REPUBLIC OF LEBANON
MINISTRY OF PUBLIC HEALTH

Communicable Disease Department

Guidelines for
Medical center, dispensary and field medical unit based surveillance and response

August-September 2014

This training is part of the Project titled

"Conflict reduction through improving health care services for the vulnerable population in Lebanon"

Project **led by** Ministry Of Public Health (**MoPH**)
funded by the European Union (**EU**)

Implemented by United Nations High Commissioner for Refugees (**UNHCR**) in partnership with

World Health Organisation (**WHO**), United Nations Children's Fund (**UNICEF**), International Relief and Development (**IRD**) and International Alert (**Alert**).

2014-2015

UNHCR
The UN Refugee Agency

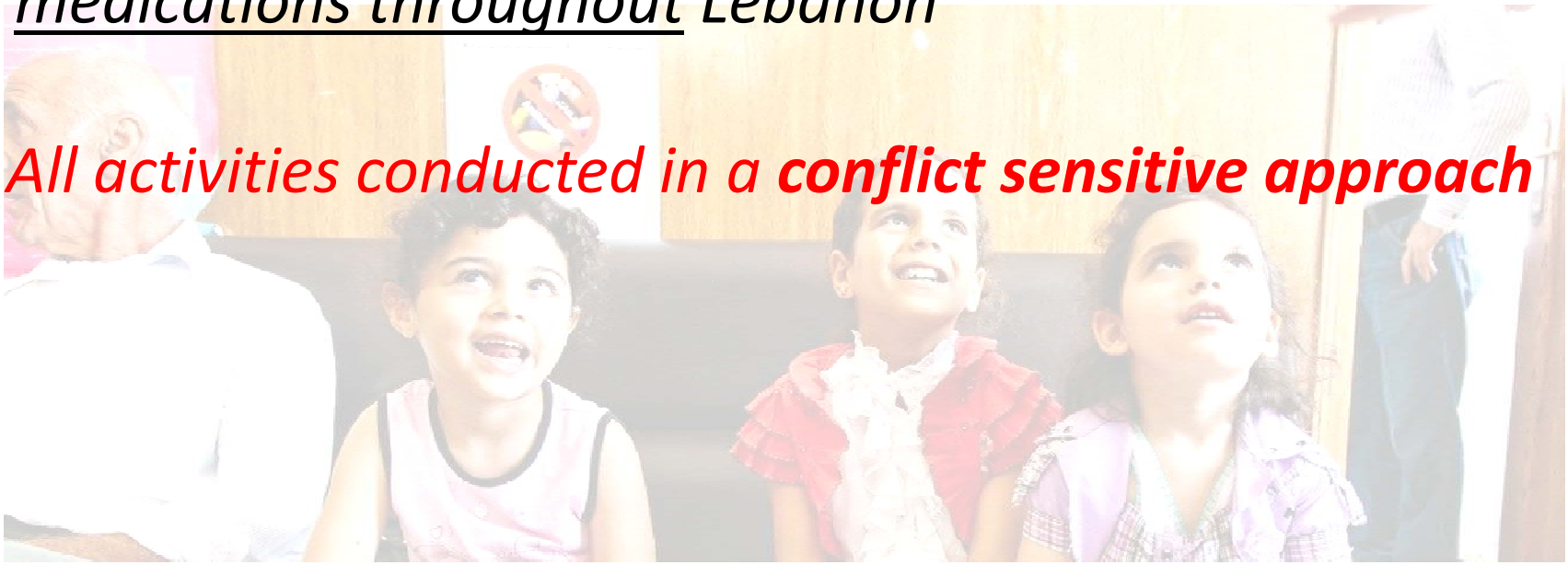
World Health Organization
Lebanon Office

Aim of Project

To alleviate the impact of the Syrian crisis on Lebanon by:

- *Strengthening the public healthcare system's capacity to manage communicable diseases,*
- *Providing quality primary healthcare services,*
- *Ensuring adequate provision of vaccines and medications throughout Lebanon*

*All activities conducted in a **conflict sensitive approach***



Expected overall impact

Contribute to communities tension reduction through:

- **Workforce**: A critical mass of well trained health staff to deliver high quality standard care (Early Warning and Response System, Mother and Child Health, Mental Health, Non Communicable Disease Initiative…)
- **Medical equipment and medications**: Procurement of equipment and medical supplies and medications (including vaccines and chronic medications) to redirect the resources of the MOPH to preventive care; decentralization of water laboratories in the governorates
- **Conflict sensitivity approach***: Securing and optimizing the utilization of quality health services by vulnerable populations and as a result decreasing tension

