cases per million inhabitants

- Reducing measles mortality by 95%.

Measles elimination refers to the absence of endemic measles cases for a period of twelve months or more, in the presence of adequate surveillance.

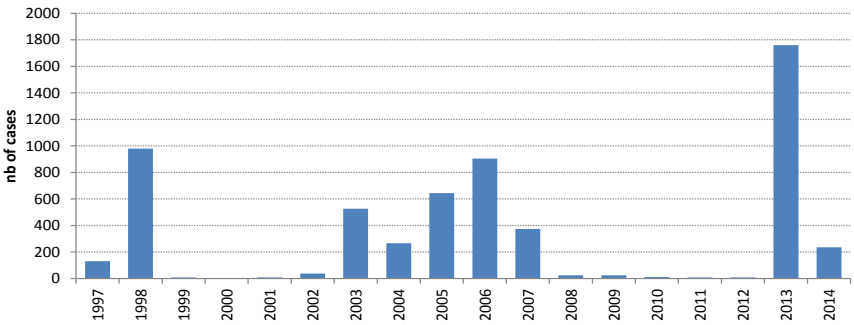
Measles eradication refers to the worldwide interruption of measles transmission in the presence of a surveillance system that has been verified to be well performing.

C. Measles situation in Lebanon

Lebanon has witnessed several measles outbreaks in the past years (Figure 1):

- The 1997-1998 outbreak in the North reported 980 measles cases and 3 deaths
- From 2003 to 2007, annual epidemic waves were observed with recurring outbreaks every 2 years in North-Lebanon
- In 2013, a national outbreak occurred with 1700 cases and 4 deaths.

Figure (1): Reported measles cases by year, Lebanon, 1997-2014



Source: Lebanon, MOPH, Esumoh, 2014

D. Objectives and target audience for this guideline

This guideline aims to provide health professionals as well as the MOPH staff an easy tool to be active partners in the national measles surveillance system and in the worldwide measles elimination initiative.

At the end of this guideline, our target audience will:

- Know the objectives of the measles surveillance
- Know the disease dynamics
- Know how to report cases
- Know how to investigate, collect specimen and classify cases
- Know how to analyze the data
- Know how to monitor surveillance indicators
- Be able to interact with various key players in the system.

II. The disease

A. Agent

Measles is a RNA virus belonging to the Morbillivirus genus of the Paramyxoviridae family. The virus is antigenically stable with no evidence of significant change over time. In addition, it is sensitive to ultraviolet light, heat and drying.

B. Reservoir

Humans are the only natural hosts of measles virus.

C. Mode of transmission

Transmission of measles virus is person-to-person via two modes:

- Respiratory droplets transmission to mucous membranes of the upper respiratory tract and conjunctiva
- Airborne transmission in closed areas is also possible.

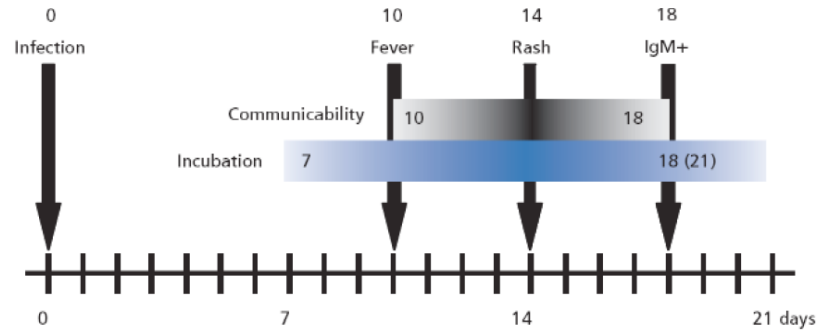
D. Incubation

The incubation period is on average 10 days (with a range of 7-18 days and rarely as long as 21 days) from virus infection to rash onset (Figure 2).

E. Communicability

Measles can be transmitted from four days before rash onset to four days after rash onset. Infectivity is greatest three days before rash onset (Figure 2).

Figure (2): Correlation of time of infection, incubation period, and communicability period following measles virus infection (in days)



Source: WHO, Measles Elimination Field Guide, 2005

F. Serological response to natural measles virus infection

Following primary infection with measles virus, measles specific antibodies appear in the blood after rash onset:

- IgM peaks one week after rash onset and is rarely detectable six weeks after rash onset.
- IgG peaks two weeks after rash onset and is detectable for years after infection.

G. Clinical features

Following exposure, measles virus infects the nasopharyngeal epithelium and extends to cells of the reticulo-endothelial tissues. Viraemia peaks towards the end of the incubation period, when the patient developes prodromal symptoms of high fever, cough, coryza (runny nose) and conjunctivitis.

Three to four days after the prodromal phase, the maculopapular rash appears, often with fever peaking at 39-40ºC, spreads from the face and neck to the trunk and extremities, and fades three to four days later. At rash onset, Koplik's spots may be seen in the oral mucosa.

Patients normally improve by the third day of rash, and are fully recovered seven to ten days from rash onset.

Modified forms of measles, with generally mild symptoms, may occur in infants who still have partial protection from maternal antibody, and occasionally in persons who only received partial protection from the vaccine.

H. Differential diagnosis

Many illnesses are accompanied by fever, rash, and a variety of non-specific symptoms.
The main differential diagnoses are: rubella, scarlet fever, roseola, dengue fever...
Other conditions may present in similar forms: erythmea infectosium, enterovirus, adenovirus, Kawasaki's disease, toxic shock syndrome, rickettsial disease, drug hypersensitivity reactions…

I. Complications

Approximately 10% of reported cases of measles in developed countries involve one or more complications. The risk of serious measles complications is higher in infants, adults, malnourished persons, and immuno-compromised persons.

1) Short-term complications

a) Pneumonia is the most common complication associated with the measles-related deaths. It may be due to the measles virus, or to secondary infection with adenoviruses or bacterial organisms, in particular Staphylococcus aureus. Pneumonia occurs in 5-10% of measles cases among children less than 5 years old.

b) Diarrhea may develop during and following acute measles illness. It can cause dehydration and death in childhood.

c) Otitis media occurs 5-15% among children under 5 years old.

d) Laryngo-tracheobronchitis is reported in 32% of hospitalized children in the United States. Bacterial pathogens, particularly Staphylococcus aureus were isolated in up to 50% of the cases.

e) Neurological complications such as post infectious encephalomyelitis occur few days after rash onset in 1 to 3 every 1000 infected persons, especially in adolescents and adults. Febrile seizures are common manifestations. Around 25% of the patients die and 25% have lifelong neurological sequelae (severe mental retardation, motor impairment, and blindness…)

f) Blindness is a very common complication in areas known to be at risk of vitamin A deficiency.

2) Long -term complications

Sub-acute sclerosing panencephalitis (SSPE) is a rare chronic, degenerative neurological disorder associated with the persistence of the measles virus in the central nervous system. It may develop approximately seven years after measles infection. The incidence is approximately 1 per 100000 measles cases.

J. Case fatality

The measles case fatality rate (CFR) in Lebanon is 2 per 1000 reported cases, based on previous outbreaks (1997-1998, 2013). It is estimated to be around 1 per 1000 reported cases in industrialized countries, and 3-6% in developing countries. In high-risk populations, case-fatality rates for infants under 1 year may reach 20% to 30%.

These rates underestimate the true lethality of measles because of incomplete reporting of measles illness, miscoded hospital records or death certificates.

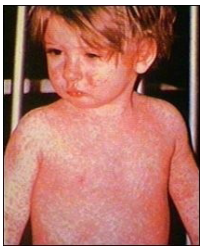
Factors leading to these observed high case-fatality rates are: young age, crowding, underlying immunodeficiency, vitamin A deficiency, and lack of access to medical care.

K. Treatment

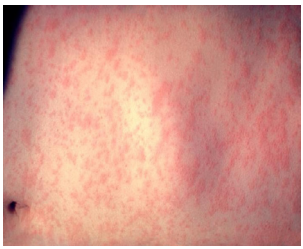
There is currently no specific treatment for measles infection. WHO recommends the administration of vitamin A to children with measles as it has shown to decrease both the severity of the disease and the case-fatality rate.
Symptomatic and specific treatments are indicated for measles complications, such as diarrhea, pneumonia and otitis media…

Figure (3): Measles pictures

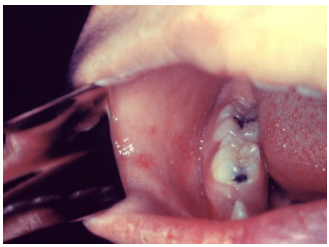
(a)Maculo-papular rash



(b)Maculo-papular rash



(c)Koplik's spots on buccal mucosa



Sources: CDC website & WHO Measles Elimination Field Guide, 2005

III. Measles vaccines

The current used vaccine is an-attenuated live measles vaccine. Two main vaccine strains are used: the Moraten strain and the Schwartz strain. In Lebanon, Schwartz strain is used. The measles-containing vaccines (MCV) are available in two forms:

- Monovalent: Measles
- Combined: Measles/Rubella (MR) or Measles/Mumps/Rubella (MMR), given after 1 year of age.

A. Immunity due to vaccine

Vaccine efficacy is estimated as the percentage reduction in disease incidence attributable to immunization.
For measles, vaccine efficacy is age-dependent due to the interference with maternal antibodies that pass from mother to child in-utero and protect the child for the first few months of life (5-9 months).

Measles vaccine efficacy is:

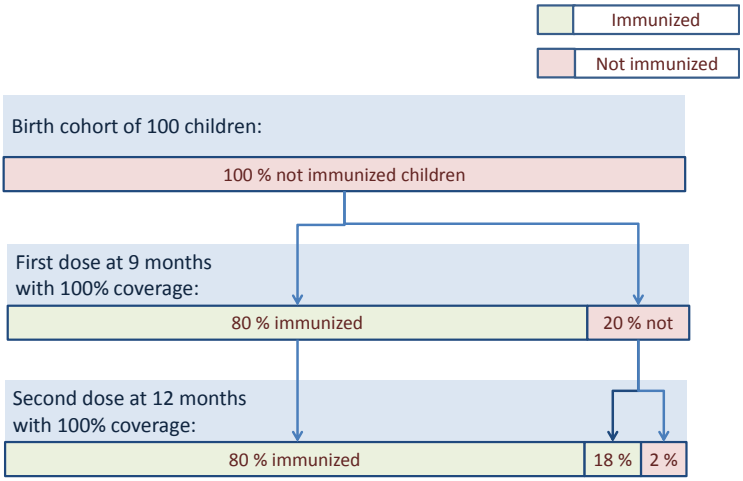
- At 6 months of age: around 50%
- At 9 months of age: 80%
- At 12 months and above: ≥ 90%.

Measles vaccine efficacy can be enhanced by providing two doses of MCV. For instance, providing two doses of MCV increases the proportion of immunized persons to 98% whereas it is only 80% with one dose at 9 months (Figure 4). For measles elimination purpose, two doses are needed in order to ensure 95% population immunity.

The peak antibody response occurs six to eight weeks after vaccination. Immunity conferred by vaccination against measles has been shown to persist for at least 20 years and is thought to be lifelong.

As a result, persons susceptible to measles are:
- The non-vaccinated
- Or the vaccinated without acquiring immunity.

Figure (4): Immunization coverage following two doses of measles-containing vaccine.



B. Vaccination in Lebanon

Measles monovalent vaccine was included in the official routine vaccination calendar in 1987. The MMR was included in 1996.

The current public vaccination calendar includes 3 doses of measles for children:
- Measles at 9 months
- MMR dose at 12 months
- MMR dose at 18 months (replacing the dose at 4-5 years).

In addition to the routine vaccination, national catch-up campaigns against measles were conducted in 2001, 2008 and 2013. Those campaigns aim to enhance vaccination coverage and reduce the accumulation of susceptibles.

C. Contraindications

The main contraindications for measles vaccine are:

- Severe allergic reaction (anaphylaxis) to a previous dose of MMR or its components
- Anaphylactic reaction to neomycin or gelatin-containing products
- Severe immune-suppression caused by HIV infection or another condition
- Pregnancy.