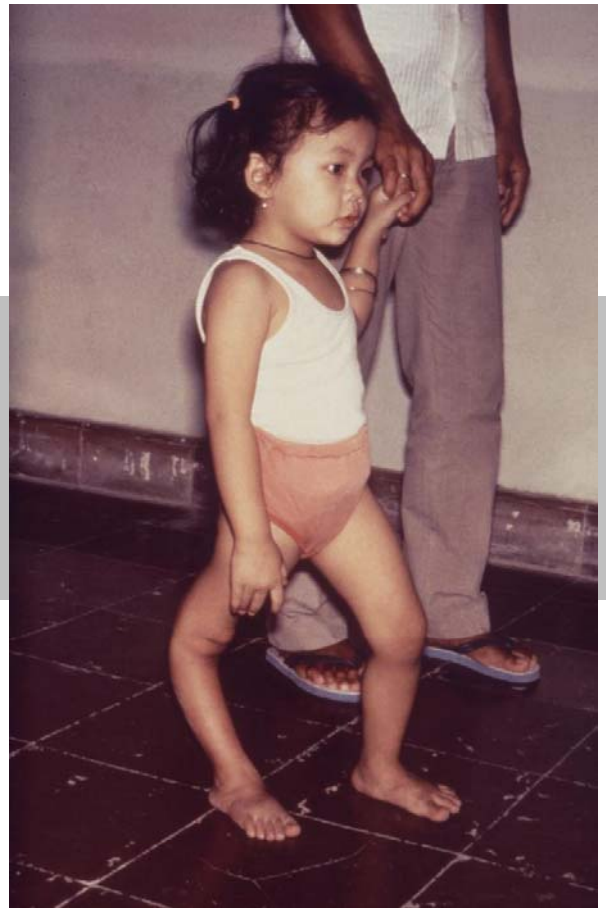
For more info:
www.moph.gov.lb and MoPH mobile application (Now available on APP Store)

*The conflict sensitive approach encompasses how you consider planning and setting priorities, how you implement or carry out your work and monitor it, how you evaluate the success of your intervention and how you think about the impact of your overall presence.

Target Events

- Poliomyelitis due to wild poliovirus
- Measles
- Rubella
- Mumps
- Pertussis
- Acute Jaundice
- Watery and Bloody Diarrhea
- Cholera
- Leishmaniasis
- Ebola
- MERS-CoV

References: WHO, CDC, ESP-MOH Lebanon, CD Dpt-MOH Lebanon



Poliomyelitis due to wild poliovirus

Polio

- Acute onset of flaccid paralysis
- GI tract to regional lymph nodes to CNS in a minority (flaccid paralysis in less then 1%)
- Paralysis is usually asymmetric with fever
- Maximum extent is usually reached within 3-4 days
- Some improvement during convalescence but paralysis present after 60 days is likely permanent

Poliomyelitis due to wild poliovirus

Agent:

- poliovirus (genus enterovirus)
- 3 serotypes: 1, 2 and 3

Incubation period: 7-14 days (3-35 days)

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: faecal-oral route, and rarely pharyngeal
- Rarely through water and food

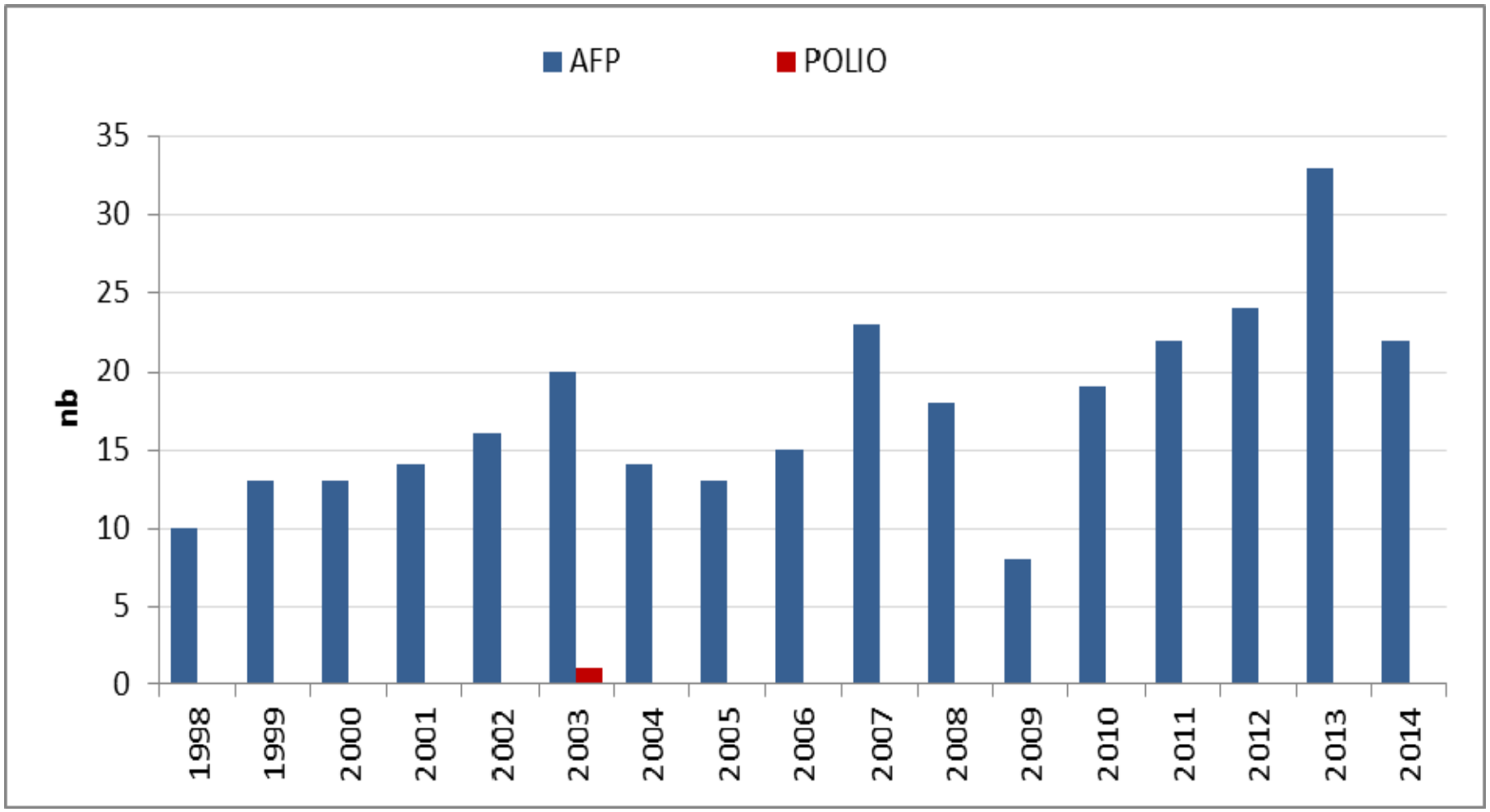
Clinical features

- 90-95% asymptomatic infection
- 4-8% mild illness (influenza-like illness or gastro-intestinal illness)
- 1-2% aseptic meningitis, <1% paralytic poliomyelitis

Differential diagnosis of acute flaccid paralysis (AFP)

- Guillain-Barré syndrome (typically symmetrical, with absence of fever, H/A, N, V and pleocytosis. High protein and low cell count on CSF)
- Other enteroviruses (types 70 and 71), echoviruses and coxsackieviruses
- Transverse myelitis, traumatic neuritis, infectious and toxic neuropathies, tick paralysis, myasthenia gravis, porphyria, botulism, insecticide poisoning, polymyositis, trichinosis, and periodic paralysis.

Reported cases in Lebanon

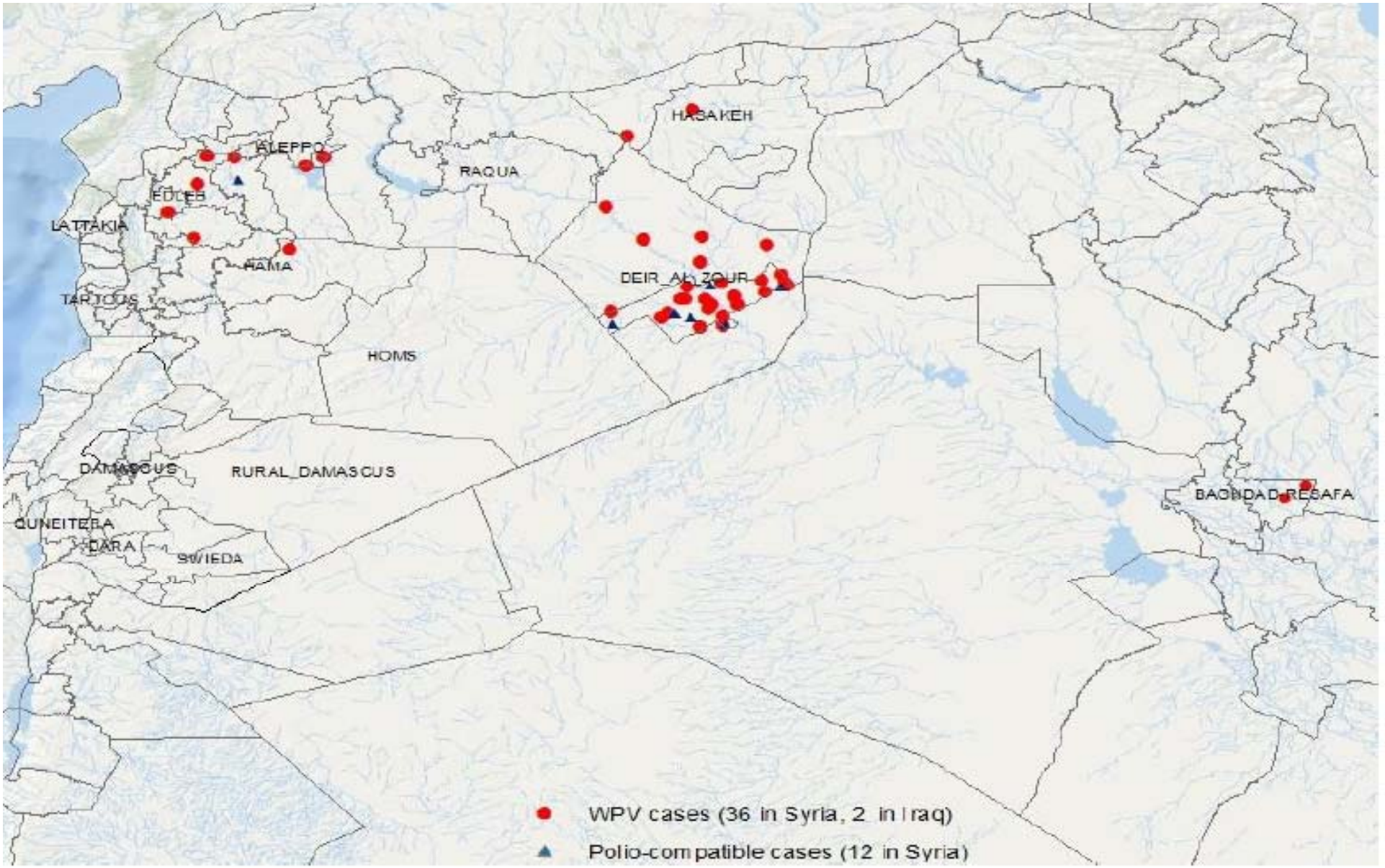


Lebanon is still at high risk of polio importation due to:

- Circulating polio virus in different regions of the globe
- Globalization effect
- Ongoing Lebanese immigration/migration
- Foreign workers turnover

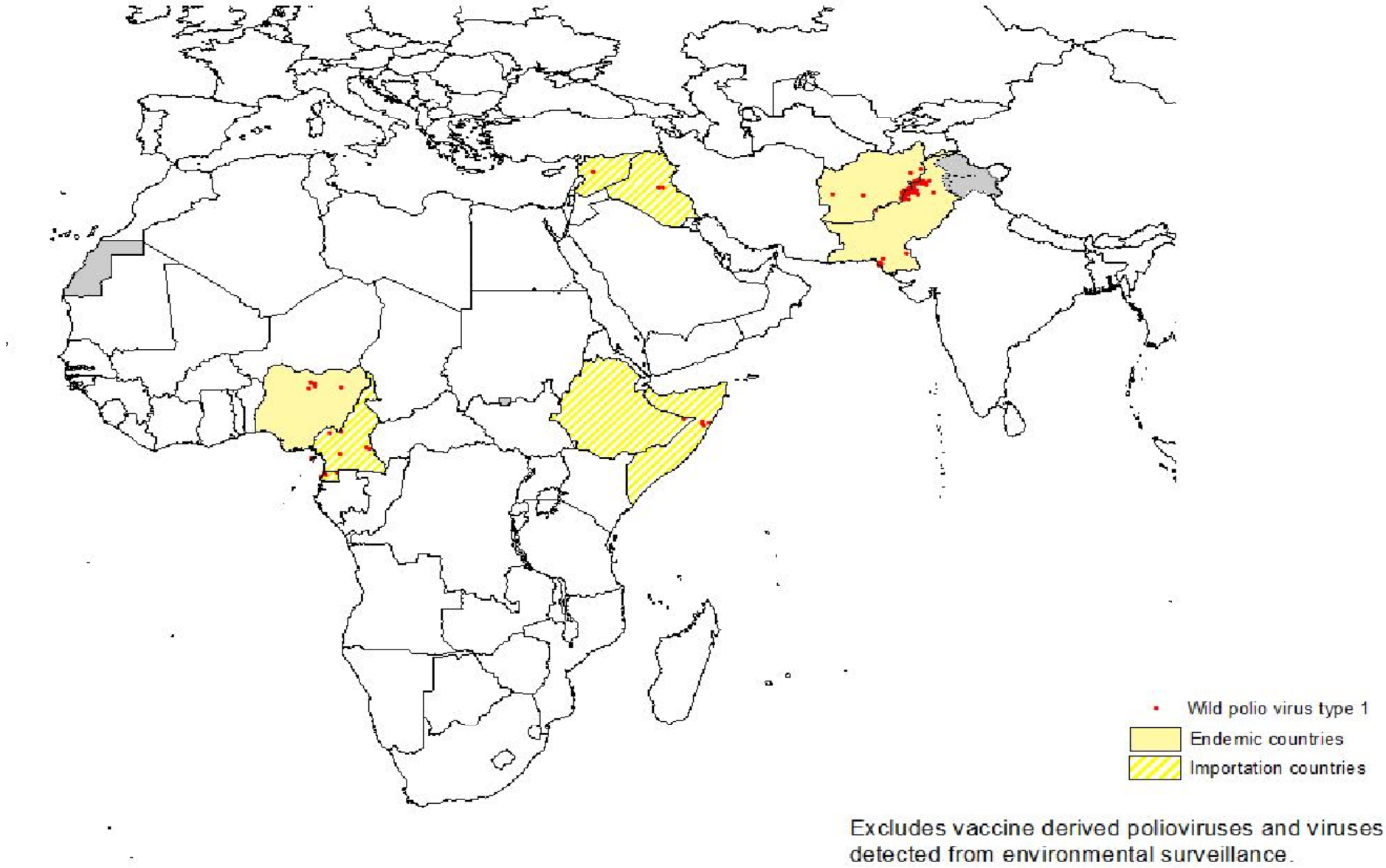
Current human crisis in the region

In the Region (2013- August 2014)



Worldwide

January 2012- August 2014



Excludes vaccine derived polioviruses and viruses detected from environmental surveillance.