D. Adverse reactions following measles vaccination

The main adverse reactions following measles vaccine are:

- Minor reactions such as pain at injection site
- Low-grade fever and generalized rash that may appear 7-12 days after vaccination
- Systemic reactions such as anaphylaxis that are rare and occur mainly among people who have never been vaccinated
- Allergic reactions to streptomycin, polymyxin B and neomycin that may occur in persons sensitive to these antibiotics.

E. Vaccine cold chain

Measles vaccine should be stored at 2-8°C. Administration of improperly stored vaccine may fail to provide protection against the disease.

IV. Measles surveillance

"Surveillance is a continuous and systematic collection of data related to health events, their verification, investigation, compiling, analysis and interpretation, and the dissemination of the information to those who need to know in order to reduce mortality and morbidity and enhance the health status of the population" (WHO).

Acquired rubella is integrated within measles surveillance, as the clinical picture is similar.

A. Objectives of measles surveillance

Measles surveillance aims to:

- Measure disease burden: measure the incidence, describe cases' profiles, identify high-risk populations
- Detect and investigate outbreaks: identify the source (local or imported), the cause (failure to vaccinate, vaccine failure, or accumulation of susceptible persons), document the transmission sustainability (following importation)
- Identify the genotypic diversity of circulating viral strains and identify imported strains
- Predict next outbreaks based on susceptibility profile
- Monitor progress towards achieving disease elimination goals
- Monitor surveillance indicators in order to identify areas where it is necessary to strengthen surveillance
- And provide evidence that the absence of reported cases is attributable to the absence of disease rather than to inadequate detection and reporting.

B. Measles case definitions

Measles cases are classified according to laboratory and epidemiological investigation.

1) Before investigation: suspected measles case

At clinical presentation, a suspected measles case is defined as below [Annex 1]:

- A patient with maculo-papular rash (i.e. non-vesicular) and fever
- Or a patient for whom the physician is suspecting measles.

This case definition is also adopted for suspected rubella case.

2) After investigation

Based on the epidemiological and laboratory investigation, measles cases are classified as below [Annex 1]:

2.1) Laboratory-confirmed case

A laboratory-confirmed case is a suspected case of measles with positive measles IgM and/or positive RT-PCR result.

2.2) Epidemiologically-confirmed case

An epidemiologically-confirmed case is a suspected case of measles with:

- No laboratory confirmation
- And linked epidemiologically to a laboratory-confirmed case.

The epidemiological linkage is defined as direct contact with another laboratory confirmed measles case or another epidemiologically-linked case within the last 28 days.

2.3) Clinically-confirmed case

A clinically-confirmed case is a suspected case of measles with:

- No laboratory confirmation or equivocal laboratory results
- And without any epidemiological linkage to confirmed cases.

2.4) Discarded case

A discarded case is a suspected case of measles that has been investigated and discarded as non-measles and

non-rubella case based on IgM serology or RT-PCR testing. As rubella is integrated within measles surveillance, suspected cases are tested for both measles and rubella.

2.5) Vaccine-associated measles case

A vaccine-associated measles case is a suspected case of measles that meets all the following 5 criteria:

- Presence of rash illness, with or without fever, without cough or other respiratory symptoms related to the rash
- Rash onset 7–14 days after vaccination with a measles-containing vaccine
- Positive result for measles IgM testing in specimen collected 8–56 days after vaccination
- Absence of secondary cases based on thorough field investigation
- Absence of other causes based on field and laboratory investigations.

2.6) Endemic case

An endemic case is a confirmed measles case (laboratory, epidemiologically, or clinically-confirmed) resulting from endemic transmission of measles virus.

2.7) Imported case

An imported case is a confirmed measles case (laboratory, epidemiologically, or clinically-confirmed) with epidemiological and/or virologic evidence of exposure outside the region or country during the 7–21 days prior to rash onset.

2.8) Case related to importation

A case related to importation is a confirmed measles case (laboratory, epidemiologically, or clinically-confirmed) that is:

- Resulting from locally acquired infection
- And occurring as part of a chain of transmission originated by an imported case as supported by epidemiological and/or virological evidence.

If transmission of measles cases related to importation persists for ≥12 months, cases are no longer considered to be import-related, they are considered to be endemic.

2.9) Chain of transmission

A chain of transmission includes at least two confirmed cases that are:

- Epidemiologically-linked
- And/or virologically-linked

At least one of those cases has to be laboratory-confirmed.

2.10) Measles outbreak

An outbreak of measles is defined as a chain of transmission with three or more confirmed cases.

2.11) Measles-related death

A measles-related death is a death in confirmed measles case (laboratory, epidemiologically, or clinically-confirmed) in which

- Death occurs within 30 days of rash onset
- And is not due to another etiology, e.g., a trauma or chronic disease.

Usually, measles-related death occurs following measles complications such as pneumonia, diarrhea with dehydration, and encephalitis.

C. Case notification

Suspected measles case is notified to the Epidemiological Surveillance Program (Esumoh) at the Lebanese Ministry of Public Health (MOPH) through various channels:

1. Classical surveillance
2. Hospital weekly zero-reporting
3. Hospital active surveillance
4. Medical centers and dispensary-based weekly reporting
5. Ambulatory sentinel surveillance for private physicians
6. School absenteeism surveillance system.

1) Classical surveillance system

The Law on communicable diseases issued on the 31st December 1957 requires physicians to report to MOPH on a list of notifiable communicable diseases. Since 2001, measles is included among the immediately notifiable diseases for immediate case investigation.

Physicians and health structures report to MOPH by filling an individual-reporting form [Annex 2], or a specific measles/rubella case-based form [Annex 3]. It is recommended to use the specific measles/rubella case-based form as it provides specific information for case investigation. Filled forms are sent to MOPH (caza, mohafaza or central level) by fax or mail. Upon reception by Esumoh, cases are immediately investigated and recorded in the national measles/rubella database. Contact details of MOPH/Esumoh teams are find in Annex 17.

2) Hospital weekly-zero reporting

The MOPH decision no. 1162/2 dated on the 5th December 2001 requests from all public and private hospitals to zero-report on weekly basis to the MOPH. The target events for zero-reporting are all immediately communicable notifiable diseases including measles.

The zero-reporting relies on the designation of a focal person appointed by the hospital. The terms of reference of the focal person are:

- Raising awareness of hospital staff on timely reporting
- Searching for cases with the target diseases
- Filling the zero-reporting form and sending it to MOPH/Esumoh caza team [Annex 4]
- Coordinating with MOPH/Esumoh caza team for case investigation

The reporting is done on weekly basis. In Beirut, hospitals report directly to the central level.
At MOPH/Esumoh caza level, the forms are received and verified. If cases are mentioned, investigation is launched. Forms are entered in a specific database able to compute completeness and timeliness.

3) Active surveillance

The revised MOPH decision no. 549/2 dated on the 15th June 2006 requests from MOPH/Esumoh caza teams to conduct weekly active surveillance in selected public and private hospitals.

Not all hospitals are included in the active surveillance. In each caza, 2 hospitals are selected based on their activity. If the caza population exceeds 100000 inhabitants at least 3 hospitals are selected.

The MOPH circular no.61 dated on the 3rd July 2014 specifies the target events for active surveillance: acute flaccid paralysis/acute poliomyelitis, meningitis, measles/rubella, and cholera.

A MOPH officer (MD, nurse, epidemiologist) conducts the weekly active surveillance in the selected hospitals with the following terms of reference:

- Visiting hospital wards (pediatric, internal medicine, Intensive Care Unit)
- Meeting with the hospital staff and raising awareness on timely reporting
- Checking admission registries (hard copy or database)
- Searching for target International Classification of Diseases-10th revision (ICD-10) codes if used
- Checking the medical files if needed
- Initiating investigation if needed.
- Documenting the visit using a specific form [Annex 5].

Table (2): Codes for measles and rubella

Disease	ICD-10	ICD-9
Measles	B05	055
Rubella	B06	056

Source: WHO/ICD-9, WHO/ICD-10

The forms are entered in a specific database and completeness of field visits is monitored.

4) Medical center and dispensary-based surveillance system

The system was initiated in 2006 in the 3 mohafazas (Bekaa, South and Nabatieh) in addition to Baabda caza, and was generalized in 2009. The revised MOPH decision no. 529/1 dated on 10th March 2014 requests medical centers, dispensaries and field medical units to report to MOPH on weekly basis.

The health unit designates a contact person with the following terms of reference:

- Maintaining and updating the consultation logbook
- Searching for cases among the outpatients
- Filling the weekly aggregated-based form and sending it to MOPH/Esumoh caza level
- Filling the individual-based form if needed
- Coordinating with MOPH for case investigation.

The reporting form is aggregated-based and indicates the number of patients consulted for target health events, including measles [Annex 6]. If a measles case is encountered, the health unit notifies the case in the weekly form in addition to the measles case-based form [Annex 3].

Upon reception of weekly forms, the MOPH/Esumoh caza team verifies the content and initiates the investigation when measles is reported. The weekly forms are entered in specific database which enables generating and monitoring needed outputs and indicators.

5) Ambulatory sentinel surveillance system

In 2009, the ambulatory sentinel surveillance system was initiated with 100 volunteering physicians (pediatricians, internals and family medicine Drs, GPs) distributed all over Lebanon. Not all physicians are included.

On weekly basis, physicians report using a specific form on a maximum of 10 target diseases or syndromes, including measles [Annex 7].

Forms are received at the Esumoh central level where they are verified and entered. Investigation is initiated if measles is notified.

6) School-based surveillance system

Initiated in 2009-2010, schools became part of the national epidemiological surveillance program. The revised joint circular of the Ministry of Education High Education (MEHE) no. 139 and MOPH no. 83 issued on the 6th September 2013 requests from schools of both public and private sectors to report to MOPH.

At school level, a focal person is designated with the following terms of reference:

- Collecting data on absenteeism
- Collecting data on received medical reports for school absenteeism
- Collecting data on health inspection
- Filling the weekly form and sending it to MOPH [Annex 8]
- Coordinating with MOPH and MEHE for investigation and response.

The weekly form is aggregated-based [Annex 8] and includes the number of received medical reports mentioning measles/rubella.

Upon reception at MOPH/Esumoh caza level, the forms are checked. Investigation is initiated if measles is reported. The forms are entered in specific application which enables generating automatic outputs and various indicators.

Table (3): Summary table on various components of surveillance system

System	Data sources	Passive/active	Type of form	Frequency	Forms
Classical surveil-lance	Physicians and health structures	Active for physicians & health structures / Passive for MOPH	Individua-based	Immediately (measles) and weekly	Annex 2 Annex 3
Hospital zero-re-porting	All hospitals	Active for hospitals / Passive for MOPH	Aggregated-based	Weekly	Annex 4
Hospital active sur-veillance	MOPH/officer visiting selected hospitals	Active for MOPH	Aggregated-based including line listing	Weekly	Annex 5
Medical center and dispensa-ry-based	All medical centers & dispensaries	Active for medical centers / Passive for MOPH	Aggregated-based	Weekly	Annex 6
Sentinel ambulato-ry network	Selected private physicians	Active for physicians / Passive for MOPH	Aggregated-based	Weekly	Annex 7
School-based	All schools	Active for schools/ Passive for MOPH	Aggregated-based	Weekly	Annex 8

D.Case investigation

Once a suspected case is detected, investigation is launched.

Case investigation aims to gather information and specimens that are necessary to:

- Document the case
- Confirm the disease
- Identify the underlying factors
- Identify the source and the secondary cases.

Case investigation includes:

- Getting a national identification number
- Collecting information
- Collecting specimens
- Performing case-classification.

1) National patient identification number

Each suspected measles/rubella case has a national identification number, allocated by MOPH/Esumoh central team where the national measles/rubella database is maintained and updated by the national measles/rubella surveillance coordinator. Cases are checked for potential duplication. The national patient identification number is provided by the central unit to MOPH/Esumoh caza and mohafaza teams.