Surveillance (1)

Surveillance approach:

- Syndromic-based surveillance: Acute Flaccid Paralysis

Investigation:

- Data collection : Clinical findings, medical diagnosis, CSF/EMG results, vaccination status, travel history, follow-up at 60 days for residual weakness

Surveillance (2)

Investigation:

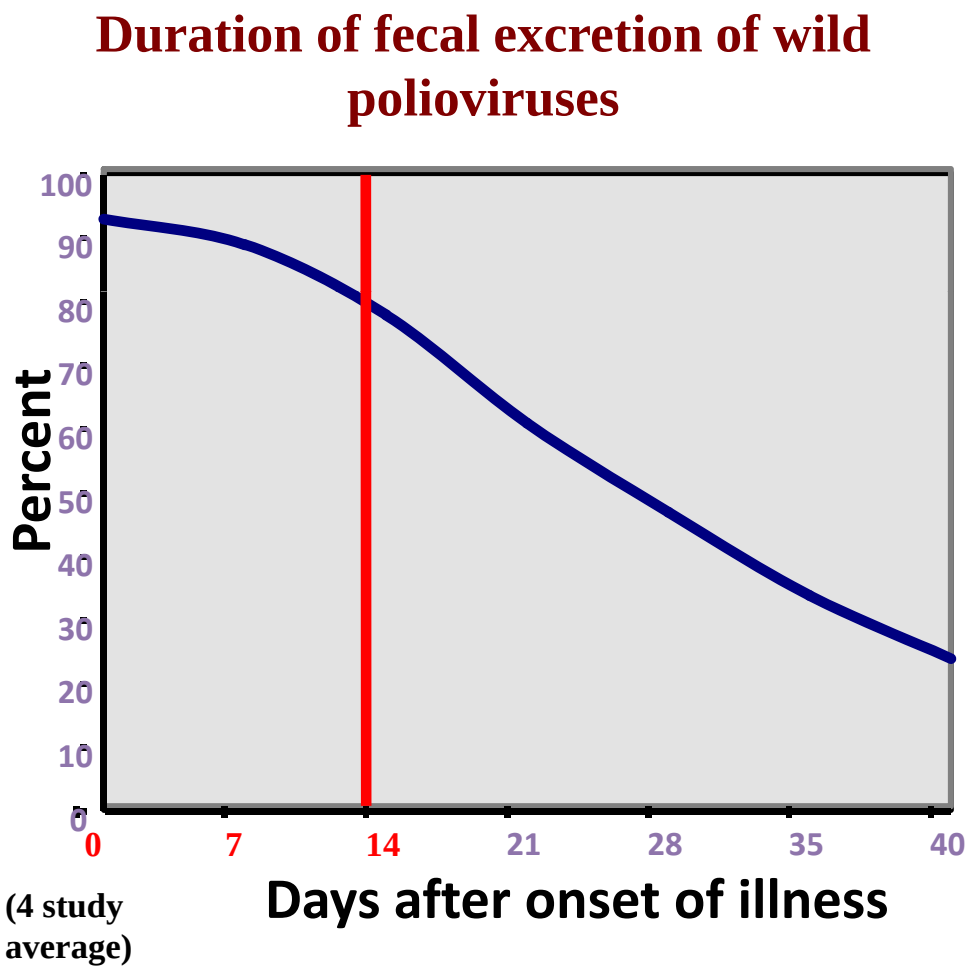
- Data collection about contacts : If polio or highly suspicion of polio: rapid survey on vaccination status (OPV3 coverage) at the community level

- Clinical specimen collection from contact: If delay in collection specimens from case, stool specimens are collected from at least 3 contacts under 5 years

  If polio case: stool specimens are collected from siblings, neighbors and inpatients

Clinical specimen collection from case

- At **least two stool specimens should** be obtained **24hrs** apart from patients
- Specimen should be **kept** at temp of **between 2 and 8 degree Celsius**



Test: Virological culture

WHO accredited laboratories:

- Vacsera in Egypt

Alert level:

- 1 case of Acute Flaccid Paralysis <15 years

Outbreak level:

- 1 confirmed case = OUTBREAK

Control

Primary prevention:

- Immunization 3 doses under 1 year, and 2 boosters > 1 year

Case management: Symptomatic

Isolation: Enteric precautions

Outbreak response:

- National vaccination campaign

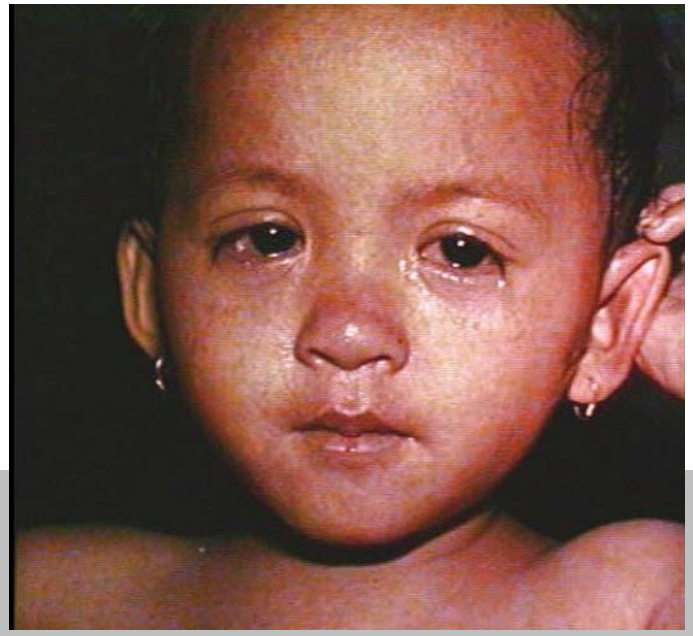
Case Definition

MOPH circular no. 34 (2012)

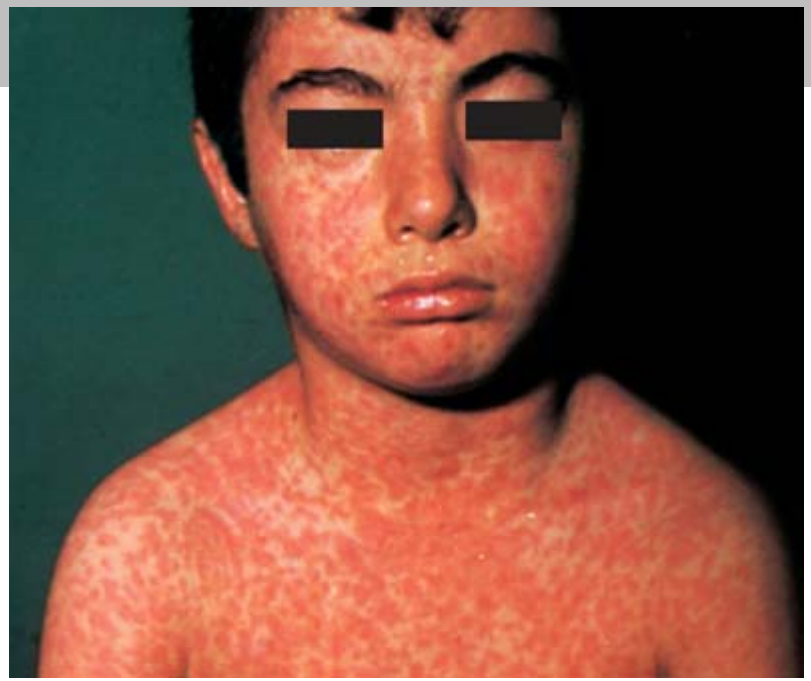
Confirmed case: is a suspected case with isolation of wild poliovirus in stool specimens collected from the suspected case or from a close contact of the suspected case.

Suspected case: 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.



Measles



Measles

Agent: RNA virus belonging to the Morbillivirus genus of the Paramyxoviridae family

Incubation period: 10 days (7-18 days, may be to 21 days)

Communicability: 4 days before rash and 4 days after rash onset; Infectivity is greatest three days before rash onset

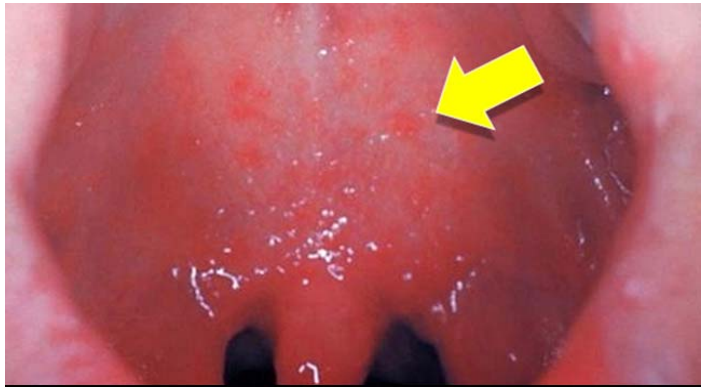
Reservoir: Humans are the only natural hosts of measles virus

Modes of transmission: person-to-person via two modes:

Respiratory droplets transmission to mucous membranes of the upper respiratory tract and conjunctiva

Airborne transmission in closed area is also possible

Clinical features



- Febrile maculo-papular rash
- **Complication:** 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 and months after onset)
- **Long term complication:** sub-acute sclerosing pan-encephalitis, 7 years or more after onset

  (1/25000 case, and 1/8000 if onset under 2 years old)

Differential diagnosis

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

Case fatality

- The measles case fatality rate (CFR) in Lebanon is 2 per 1000 reported cases, based on previous outbreaks (1997-1998, 2013)
- Industrialized countries: estimated around 1/1,000 reported cases and developing countries 3-6%
- In high-risk populations CFR for infants under 1 year may reach 20% to 30%