The case ID is necessary to identify anonymously each case for epidemiological and laboratory investigation.
The ID is as follows: Country Code–Year–Disease Code–Case count
Example: “LEB-2013–MR–5” is the 5th reported measles/rubella case in Lebanon in 2013.

2) Case investigation: Data collection

Clinical investigation aims to have answers for the following questions:

- Did the case meet the case definition of suspected measles?
- Did the case receive any MCV vaccine?
- What is the potential source of infection?
- Is there any time/space cluster of measles cases?

To answer these questions, data collection is done through two forms:

- The measles/rubella case-based reporting form
- The measles/rubella investigation form.

2.1) Measles/rubella case-based reporting form

The measles/rubella case-based reporting form [Annex 3] is filled by the physician or the focal person at the healthcare setting (hospital, medical center, dispensary, field medical unit…).

This form includes minimal information aiming to answer the questions related to case definition and vaccination status. The table (4) provides detailed information on the variables included in the form and their purposes.

Table (4): Content of the specific measles/rubella reporting form

Part	Variables	Purpose of collecting such information
Part I: Patient identification and demography	- Patient name - Date of birth - Gender - Nationality - Type of residence: resident, tourist, refugee - Residence: caza, locality and address - Contact details (phone number)	- To avoid duplicates - To describe cases by person and place - To identify the household for field investigation
Part II: Medical information	Administrative: - Date of consultation - Hospital admission - Date of hospital admission - Hospital name	To contact the health setting for further details, specimen collection, and result feedback
	Clinical data: - Disease - Date of rash onset - Type of rash: maculo-papular, vesicular, other - Other symptoms: coryza, cough, conjunctivitis, lymphadenopathy, arthralgia/arthritis - Complications: pneumonia, gastroenteritis, other… - Pregnancy - Death (and date)	- To verify case definition - To describe cases by time - To describe cases by complications and outcomes
Part III: Vaccination status	Number of received vaccines: - Measles vaccine - MMR vaccine - MR vaccine - R vaccine - For each: date of last dose - For each: presence of documentation	- To assess vaccination status - To detect vaccine-related cases

Part IV: Specimen collection	Clinical specimens for IgM/RT-PCR: - Date of collection - Type of specimen	-To confirm the case -To verify the adequacy of the specimen
	Clinical specimen for virus isolation: - Date of collection - Type of specimen	-To identify the genotype
Part V: Health care provider identification	- Treating physician: name and contact details - Date of filling the reporting form - Signature	-To contact the treating physician for further details, specimen collection and result feedback

2.2) Measles investigation form

The measles investigation form [Annex 9] is filled by the MOPH/Esumoh caza teams.

It aims to:

- Verify information gathered in the reporting form
- Complete missing information on clinical signs and vaccination status
- Identify additional cases
- Identify potential source of infection.

The investigation form includes line listing of contacts with measles which is useful to:

- Detect chain of transmission
- Detect index and secondary cases among contacts
- Identify pregnant women with potential risk of Congenital Rubella Syndrome (if rubella is suspected or confirmed).

Contacts are defined as:

- Household members
- Close family and relatives
- Close neighbors
- Close friends and playmates
- Classmates in kinder-gardens and schools and close staff.

Table (5): Content of the measles/rubella investigation form

Part	Variables	Purpose of collecting such information
Part I: Investigation information	- Interviewer name - Date of investigation - The interviewee: patient, parent, other	-To verify timely investigation
Part II: Patient identity and address	- Patient name - Gender - Date of birth - Nationality - Type of residence: resident, tourist, refugee - Address - Contact details (phone number)	To complete the information related to: - Description by person and place - Identification of the household for field investigation
Part III: Signs	- Fever - Rash: onset and type - Hospital admission: date, hospital name - Pregnancy - Outcome	-To complete the description of cases by signs, complications, outcome
Part IV: Vaccination status	Vaccination status: - Vaccine: documentation, number of doses, date of last dose - Reasons for non-vaccination	-To complete the information related to vaccination status -To identify reasons for non-vaccination
Part VI: Contacts	- Contact with pregnant women: name, gestation duration, contact details - Similar cases among contacts: setting - Contact with cases during the 3 weeks before rash onset: name, age, relationship, date of rash, date of last contact, phone number	-To identify pregnant women and risk of congenital rubella syndrome (if rubella) -To identify additional cases and cluster of cases -To identify the source of infection
Part VII: Travel history	- Travel history during the 3 weeks before rash onset - Travel history of any close contacts	-To identify travel associated infection

2.3) Other measles investigation form

In case an outbreak has occurred in a specific or defined setting, the MOPH/Esumoh team may use specific line-listing investigation forms:

- The school-based rash investigation form [Annex 10]
- The community-based rash investigation form [Annex 11].

Clinical specimens are collected in order to:

- Confirm the disease
- Identify the circulating genotype.

3.1) Specimen for confirmation

The golden rule to confirm or to discard a case as measles is the collection of adequate specimens from each suspected case.

Two confirmatory tests are available:

- IgM serology
- RT-PCR testing.

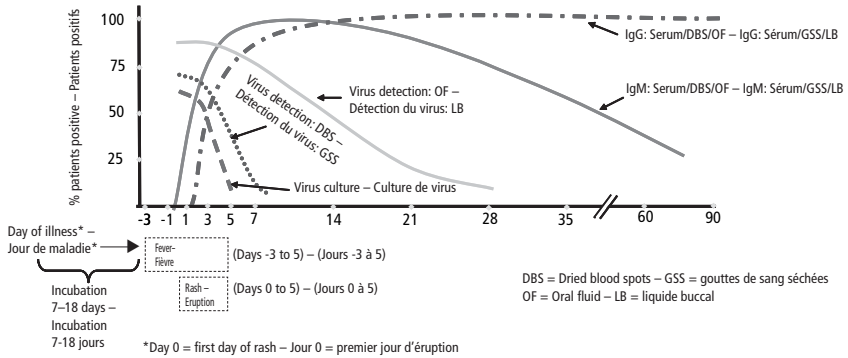
Measles IgM is detectable for 28 days after rash onset. Three types of specimens can be collected for IgM testing: serum, oral fluid and dried blood spots. If a specimen collected during the first 3 days gives negative or equivocal result, a second specimen is needed within 28 days of rash.

RT-PCR testing detects the presence of the virus up to 7 days in dried blood spots, and up to 14 days in oral fluid.

The table (6) summarizes the specimen types and optimal period for collection. The Annex 12 provides details on specimen collection for oral fluid, and the Annex 13 on collection of dried blood spots.

Figure (5): Wild measles-virus infection and sensitivity of sampling methods

Fig. 1 **Schematic of wild measles-virus infection and sensitivity of alternative sampling methods**
Fig. 1 **Schéma de l'infection par un virus rougeoleux sauvage et sensibilité d'autres méthodes d'échantillonnage**



Source: WER: 25, 2008, 83, 225–232

3.2) Specimen for genotyping

In addition to case confirmation, collecting samples for virus isolation and genotyping is important for the following reasons:

- Improving diagnostic resolution few days after rash onset
- Determining whether suspected case is due to vaccine or wild virus
- Identifying possible source of virus and determining whether it is indigenous or imported
- Improving surveillance systems quality indicator.

Virus culture is performed on throat swab and/or urine collected up to 5 days from rash onset. Therefore, it is advised to collect the sample for virus isolation at first patient encounter.
Moreover, samples for genetic characterization of measles viruses should be obtained from each chain of transmission.

The Annex 14 provides details on specimen collection for throat swab.

Table (6): Clinical specimens for measles confirmation and virus detection and isolation

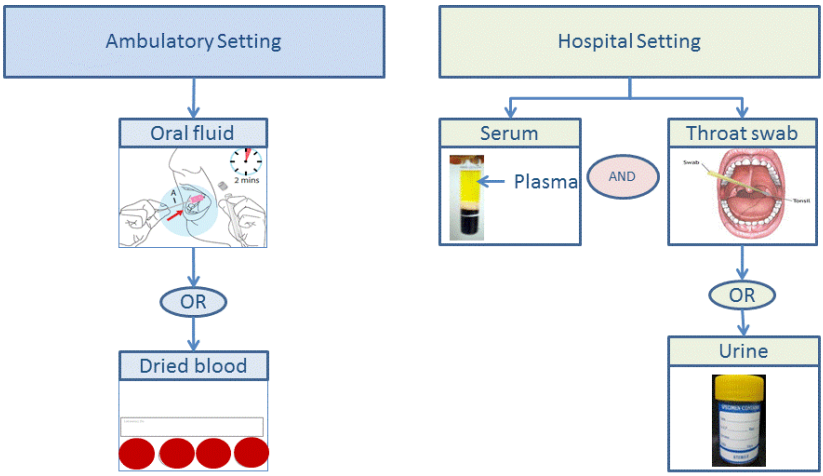
Type of specimen	Specimen collection	Specimen recipient	Recommended timing for adequate specimen (from rash onset)			Specimen storage	Annexes
			Serology (IgM Antibody detection)	Virus detection using RT-PCR	Virus isolation		
Serum	10ml of blood is collected in sterile tube, centrifuged at 1000xg for 10 minutes. 5 mL of serum is needed.	Sterile tube	Within 28 days			4−8 °C, No freezing	
Oral fluid	Sponge is brushed against the gum on both sides for at least two minutes until it becomes wet.	Sponge swab in tube	Within 28 days	Within 14 days		4−8 °C	Annex 12
Dried blood	Patient's finger is cleaned with alcohol and pricked with a sterile disposable micro-lance. Blood is collected to fill four circles. Filter paper is dried for at least 60 minutes at room temperature.	Filter paper	Within 28 days	Within 7 days		Room temperature, not exceed-ing 37°C.	Annex 13
Throat swab	Throat and tonsils are rubbed with sterile cotton swab.	Swab in Viral Transport Media			Within 5 days	4°C within 48h (if exceeding 48h: at minus 70°C)	Annex 14
Urine	10-15 mL of first passed morning specimens.	Sterile container			Within 5 days	4°C within 48h (if exceeding 48h: at minus 70°C)	

3.3) Choice of specimens

Outside outbreak circumstances, two types of specimens are essentially needed from each suspected case (Figure 6):

- In ambulatory setting, it is recommended to collect the oral fluid as first choice, if not possible, dried blood spots
- In hospital setting, it is recommended to collect 2 clinical specimens:
  - For confirmatory test: serum as first choice
  - And if within 5 days of rash for genotyping purpose: throat swab or urine.

Figure (6): Schema for specimen collection outside an outbreak



During an outbreak, the minimal schema for specimen collection is the following:

- For each caza,
- And for each month,
- At least 5 specimens are collected from:
  - Cases attending a health structure (hospital, medical center…)
  - Cluster of cases in a community
  - Cluster of cases in other settings (school…).

If the outbreak was extended for months, specimens will be collected every month in order to confirm the outbreak continuity.

3.4) Specimen labeling and local packaging

At healthcare facility, specimens should be adequately labeled at time of collection. The labels should include the following:

- Name of the patient
- Type of specimen
- Date of specimen collection.

Clinical specimens are packed as follow [Annex 15]:

- The clinical specimen is conserved in 1st solid recipient, well-sealed
- The 1st recipient is packed in a small zippered bag
- That small zipped bag is added with the documents in a larger zippered bag.

It is recommanded to use specific bag with 2 compartments:

- One as zippered bag for the specimen
- And rear pocket for the document.

Specimens are conserved at 4°C, except the dried blood spots that can be left at ambient temperature (table 6).

3.5) Specimen transportation

Transporting specimens from place of collection to the national reference laboratory is done by the MOPH/Esumoh teams within 48 hours of collection.

The MOPH/Esumoh team ensures the following points:

- Verifying the labeling: name, type of specimen, date of specimen collection
- Verifying the adequacy of the specimen: timing, quantity and conservation
- Adding the national ID number.

Specific iceboxes with icepacks are used for specimen transportation.

3.6) Specimen shipment to supranational reference laboratory

Specimens are referred to supranational laboratories for virus isolation. Before shipping the specimens, it is essential to verify that the laboratory is ready to receive the specimens and that the arrival date does not fall during week-ends or holidays. Clinical specimens should be accompanied with clinical and epidemiological data.

The triple packaging technique [annex 16], required by IATA regulations, is essential to ensure risk reduction. The sample must be packed in a three-part system to prevent leakage of material to the outside. The triple layers consist of:

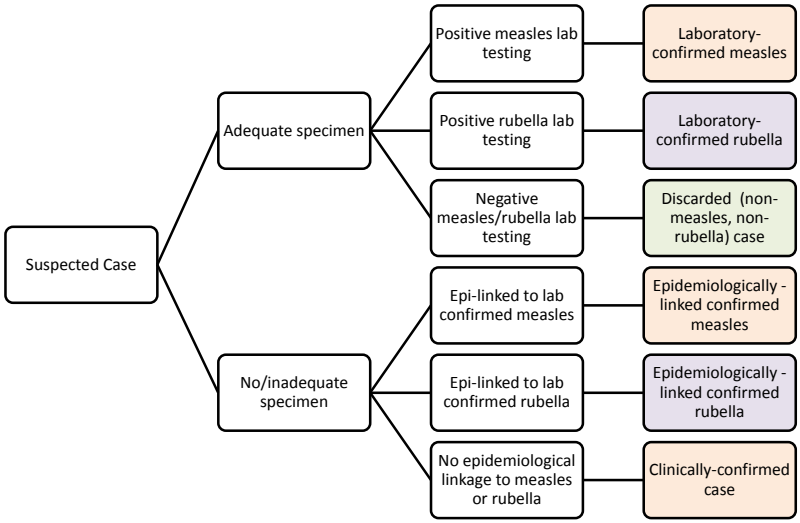
- Leak proof primary container
- Secondary container with absorbent material
- Strong outer packaging.

The laboratory request form must be inserted in a zippered bag and sent along with the specimens.

E.Case classification

Case classification relies on both epidemiological and laboratory investigation following the below algorithm (Figure 7).

Figure (7): Measles classification algorithm



* Repeat if possible with a second specimen.

V. Data analysis

Data analysis include:
- Verifying the quality of the data
- Describing the cases by final classification
- Computing incidence rate
- Describing cases by time, place and person
- Describing the cases by complications and outcomes
- Monitoring surveillance indicators.

A. Data quality

The data quality includes:
- Search of duplicates
- Completeness of information for core variables: patient full name, place of residence (caza and locality), age, gender, nationality, date of rash, vaccination status, date of last vacination (if vaccinated), date of specimen collection (if specimen was collected).

Completeness of information is a surveillance indicator for the adequacy of investigation.

B. Final classification

Based on the investigation, rash suspected cases are confirmed or discarded.
Two units are used:
- Total count of all reported rash cases (the suspected cases)
- Total count of measles cases as per the final classification.

1) Rash cases

The count of suspected/rash cases includes all suspected measles and rubella cases. It enables to compute surveillance detection and investigation indicators.

Table (6): Distribution of suspected cases by final classification, Lebanon, 2013

	n	%
All suspected cases (rash with fever):	2025	100%
- Measles cases	1760	87%
- Rubella cases	27	1%
- Discarded cases	238	12%

Source: Lebanon, MOPH, Esumoh, 2014

In 2013, 2025 suspected cases were reported. Based on the investigation, 1760 were classified as measles, 27 as rubella, and 238 were discarded as non-measles and non-rubella.

2) Final measles cases

The count of final measles cases enables to perform descriptive and further analysis.

Table (7): Distribution of measles cases by final classification, Lebanon, 2013

	n	%
All measles cases:	1760	100%
- Laboratory-confirmed	903	51%
- Epidemiologically-confirmed	89	5%
- Clinically-confirmed	768	44%

Source: Lebanon, MOPH, Esumoh, 2014

In 2013, among the 1760 measles cases, 51% were lab-confirmed, 5% epi-confirmed and 44% clinically-confirmed.

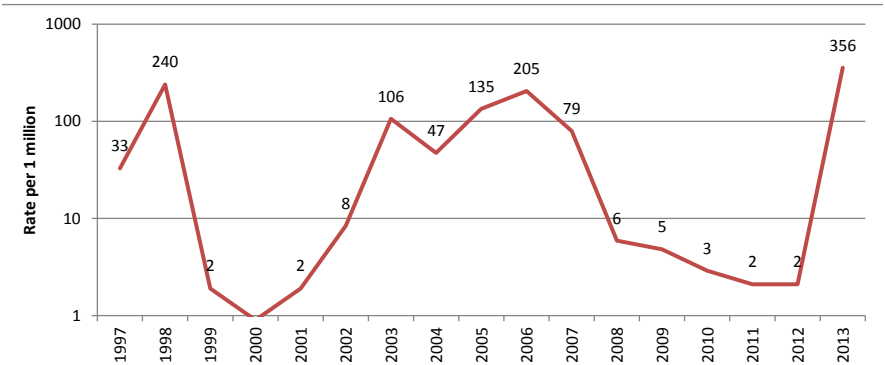
C. Incidence rate

At national level, the incidence rate per 100000 or 1000000 inhabitants is computed.

$$\text{Annual incidence rate} = \frac{\text{Number of confirmed measles cases} * 1000000}{\text{Population size (at mid-year or average size)}}$$

For monitoring trends showing wide variations, semi-logarithmic scale may be used, as in figure (8).

Figure (8): Annual incidence rate of measles per 1000000 inhabitants, Lebanon, 2003-2013



Note: Semi-logarithmic scale
Source: Lebanon, MOPH, Esumoh, 2014

Usually, incidence rates are computed by year, by month or by week.

During the year, the “annual” incidence rate may be estimated by using:

- Annualized rates
- Or past 12-months period incidence rates.

The term of “attack rate” is used for epidemics.

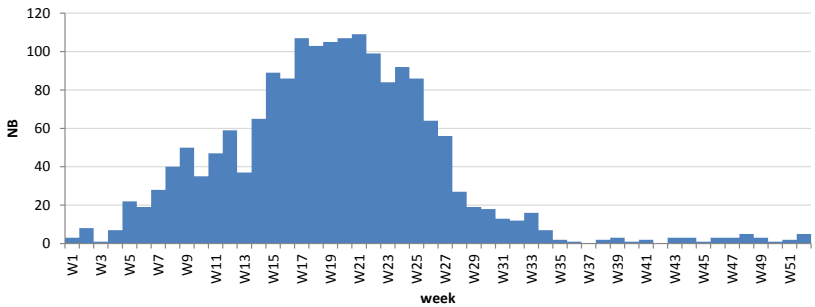
D. Descriptive time, place and person

Cases are described by time, place and person.

1) By time

By time, cases are monitored by year, month and weeks. The presentation by year will provide the secular trends (Figure 1). The presentation by weeks will monitor the occurrence of sporadic cases, clusters or outbreaks (Figure 9).

Figure (9): Distribution of measles cases by week of onset, Lebanon, 2013



Source: Lebanon, MOPH, Esumoh, 2014

The outbreak of 2013 started around week 5, peaked at weeks 18-22, and ended around week 36, and lasted for 31 weeks.

2) By place

By place, cases are monitored at national level and by mohafaza, caza and locality. Cases are plotted by:

- Count of cases
- or specific incidence per 100000 inhabitants.

Table (8): Mealses cases by mohafaza, distribution and incidence rates, Lebanon, 2013

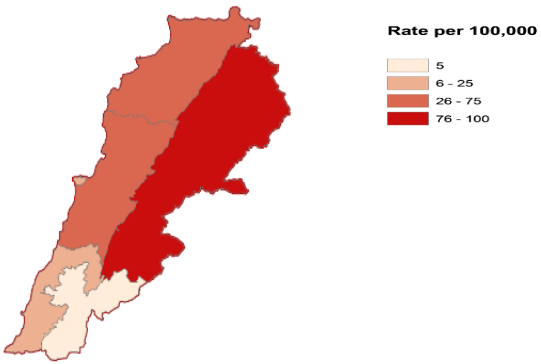
Mohafaza	Nb cases	%	Population	Rate /100000
Beqaa	630	36%	719705	87
North	383	22%	1092567	35
Nabatieh	14	1%	280236	5
South	66	4%	672468	10
Mount Lebanon	550	31%	1755973	31
Beirut	93	5%	424820	22
Unsp	24	1%		
LEBANON	1760	100%	4945769	35

Source: Lebanon, MOPH, Esumoh, 2014

The distribution of cases points out the areas with high disease load for case management. The incidence rate points out the area with high incidence rate. They are not necessarily correlated. In 2013, Mount Lebanon had more measles cases than the North, but the North had higher incidence rate than Mount-Lebanon.

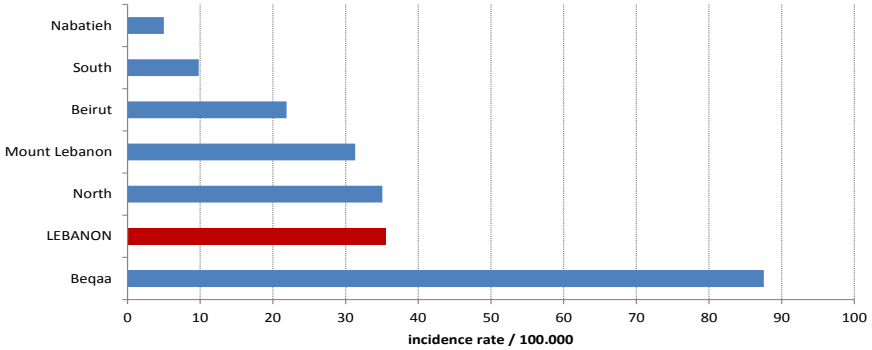
Figure (10): Distribution of measles cases by mohafaza, Lebanon, 2013

Figure (11): Annual incidence rate of measles per 100000 per mohafaza, Lebanon, 2013



Source: Lebanon, MOPH, Esumoh, 2014

Figure (12): Annual incidence rate of measles per 100000 per mohafaza, Lebanon, 2013



Source: Lebanon, MOPH, Esumoh, 2014

3) By person

By person, cases are displayed by various inner and acquired characteristics, mainly:

- Age
- Gender
- Nationality
- Vaccination status (see specific paragraph).

For person characteristics, the analysis computes:

- The distribution of cases
- The specific incidence rates.

Table (9): Mealses cases by age group, distribution and incidence rates, Lebanon, 2013

Age group	Cases	%	Rate/100,000
<1y	251	14%	54
1-4y	691	39%	129
5-9y	378	21%	71
10-14y	49	3%	10
15-24y	85	5%	9
25+y	281	16%	14
Unspecified	25	1%	
Total	1760	100%	35

Source: Lebanon, MOPH, Esumoh, 2014

Age-specific incidence rate identifies the age-group at higher risk for measles infection, where the susceptible persons are.