Treatment

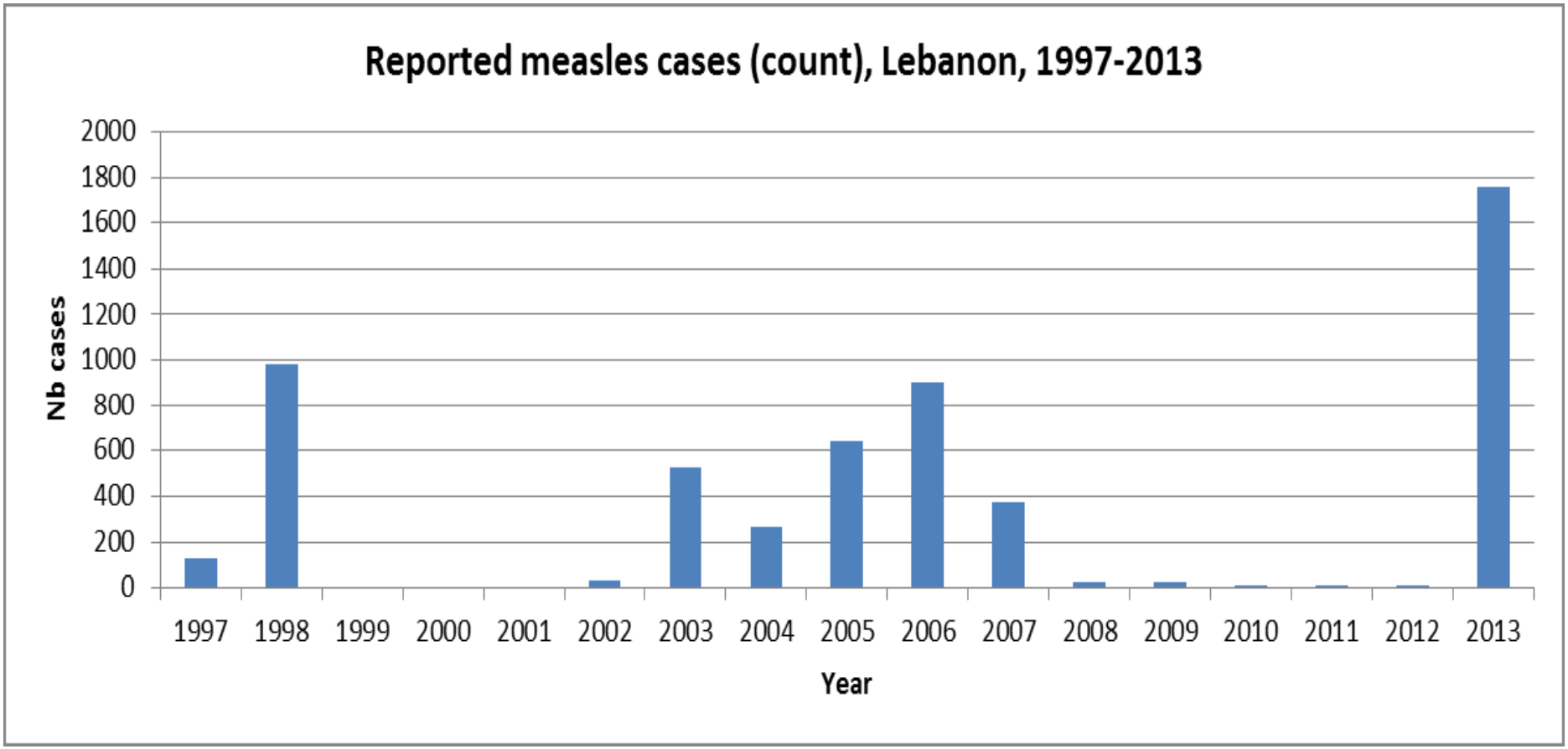
There is currently no specific treatment for measles infection

- WHO recommends the administration of vitamin A as it has shown to decrease both the severity of disease and the CFR
- Symptomatic and specific treatments are indicated for measles complications, such as diarrhea, pneumonia and otitis media…

Age dependent vitamin A administration	
Age	**Dose of Vitamin A**
Infants < 6 months	50,000 I.U.
Infants 6-11 months	100,000 I.U.
Children aged ≥ 12 months	200,000 I.U.

Source: WHO, Measles Elimination Field Guide, 2005

Reported cases in Lebanon



Surveillance (1)

Surveillance approach:

- Syndromic (febril macuplo-papular rash) with laboratory confirmation

Surveillance (2)

Investigation:

- Data collection: Signs, vaccination status, travel history, contact tracing, pregnancy
- Clinical specimen collection from case: Serum, urine, oral fluid, dried blood, throat swab, (CSF)
- Data collection about contacts: Cases among contact, travel history, vaccination status, pregnancy
- Clinical specimen collection from contact: If cases among contact

Test:

- IgM (1-28 days from onset with serum, oral fluid, urine, CSF, dried blood);
- PCR (1-7 days with oral fluid, dried blood); Culture (1-5 days with urine, throat swab)

Laboratories: RHUH (clinical lab), Tunis Pasteur (culture)

Alert level: 1 suspected case

Outbreak level: At least 3 confirmed cases epidemiologically or viroligically linked

Control

Primary prevention: Immunization at least 2 doses after 1 year

Case management: Symptomatic

Isolation: Droplet isolation at home and airborne isolation at the hospital

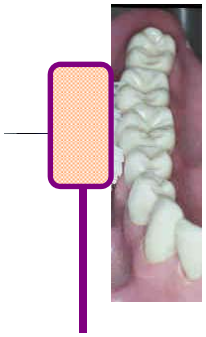
Contact prevention: MMR if within 72 hours of first contact with the patient

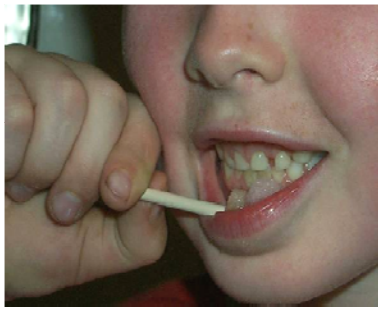
Case response: Confirmation and vaccination of susceptible close contacts