Figure (13): Distribution of measles cases by age group, Lebanon, 2013 (n=1760)

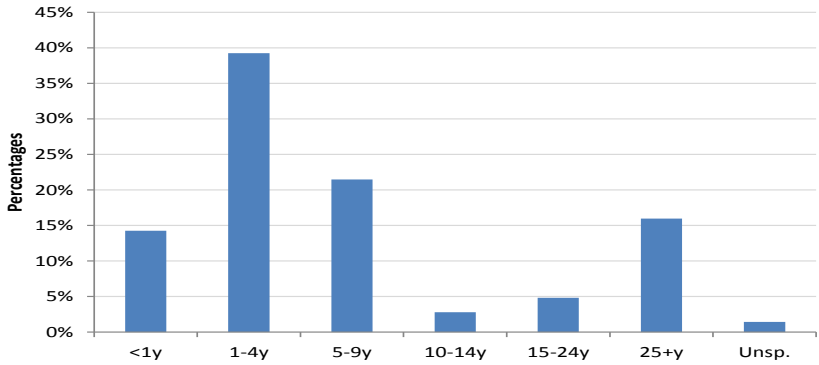
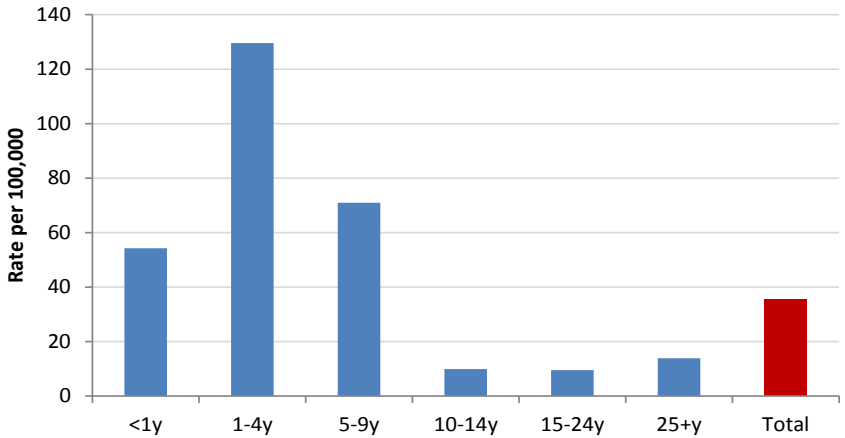


Figure (14): Age-specific incidence rate of measles, Lebanon, 2013



Source: Lebanon, MOPH, Esumoh, 2014

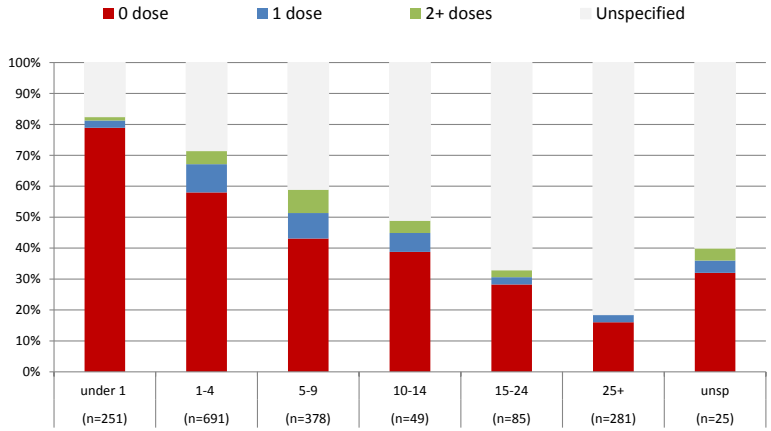
In 2013, the susceptible persons were children under 10 years old.

4) By vaccination status

Vaccination status is analyzed by:

- Age groups according to the national vaccination calendar
- Or birth cohorts.

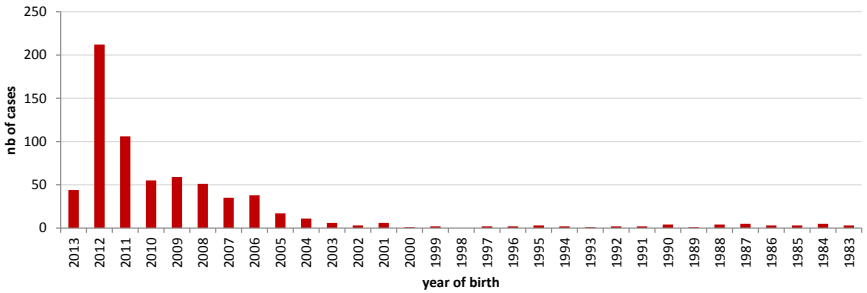
Figure (15): Distribution of cases by age-group and vaccination status, Lebanon, 2013



Source: Lebanon, MOPH, Esumoh, 2014

Displaying the cases by birth cohort is another manner to identify the susceptible generations.

Figure (16): Distribution of unvaccinated Lebanese measles cases (up to 30 years old) by birth cohort, Lebanon, 2013 (n=1330)



Source: Lebanon, MOPH, Esumoh, 2014

E. Complications and outcomes

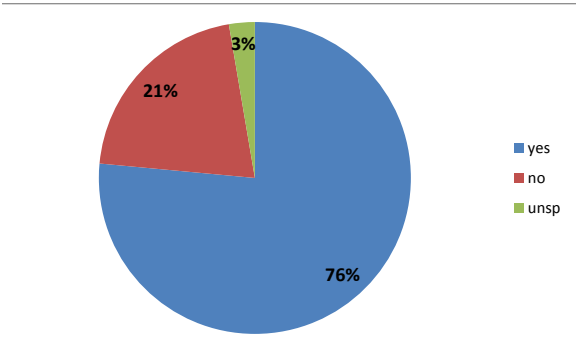
1) Hospital admission

The proportion of hospital admission is an indicator of:

- The severity of the disease
- The access to case management
- The degree of reporting.

Usually, 30% of measles cases required hospital admission. If the proportion exceeds that percentage, it indicates under-reporting from the ambulatory sector.

Figure (17): Distribution of measles cases by hospital admission, Lebanon, 2013 (n=1760)



Source: Lebanon, MOPH, Esumoh, 2014

2) Complications

Cases are described by type of complications, in particular the serious ones.

Table (10): Distribution of measles cases by complication (based on available data), Lebanon, 2013

Complication	Measles, N	Complication, Yes	Complication, Yes %
Pneumonia	1380	369	27%
Gastrenteritis	1378	401	29%
Encephalitis	1158	6	1%

The missing values are omitted.
Source: Lebanon, MOPH, Esumoh, 2014

3) Case fatality rate

The case fatality is an essential indicator reflecting severity and access to care.

$$\text{Case fatality rate} = \frac{\text{Number of measles related deaths} * 1000 \text{ (or } 100)}{\text{Number of measles cases}}$$

It is expressed in percentage (%) or per thousand (‰).

Table (11): Case fatality rate, Lebanon, 1997-1998 and 2013

	Measles cases	Deaths	CFR /1000
1997-1998 outbreak	1111	3	2.7
2013 outbreak	1760	4	2.3

Source: Lebanon, MOPH, Esumoh, 2014

In 2013, the 4 deaths were for patients presenting multiple complications (pneumonia and/or gastroenteritis and/or encephalitis).

F. Molecular surveillance

For the period 2003-2007, the most probable circulating genotype in Lebanon was D4. Effectively, international literature review revealed genotype D4 related to exportation of measles cases to the United States (2003), Denmark (2006) and Canada (2007).

For the year 2013, the identified genotypes have changed. Mostly, the genotype D8 was isolated in addition to B3 and H1.

G. Further analysis

1) Susceptibility profile

The susceptibility profile aims to identify the generations where there are accumulation of susceptibles in need for vaccination activities. The inputs integrated both coverage data and surveillance data. Usually, the results are displayed by birth cohort.

2) Coverage survey

Two methods are used to compute the vaccine coverage for MCV:

- The administrative data provided by the medical centers and dispensaries in charge of administrating vaccine in the public and philanthropic sectors (NGO). Those figures are based on administered vaccines to children by age group.
- The household surveys conducted by the Central Administration for Statistics (CAS) or academic institutions. Those figures are based on received vaccines by children and include both public and private sectors.

3) Vaccine efficacy VE

Vaccine efficacy (VE) can be calculated by comparing the infection attack rates in the vaccinated (ARV) versus the unvaccinated groups (ARU) as per the following formula:

$$VE\ (\%) = \frac{(ARU-ARV) \times 100}{ARU}$$

or

$$VE\ (\%) = [\ 1 - \frac{ARV}{ARU}\ ] \times 100$$

The $\frac{ARV}{ARU}$ is equivalent to the relative risk.

Various types of studies can be conducted to compute the VE:

- Cohort study in particular if the outbreak is confined in defined population group (school…) for whom the information on the vaccination status is available
- Household contact study where the secondary attack rate is measured among the household contacts of index cases
- Case-control study will calculate the odds ratio of vaccination, thus approximating the relative risk
- Screening method when vaccination status of cases is only available, and may be used for routine monitoring of VE.

H. Surveillance indicators

Surveillance performance indicators are essential to monitor the progress towards measles elimination, and are divided as surveillance and laboratory indicators.

Table (12): Measles surveillance indicators

Indicator	Description	Target
Surveillance Indicators		
Completeness of reporting	Proportion of health facilities reporting to the MOPH the weekly form	≥80%
Timeliness of reporting	Proportion of health facilities reporting to the MOPH the weekly form on time	≥80%
Reporting rate of discarded (non-measles non-rubella) cases	Reporting rate of discarded (non-measles non-rubella) cases at national level	≥2 cases per 100 000 population per year
Representative-ness of reporting	Proportion of mohafaza/caza reporting at least 2 discarded (non-measles non-rubella) cases per 100000 population	≥80%
Adequacy of investigation	Proportion of all suspected measles and rubella cases that had an adequate investigation initi-ated within 48 hours of notification	≥80%
Laboratory Indicators		
Laboratory confir-mation	Proportion of suspected cases with adequate specimens for detecting acute measles or rubella infection collected and tested in a proficient laboratory	≥80%
Timeliness of specimen trans-port	Proportion of specimens received at the laboratory within 5 days	≥80%
Timeliness of re-porting laboratory results	Proportion of results reported by the laboratory within 4 days of receiving the specimen	≥80%
Viral detection	Proportion of laboratory-confirmed chains of transmission with adequate samples tested in an accredited laboratory for detecting measles or rubella virus	≥80%

I. Feed back

1) Laboratory results

Currently, the laboratory results from reference laboratories are communicated to the reporting healthcare settings via MOPH/Esumoh. Further advanced communications tools are being explored for timely results feedback.

2) National figures

National measles figures are updated on weekly basis on the MOPH website. Specific measles reports are issued on monthly basis outside outbreak and on weekly basis during outbreaks (www.moph.gov.lb).

Figure (18): MOPH website and measles webpage www.moph.gov.lb

3) Regional and international figures

The MOPH provide a national anonymous line listing to WHO in charge of editing regular bulletin related to measles in the Eastern Mediterranean Region and the world, available at the WHO websites:

- www.emro.who.int
- www.who.int and in particular:
  - www.who.int/immunization/monitoring_surveillance/burdenvpd/surveillance_type/active/measles_monthlydata/en/

VI. Measles reference laboratories

A. Role of the reference laboratories

The role of national measles reference laboratories in measles and rubella is the following:

- Confirming the disease
- Characterizing the virus genotype for epidemiological mapping.

B.Reference laboratories for measles and rubella

1) At National Level

From 2002 to 2007, the Central Public Health Laboratory was the national measles laboratory.
Since 2008, the Rafik Hariri University Hospital (RHUH) laboratory was designated as the national measles laboratory, as the Central Public Health Central Laboratory was closed in 2007.

2) At Regional Level

There are two regional reference laboratories (RRL): The Central Public Health Laboratories in Sultanate Oman and the Pasteur Institute in Tunisia.
The functions of the RRL include:

- Supporting EMR countries in Measles and Rubella elimination program
- Confirming Measles/Rubella cases and monitoring virus strains
- Operating quality assurance/accreditation and biosafety programs
- Improving capacity building and conducting supervision activites to sustain surveillance data quality
- Cooperating and coordinating with national laboratory staff.

C. Performed tests

The laboratory tests for measles include: ELISA assay IgM antibody detection, viral RNA detection by RT-PCR, virus isolation in tissue culture, and genomic sequencing.

1) Serological assays

Measles infection is diagnosed serologically by detecting measles specific IgM antibodies. The serological methods used at the national measles laboratory in Lebanon are Measles IgM capture ELISA for oral fluids, dried blood, serum and plasma, and IgM indirect ELISA for serum, plasma and dried blood.

2) Reverse transcription polymerase chain reaction (RT-PCR)

This technique consists of reverse transcription of measles RNA (RNA/ DNA) and amplification of DNA fragments. DNA may be used for genetic characterization of measles and rubella virus. This technique is more sensitive than serological assays.

3) Virus isolation

The national measles reference laboratory does not have the capacity to perform virus isolation, and specimens for virus isolation are referred to the regional reference laboratories (RRL). Detection and identification of the virus in cell culture may take several weeks. Possession of a measles virus isolate permits genomic analysis and comparison with other strains from different locations and years, providing information on its origin and transmission history.

4) Genomic sequencing

The DNA fragment generated in the genotyping RT-PCR is used for genomic sequencing. Sequencing targets specific nucleotide regions in measles (and rubella) genes.

Abbreviations

Abbreviation	Details
ARU	Attack Rate among Unvaccinated
ARV	Attack Rate among Vaccinated
CAS	Central Administration for Statistics
CFR	Case Fatality Rate
DNA	Deoxyribonucleic acid
EMR	Eastern Mediterranean Region
GP	General Practitioner
HIV	Human Immunodeficiency Virus
IATA	International Air Transport Association
ICD-9	International Classification of Diseases – 9th version
ICD-10	International Classification of Diseases – 10th version
MCV	Measles-Containing Vaccine
MEHE	Ministry of Education and High Education
MOPH	Ministry of Public Health
MMR	Measles, Mumps, Rubella
MR	Measles, Rubella
NGO	Non-Governmental Organization
PCR	Polymerase Chain Reaction
R	Rubella
RNA	Ribonucleic acid
RRL	Regional Reference Laboratory
RT-PCR	Reverse Transcription – Polymerase Chain Reaction
SSPE	Subacute Sclerosing Panencephalitis
VE	Vaccine Efficacy
VTM	Viral Transport Media
WHA	World Health Assembly
WHO	World Health Organization

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Annexes

Annex 1: Measles case definition

Annex 2: Reporting form for communicable diseases

Annex 3: Specific reporting form for measles and rubella

Annex 4: Hospital zero-reporting form

Annex 5: Hospital active surveillance form

Annex 6: Medical center and dispensary-based surveillance form

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Annex 8: School-based reporting form

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Annex 10: School-based rash investigation form

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Annex 12: Collection of oral fluid specimen

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Annex 15: Local packaging for national reference laboratory

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Annex 17: Contact details of MOPH and MOPH/Esumoh teams

Annex 1: Measles case definition

الجمهورية اللبنانية
وزارة الصحة العامة
المديرية العامة
- - -
رقم المحفوظات: ١/١
بيروت في٢٣ شباط ٢٠١٣

تعميم رقم ١١
تعريف حالات الحصبة / Measles / Rougeole

يعتمد التعريف التالي لحالات الحصبة، الواجب الابلاغ عنها الى وزارة الصحة العامة، بغضون ٢٤ ساعة من تشخيصها :

الحالة المشتبهة	- شخص يعاني من حمى و طفح جلدي بقعي حطاطي (غير حويصلي)؛ - أو في حال اشتباه الطبيب بوجود مرض الحصبة. - - - - Toute personne présentant une Fièvre et une éruption maculo-papulaire (non vésiculaire); - Ou toute personne chez laquelle un clinicien suspecte une infection rougeoleuse. - - - - Any person with fever and maculo-papular (non-vesicular) rash; - Or any person in whom a clinician suspects measles infection.
Cas suspect de rougeole/rubéole Suspected case of measles/rubella	
حالة مثبتة وبائيا	حالة مشتبهة لم يجري لها فحص مصلي ولها رابط وبائي بحالة مثبتة مخبريا ظهر عليها الطفح الجلدي في الأيام ٧ إلى ١٨ الماضية. - - - Un cas suspect chez qui on n'a pas procédé à un test sanguin, et qui présente un lien épidémiologique par contact direct avec un cas de rougeole confirmé par le laboratoire chez qui l'éruption est survenue de 7 à 18 jours plus tôt. - - - A suspect case who has not had a blood test, and who is epidemiologically linked by direct contact to a laboratory-confirmed case in which rash onset occurred 7-18 days earlier.
Cas avec confirmation épidémiologique Epidemiologically-confirmed case	
حالة مثبتة مخبريا	حالة مشتبهة ثبتت مخبريا عبر إيجابية الفحص المصلي IgM الخاص بالحصبة. - - - Un cas suspect confirmé par le laboratoire avec présence d'anticorps spécifiques IgM à la rougeole. - - - A suspect case with laboratory confirmation with presence of measles-specific IgM antibodies.
Cas confirmé par le laboratoire Laboratory-confirmed case	
رمز المرض CIM-10 / ICD-10	B05

مدير عام وزارة الصحة العامة
الدكتور وليد عمار

Annex 2: Reporting form for communicable diseases

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 3: Specific reporting form for measles and rubella

الجمهورية اللبنانية

وزارة الصحة العامة

استمارة إبلاغ عن حالة حصبة أوحصبة ألمانية

١ـ 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 : .....

٢ ـ 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

٣ ـ 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*			

٤ ـ 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*	

٥ـ معلومات اخرى

اسم الطبيب المعالج : .....

العنوان : .....

رقم الهاتف : .....

التاريخ : .....

التوقيع والختم:

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 ٢٨ يوم من تاريخ ظهور الطفح.

وتحفظ العينة بين 4-8° C.

بالإضافة يحدّد 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

Annex 4: Hospital zero-reporting form

الجمهورية اللبنانية
وزارة الصحة العامة

تلفون:

فاكس:

خاص لوزارة الصحة العامة

تاريخ الاستلام
رقم الاستمارة

جانب برنامج الترصد الوبائي
الموضوع: الإبلاغ الصفري الأسبوعي Zero-reporting للأمراض الانتقالية ذات الإبلاغ الفوري

المرجـع: مستشفى ______________________________
الاسبـوع: من الاثنين ____________ إلى الأحد ____________

عدد الحالات المشتبهة / المثبتة هي:

Other immediate notifiable diseases/ **أمراض انتقالية اخرى ذات إبلاغ فوري:** Anthrax, Diphtheria, Food poisoning, Hemorrhagic fever, Mumps, Pertussis, Plague, Rabies, Smallpox, Tetanus, Unusual/unexpected event	**Novel respiratory viruses/** الفيروسات التنفسية المستجدة : Novel Influenza Viruses انفلونزا ناجمة عن نميط جديد Or Novel Coronavirus: SARS, MERS-COV / فيروس التاجي المستجد	**Cholera /** الكوليرا	**Measles & Rubella & Congenital Rubella Syndrome/** الحصبة والحصبة الألمانية والحصبة الالمانية الخلقية	**Meningitis** (Bacterial, viral) التهاب السحايا الحاد **Or** **Invasive meningococcal disease**	**Acute Flaccid Paralysis /** الشلل الرخو الحاد أيا كان التشخيص الطبي لدون 15 سنة، بما في ذلك: Guillain Barre syndrome, transverse myelitis, acute neuritis … **Or** **Acute Poliomyelitis /** شلل الاطفال	
						قسم طب الأطفال اسم الطبيب __________
						قسم الطب الداخلي اسم الطبيب __________
						قسم العناية الفائقة اسم الطبيب __________
						قسم الطوارئ اسم الطبيب __________

اسم ضابط الاتصال: ________________ رقم الهاتف: ______________ التوقيع:

تعميم وزارة الصحة العامة رقم 62 الصادر بتاريخ 3 تموز 2014

الجمهورية اللبنانية
وزارة الصحة العامة
المديرية العامة

استمارة الترصد النشط / Active Surveillance

خاص بوزارة الصحة العامة

تاريخ الاستلام:
رقم:

1)- معلومات عامة:

اسم طبيب الوزارة	تاريخ الزيارة	الاسبوع المراجع	المستشفى	اسم ضابط الاتصال في المستشفى
		من الى		

2)- مراجعة الأقسام و السجلات:

الأقسام	مقابلة الأقسام	مراجعة سجل الدخول		حالات				
	اسم الطبيب	من رقم	الى رقم	شلل رخو حاد	التهاب سحايا	حصبة /حصبة المانية	الكوليرا	غيره
طب الأطفال								
الطب الداخلي								
العناية الفائقة								
الطوارئ								
العيادات الخارجية								
غيره								

3)- مراجعة الرموز ICD10 / CIM10

المرض	شلل الاطفال	شلل رخو حاد دون 15 سنة	التهاب سحايا	حصبة /حصبة المانية	الكوليرا
الرموز	A80	G04, G37, G54, G57, G58, G61, G62, G72, G82, G83	A39, A87, G00, G01, G02, G03	B05, B06	A00, E86
عدد الحالات					

4)- الحالات التي تم الكشف عنها:

اسم المريض	العمر	المرض	سبب الاستشفاء	تاريخ الدخول	جمع العينات	اسم الطبيب المعالج

توقيع ضابط الاتصال في المستشفى:

توقيع طبيب الوزارة:

تعميم وزارة الصحة العامة رقم 61 تاريخ3 تموز 2014

Annex 6: Medical center and dispensary-based surveillance form

الجمهورية اللبنانية وزارة الصحة العامة

استمارة الترصد الوبائي عن الأمراض والوفيات الخاصة بالمستوصفات والمراكز الصحية

1) عن المستوصف و الأسبوع

المحافظة	القضاء	البلدة	اسم المستوصف
التاريخ	**من الاثنين**	**لغاية الأحد**	**رقم الاستمارة**

2) عن الأمراض

الأمراض المشمولة بالترصد	الحالات		ملاحظات
	اقل من 5 سنوات	5 سنوات او أكثر	
أ) امراض مناعية / vaccine preventable diseases			
شلل رخو حاد/ paralysie flasque aigue/acute flaccid paralysis			
حصبة / rougeole / measles			
حصبة ألمانية / rubeole / rubella			
السعال الديكي اوالشاهوق/ coqueluche / pertussis or woophing cough			
النكاف او أبو كعب / oreillons / mumps			
ب) أمراض انتقالية أخرى / other communicable diseases			
إسهال حاد / diarrhée aigue/ acute diarrhea			
إسهال دموي مخاطي/ bloody diarrhea			
هضمة الكوليرا / cholera			
حالة يرقان حادة أو صفيرة/ ictère / jaundice			
انتان تنفسي حاد والزكام / acute respiratory infection & flu			
حمى غير مشخصة / unexplained fever			
الجرب / gale / scabies			
داء الليشمانيات / leishmaniasis			
أمراض انتقالية أخرى واجب الإبلاغ عنها **/other notifiable diseases			
حالات تفشي وباء / épidémie/ outbreak			
ج) غيره / others			
ربو / asthma / asthma			
الحوادث والجروح / accident / injury			
معاينات أخرى /other consultations/ autres consultations			

3) عن الحالات التي استدعت الاستشفاء

#	الاسم	العمر	الجنس	بلدة الإقامة	اسم المستشفى	سبب الاستشفاء
1						
2						

4) عن حالات الوفيات

#	الاسم	العمر	الجنس	بلدة الإقامة	سبب الوفاة
1					
2					

الاسم، التوقيع: رقم الهاتف:

** **لائحة الأمراض الانتقالية الواجب الإبلاغ عنها فور تشخيصها أو الشك فيها**: الشلل الرخو الحاد، الجمرة الخبيثة، الكوليرا، الخانوق، التسمم الغذائي، الحميات النزفية، فيروسات الانفلونزا المستجدة، فيروسات التاجية المستجدة، المكورات السحائية، الحصبة، التهاب السحايا، ابو كعب، الشاهوق، الطاعون، داء الكلب، الحصبة الالمانية، متلازمة الحصبة الالمانية الخلقية، الجدري، الكزاز، الكزاز الوليدي، حدث غير متوقع

** **لائحة الأمراض الانتقالية الواجب الإبلاغ عنها أسبوعيا**: بلهارسيا، الحمى المالطية، داء كروتسلفيلد جاكوب، السيلان، التهاب الكبد الفيروسي A, B, C, D, E ، HTLV1 ، الكيسيات المائية، التهابات المعوية، داء الفيالقة، داء الليشمانيات، الجذام، الملاريا، السفلس، الحميات التيفية، السل، العدوى بفيروس ضعف المناعة المتكسب

قرار وزارة الصحة العامة رقم 2/964 تاريخ 3 تموز 2014

Annex 7: Ambulatory sentinel surveillance form

Republic of Lebanon Ministry of Public Health

Weekly Form for the Ambulatory Sentinel Surveillance System A3S

1. Physician

Physician name	
Physician code (at the Order, in latin)	

2. Week

Week, starting on Monday	_ _ / _ _ / _ _ _ _
Date of report	_ _ / _ _ / _ _ _ _

3. Aggregated data

	Acute watery diarrhea	Acute respiratory infection	Chicken Pox	Injuries/Poisoning				
	>=3 loose stools in the past 24 hours with/without dehydration	Fever (>38 C) + cough or sneezing or throat sore or coryza or dyspnea	Fever + vesicular rash	Falls	Burns	Animal/Insect related	Poisoning (medicines, food, chemical)	Other (road traffic, drowning…)
< 5 years								
≥ 5 years								

4. Notifiable diseases

#	Name	Disease	Gender	Age	Locality/Caza	Phone contact	Nb of vaccine received	Laboratory results	Date consultation
		□ Measles □ Pertussis □ Rubella □ VHA □ Mumps □ Dysentery	□ M □ F						
		□ Measles □ Pertussis □ Rubella □ VHA □ Mumps □ Dysentery	□ M □ F						
		□ Measles □ Pertussis □ Rubella □ VHA □ Mumps □ Dysentery	□ M □ F						
		□ Measles □ Pertussis □ Rubella □ VHA □ Mumps □ Dysentery	□ M □ F						
		□ Measles □ Pertussis □ Rubella □ VHA □ Mumps □ Dysentery	□ M □ F						

5. Comments

6. Signature

Date received	Form number

Please send the filled form(s) to the Epidemiological Surveillance Program 01-610920

Annex 8: School-based reporting form

وزارة الصحة العامة

الجمهـورية اللبنـانيـة

وزارة التربية والتعليم العالي

الاستمارة الأسبوعية الخاصة بإحصاءات الغياب

تعبأ الاستمارة من قبل المرشد الصحي في المدرسة وترسل إلى قسم الصحة العامة في القضاء

الأسبوع بدأ من الاثنين |_____|

الرقم الرسمي للمدرسة _____ اسم المرشد الصحي _____

اسم المدرسة _____ رقم الهاتف الثابت _____

البلدة _____ رقم الهاتف الخليوي _____

القضاء _____ التاريخ _____

1) إحصاءات الغياب

	عدد الغياب						مجموع	
	الاثنين	الثلاثاء	الاربعاء	الخميس	الجمعة	السبت	التلاميذ المسجلة	الصفوف
الروضات								
الحلقة الأولى من التعليم الأساسي								
الحلقة الثانية من التعليم الأساسي								
الحلقة الثالثة من التعليم الأساسي								
الثانوي								
الموظفون								

2) بعد قراءة التقارير الطبية المتوفرة للمتغيبين

	مجموع التقارير المستلمة	أسباب الغياب المذكورة في التقارير الطبية						
		التهاب تنفسي حاد	التهاب معوي حاد	الحصبة/ الحصبة ألمانية	الصفيرة	التهاب الملتحمة	أبو كعب	تدرن	غيره
عدد التقارير الطبية المتوفرة للمتغيبين									

3) نتائج الكشف الاسبوعي

حالات جرب	حالات قمل	غيره

4) ملاحظات:

توقيع وختم مدير المدرسة أو الثانوية

تعاريف الأمراض.

- التهاب تنفسي حاد: حمى مع رشح أو سعال أو نزلة أنفية أو ألم في الحنجرة أو ضيق في التنفس. مثلا: الزكام، الكريب، التهاب اللوزتين، التهاب في القصبة الهوائية، داء الرئة ...
- التهاب معوي حاد: وجود إسهال حاد مائي أو دموي مخاطي
- الحصبة / الحصبة ألمانية: حمى مصحوبة مع طفح جلدي حيث لا تحتوي الحبيبات على أي سائل بداخلها
- الصفيرة: إصفرار في ملتحمة العينين أو الجلد.
- التهاب الملتحمة أو الرمد: عين حمراء

Annex 9: Measles/Rubella investigation form

الجمهورية اللبنانية – وزارة الصحة العامة – برنامج الترصد الوبائي

استمارة تقصي حالة حصبة /حصبة الألمانية

تعبأ الاستمارة من قبل وزارة الصحة العامة / فريق الترصد الوبائي

رقم الحالة |_____|

١. معلومات عن التقصي

اسم المحقق	المحافظة	القضاء	تاريخ التقصي	مع من تمّ الاتصال؟
			...../...../.....	☐ المريض نفسه ☐ الأم ☐ الأب ☐ غيره، حدّد

٢. المريض وعنوانه

اسم المريض الثلاثي	الجنس	تاريخ الولادة	الجنسية	الاقامة
	☐ ذكر ☐ أنثى	...../...../..... العمر:	☐ لبناني ☐ غير لبناني، حدّد:	☐ مقيم ☐ زائر ☐ عامل اجنبي
				☐ لاجئ من أقل من ١٠ سنوات ☐ لاجئ منذ ١٠ سنوات او اكثر

القضاء	البلدة	العنوان الكامل	رقم الهاتف

٣. العوارض

- هل ظهرت حمى (38>) ؟ ☐ كلا ☐ نعم
- هل ظهر طفح جلدي ؟ ☐ كلا ☐ نعم، حدد **نوع الطفح:** ☐ *Maculopapular* ☐ *Vesicular* ☐غيره، حدّد: **تاريخ ظهور الطـفـح** : ...../...../.....
- هل دخل المريض المستشفى؟ ☐ كلا ☐ نعم، حدد اسم المستشفى: . تاريخ دخول المستشفى: ...../...../.....
- هل المريضة حامل؟ ☐ كلا ☐ نعم، حدد شهر الحمـل: تاريخ الولادة المتوقـع: ...../...../.....
- كيف أصبح المريض؟ ☐ شفاء ☐ ما زال مريضا ☐ وفاة، السبب: تاريخ الوقـــــــاة: ...../...../.....

٤. الوضع التلقيحي للمريض

- هل المعلومات موثّقة في السجل الصحّي/البطاقة الصحية؟ ☐ كلا ☐ نعم
- هل أخذ المريض لقاح ؟

				عدد الجرعات	تاريخ آخر جرعة
– حصبة measles	☐ غير معروف	☐ كلا	☐ نعم، حدد		...../...../.....
– حصبة /حصبة المانية /ابو كعب MMR	☐ غير معروف	☐ كلا	☐ نعم، حدد		...../...../.....
– حصبة / حصبة المانية MR	☐ غير معروف	☐ كلا	☐ نعم، حدد		...../...../.....
– حصبة المانية / rubella	☐ غير معروف	☐ كلا	☐ نعم، حدد		...../...../.....

- في حال عدم التطعيم، اذكر السبب: ☐ المركز الطبي بعيد ☐ غير مقتنع بالتلقيح ☐ توقيت المركز الطبي غير مناسب ☐ وضع أمني غير مستقر ☐ لا قدرة مالية ☐ إهمال ☐ الطفل دائماً مريض ☐ غيره، حدّد:

٥. مهنة المريض

- ما وضع/مهنة المريض؟ ☐ في البيت ☐ في الحضانة ☐ طالب ☐ عامل/موظف ☐ عامل في مجال الصحة ☐ عسكري ☐غيره:

اسم الحضانة/المدرسة/ المؤسسة	الصف/القسم	القضاء	البلدة	العنوان	رقم الهاتف

٦. الاختلاط مع حالات في المحيط

- اختلاط مع امرأة حامل ؟ ☐ غير معروف ☐ كلا ☐ نعم، حدد من ؟ الاسم: . شهر الحمل: |__| رقم الهاتف:
- وجود حالات مشابهة في المحيط ؟ ☐ غير معروف ☐ كلا ☐ نعم، حدد اين؟ ☐ المنزل ☐ مدرسة ☐ مستشفى ☐ الحي/البلدة ☐ دار حضانة ☐ جامعة ☐ مؤسسة ☐غيره:
- <u>في الأسابيع الثلاثة السابقة لظهور الطفح</u>، هل اختلط المريض مع شخص ظهر له طفح جلدي <u>أو</u> حمى؟ ☐ كلا ☐ نعم، حدد من ؟

اسم الشخص	الجنس	تاريخ الولادة	العمر	الصلة	تاريخ ظهور العوارض	تاريخ آخر لقاء مع الحالة	رقم الهاتف
	☐ ذكر ☐ أنثى						
	☐ ذكر ☐ أنثى						
	☐ ذكر ☐ أنثى						

٧. السفر الى الخارج خلال الأسابيع الثلاثة قبل ظهور الطفح

- هل سافر المريض ؟ ☐ غير معروف ☐ كلا ☐ نعم، حدد البلد: تاريخ العودة:
- هل اختلط المريض مع أحد العائدين من السفر؟ ☐ غير معروف ☐ كلا ☐ نعم، حدد البلد: من: الهاتف:

تعميم وزارة الصحة العامة رقم ٧٥ تاريخ ٣١ تموز ٢٠١٣

Annex 10: School-based rash investigation form

إستمارة تقصي حول حالات غياب في المدارس بسبب الطفح الجلدي
من تاريخ ------- الى ---------

المدرسة		اسم المبلغ	صفة المبلغ	رقم الهاتف		

#	الاسم الثلاثي	الجنس Sex	تاريخ الولادة او العمر	الجنسية	الصف و الشعبة Class & Section	هاتف	العوارض			هل لقح(ت) الطالب(ة) ضد					جمع عينات		ملاحظات
							تاريخ ظهور الطفح	نوع الطفح Rash type: MP Or Vs	حرارة Fever	موثقة	الحصبة (Measles)	الحصبة و الحصبة الألمانية (MMR1)	الحصبة و الحصبة الألمانية (MMR2)	حملة تلقيح	تم جمع عينة حدد النوع والتاريخ	نتيجة الفحص	استشفاء، وفاة،
		☐ ذكر ☐ أنثى							☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة:			
		☐ ذكر ☐ أنثى							☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة:			
		☐ ذكر ☐ أنثى							☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة:			
		☐ ذكر ☐ أنثى							☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:			
		☐ ذكر ☐ أنثى							☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة:			
		☐ ذكر ☐ أنثى							☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة:			

Annex 11: Community-based rash investigation form

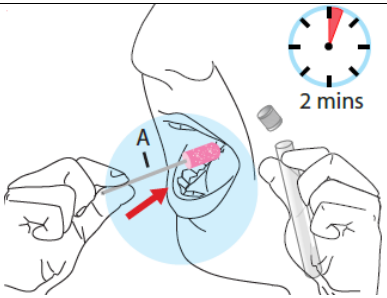
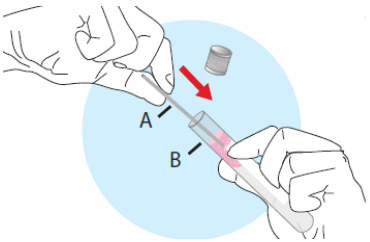
إستمارة تقصي حول حالات طفح جلدي

تاريخ ----------------

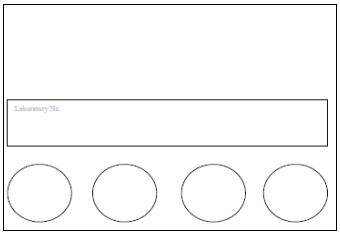
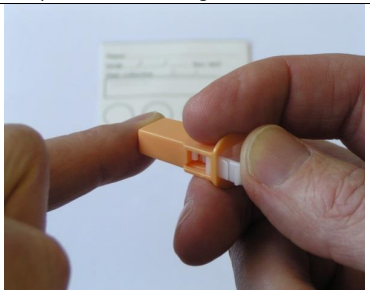
الحي		البلدة	القضاء	اسم المحقق

#	الاسم الثلاثي	الجنس Sex	تاريخ الولادة او العمر	الجنسية	هاتف	العوارض: تاريخ ظهور الطفح	العوارض: نوع الطفح Rash type: MP Or Vs	العوارض: حرارة Fever	هل لقح(ت) الطالب(ة) ضد: موثقة	هل لقح(ت) الطالب(ة) ضد: الحصبة (Measles)	هل لقح(ت) الطالب(ة) ضد: الحصبة و الحصبة الألمانية (MMR1)	هل لقح(ت) الطالب(ة) ضد: الحصبة و الحصبة الألمانية (MMR2)	هل لقح(ت) الطالب(ة) ضد: حملة تلقيح	جمع عينات: تم جمع عينة حدد النوع والتاريخ	جمع عينات: نتيجة الفحص	ملاحظات استشفاء، وفاة،
		☐ ذكر ☐ أنثى						☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة			
		☐ ذكر ☐ أنثى						☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة:			
		☐ ذكر ☐ أنثى						☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة:			
		☐ ذكر ☐ أنثى						☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:			
		☐ ذكر ☐ أنثى						☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة:			
		☐ ذكر ☐ أنثى						☐ كلا ☐ نعم	☐ كلا ☐ نعم	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، التاريخ:	☐ كلا ☐ نعم، سنة:			

Annex 12: Collection of oral fluid specimen

1) The Material	2) Collecting the oral fluid
	
The tube includes an Orocol swab, which is a sponge-collection device. Check the expiration date of the oral fluid material.	Rub the sponge swab against the gum line (cheek side) for 1-2 minutes, on both right and left sides until the sponge gets thouroughtly wet.
3) Sealing the tube	4) Labeling the tube
	
Replace the sponge swab (A) in the clear tube (B).	Document the specimen: write the name, date of birth, date of specimen collection
Source: HPA website.	

Annex 13: Collection of dried blood spots

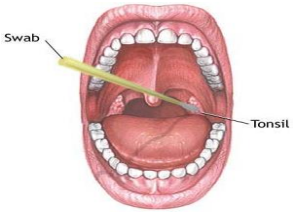
1) Material for dried blood spots	2) Skin puncture on the finger
 A rectangular filter card with four empty delimited circles and a labelling area is used.	 Clean the finger with alcohol solution.
3) The drops	4) Labelling
 Collect full blood drop each time to fill each circle.No smearing on the filter paper. Allow filter paper to dry for one hour at ambient temperature.	 Fill the filter paper with the needed information: full name, date of birth, and date of collection

Annex 14: Collection of throat swab

1) The material

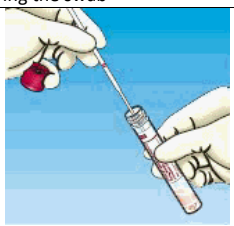
The set includes a swab and a transport vial containing Viral Transport Media VTM. Verify the expiration date.

2) Throat swab



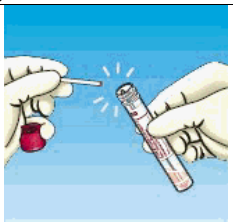
Ask the patient to be seated, and open the mouth. Depress the tongue and swab the posterior pharynx and both tonsils vigorously.

3) Transfering the swab



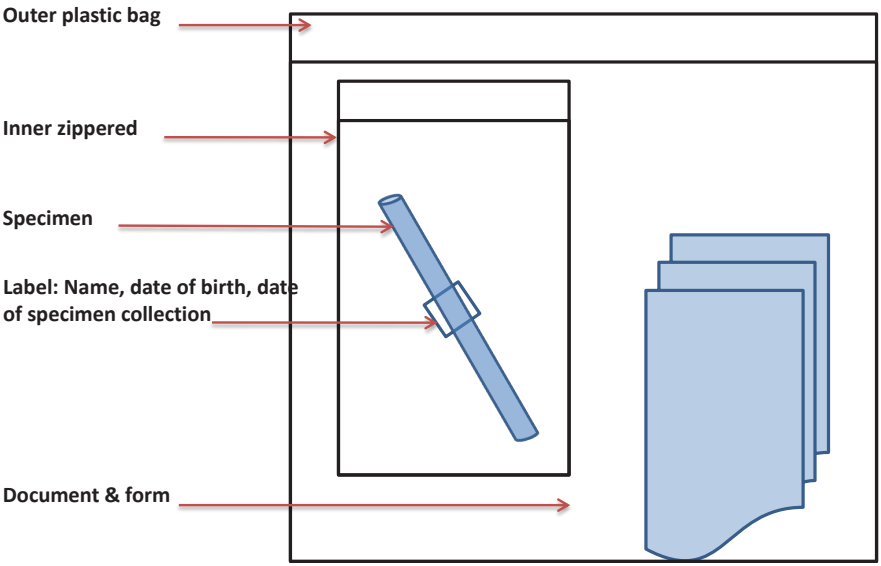
Transfer the swab into the vial containing the VTM.

4) Sealing the vial



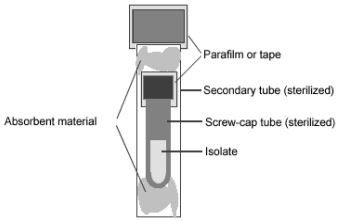
Break the applicator's stick and close the screw capped vial. Add the labeling.

Annex 15: Local packaging for national reference laboratory

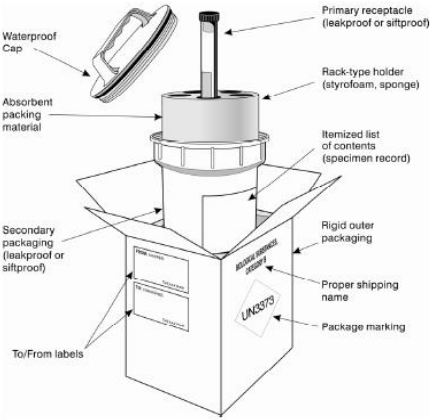


Annex 16: Packaging for shipment to supranational reference laboratory

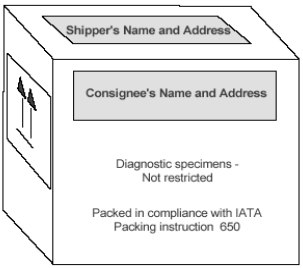
a) Leak proof primary container



b) Packaging instructions



c) Marking outside package



Annex 17: Contact detais of MOPH and MOPH/Esu-moh teams

أطباء وزارة الصحة العامة المعنيين بالإبلاغ عن مرض إنتقالي

اذار 2014

		الصفة	الإسم	هاتف ثابت	هاتف خليوي	فاكس
محافظة جبل لبنان	محافظة جبل لبنان	رئيس مصلحة الصحة	د. ميشال كفوري	05/920175	03/620615	05/920211
	قضاء الشوف	طبيب القضاء	د. زاهر أبوشقرا	05/506021	03/117994	05/501347
	قضاء عالية	طبيب القضاء	د. وهيب نجم	05/554614	03/220127	05/559740
		طبيب الترصد	د. ناديا يحيى	05/554614	70/983372	05/559740
	قضاء بعبدا	طبيب القضاء	د. ناظم متى	05/920860	03/509176	05/924113
		قضاء الترصد	د. شوقي عوض	05/920860	03/267912	05/924113
	قضاء المتن	طبيب القضاء	د. سليم مغربل	01/890916	03/422626	01/879014
		طبيب الترصد	د. جورج أبي خليل	01/890916	03/292940	01/879014
	قضاء كسروان	طبيب القضاء	د. جورج الحاج	09/914923	03/278054	09/644496
		طبيب الترصد	د. ميشال المر	09/914923	03/883034	09/644496
	قضاء جبيل	طبيب القضاء	د. شوقي حلو	09/540218	03/717417	09/942905
		طبيب الترصد	د. أنطوان عون	09/540218	03/600065	09/942905
محافظة البقاع	محافظة البقاع	رئيس مصلحة الصحة	د. غسان زلاقط	08/801512	03/802020	08/822225
		طبيب الترصد	د. زين الدين سعد	08/809148	03/875225	08/809147
	قضاء راشيا	طبيب القضاء	د. محمد خضر	08/595026	03/827853	08/595026
		طبيب الترصد	د. جميل أبو إبراهيم	08/895037	03/233675	08/592451
	قضاء البقاع الغربي	طبيب القضاء	د. سعيد طربيه	08/660012	03/287234	08/663021
		طبيب الترصد	د. زين محفوظ	08/660012	03/810345	08/663021
	قضاء زحلة	طبيب القضاء	د. وليد عبدو	08/820601	03/632875	08/820601
		طبيب الترصد	د. نقولا الفرن	08/809148	03/803075	08/809147
	قضاء بعلبك	طبيب القضاء	د. محمد الحاج حسن	08/370255	03/332846	08/370255
	قضاء الهرمل	طبيب القضاء	د. أنور علاو	08/201341	70/101183	08/201340
محافظة الجنوب	محافظة الجنوب	رئيس مصلحة الصحة	د. حسن علوية	07/722056	03/315902	07/724938
		طبيب الترصد	د. حبيب السبع أعين	07/755008	03/810452	07/755027
	قضاء جزين	طبيب القضاء	د. أنطوان رحيم	07/780104	03/244707	07/781763
	قضاء صور	طبيب القضاء	د. حسن علوية	07/740297	03/315902	07/349011
		طبيب الترصد	د. هناء محي الدين	07/740297	03/344751	07/349011
	قضاء صيدا	طبيب القضاء	د. بلال عبدالله	07/720485	03/745940	07/739182،83
		طبيب الترصد	د. عادل سكاكيني	07/755008	03/665534	07/755027
محافظة النبطية	محافظة النبطية	رئيس مصلحة الصحة	د. علي غندور	07/763210	03/302667	07/763213
		طبيب الترصد	د. غسان نعمة	07/768149	3614984	07/769102
	قضاء النبطية	طبيب القضاء	د. علي عجرم	07/760014	03/888418	07/760014
		طبيب الترصد	د. جمال عميص	07/768149	03/370175	07/769102
	قضاء بنت جبيل	طبيب القضاء	د. إيمان أيوب	07/450017	03/848312	07/450016
		طبيب الترصد	د. محمد حسن	07/450017	03/293127	07/450016
	قضاء مرجعيون	طبيب القضاء	د. أنطوان فرهود	07/830008	03/384600	07/830008
		طبيب الترصد	د. مشهور نحلة	07/831026	03/218271	07/831026
	قضاء حاصبيا	طبيب القضاء	د. ندى حمد	07/550215,	03/136152	07/550215
		طبيب الترصد	د. سليم ابراهيم	07/551027	03/352949	07/550215
محافظة الشمال	محافظة الشمال	رئيس مصلحة الصحة	د. محمد غمراوي	06/433725	03/646433	06/430068
		طبيب الترصد	د. عمر دبليز	06/423054	03/229978	06/628561
	قضاء البترون	طبيب القضاء	د. جوني ابراهيم	06/740150	03/271665	06/740150
	قضاء بشري	طبيب القضاء	د. جورج طوق	06/671045	03/250732	06/671045
		طبيب الترصد	د. أنطوان طوق	06/672709	03/388987	06/672709
	قضاء زغرتا	طبيب القضاء	د. سامي الأحدب	06/660177	03/504304	06/667018
	قضاء الكورة	طبيب القضاء	د. ميشال نعمة	06/950084	03/678901	06/953802
	قضاء طرابلس	طبيب القضاء	د. نبيل زغلول	06/435994	03/529892	06/423065
	قضاء المنية الضنية	طبيب القضاء	د. بسمة الشعراني	06/461982	03/229152	06/461942
		طبيب الترصد	د. أحمد الخير	06/461983	03/228789	06/461942
	قضاء عكار	طبيب القضاء	د. حسن شديد	06/690079, 024	03/209340	06/690014
بيروت	الادارة المركزية	برنامج الترصد الوبائي	د. ندى غصن	01/614194-96	03/214520	01/610920
		مكافحة الأمراض الإنتقالية	د. عاتكة بري	01/611845	03/976032	01/611844

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