Outbreak response: Immunization

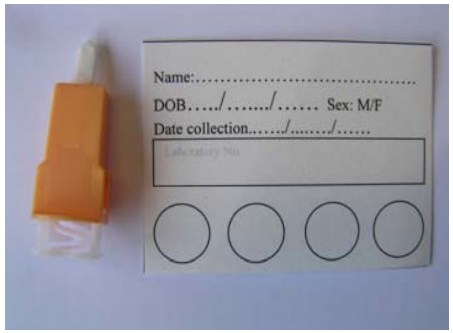
Sampling

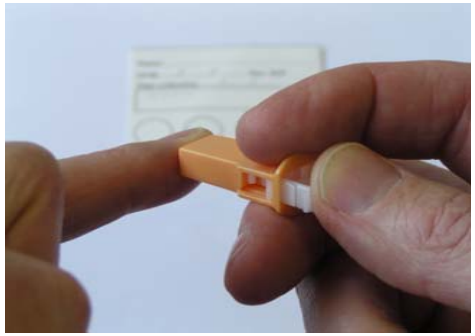
Oral Fluid

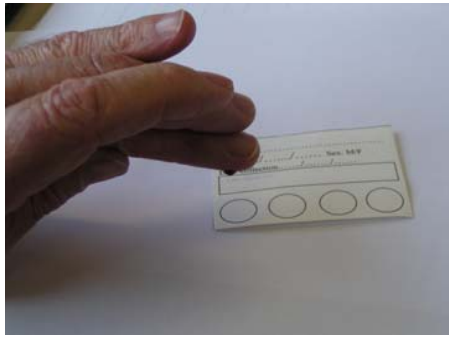


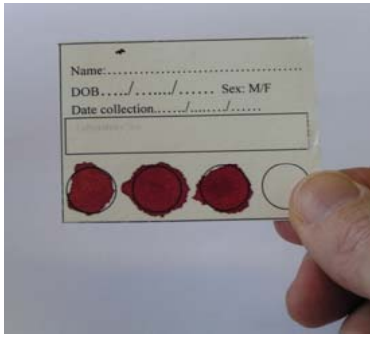


Dried Blood









Case Definition

MOPH circular 11 (2013)

Laboratory Confirmed case *(MOPH circular 11 (2013))*

- A suspect case with laboratory confirmation with presence of measles-specific IgM antibodies

Epidemiologically-confirmed case *(MOPH circular 11 (2013))*

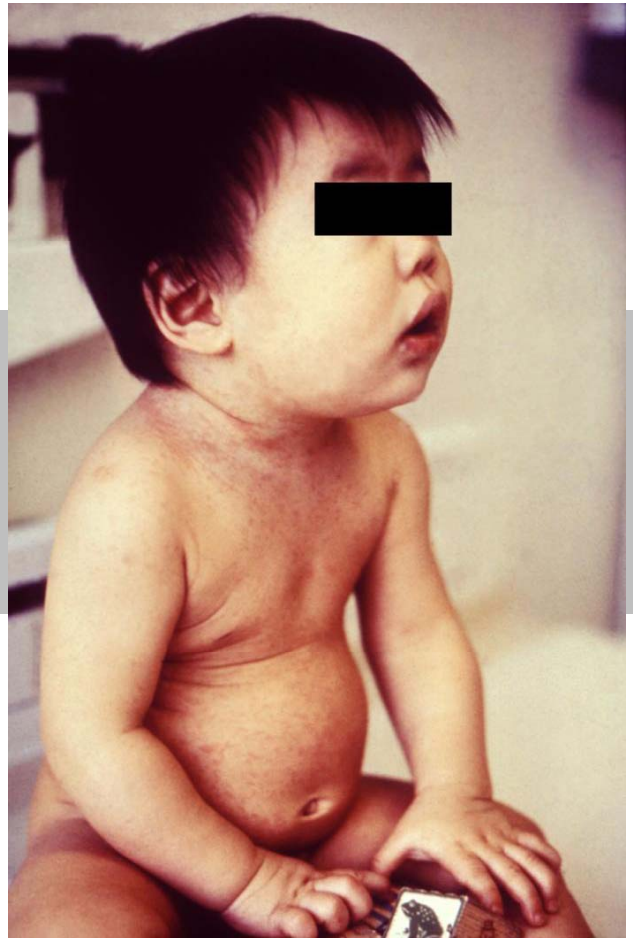
- A suspect case who has not had a blood test, and who is epidemiologically linked by direct contact to a laboratory-confirmed case in which rash onset occurred 7-18 days earlier

Case Definition

MOPH circular 11 (2013)

Suspected case/clinical case *(MOPH circular 11 (2013))*

- Any person with: Fever; And maculo-papular (non vesicular) rash; Or any person in whom a clinician suspects measles infection



Rubella

Rubella

(German measles/ Rubeola)

Agent: RNA virus belonging to the rubullavirus genus of the Togaviridae family

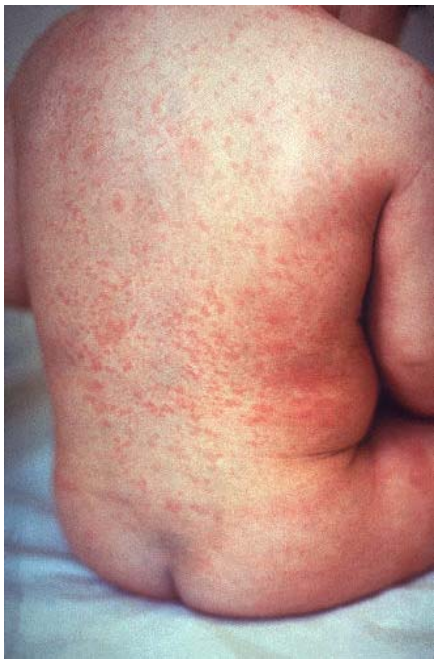
Incubation period: 14-17 days

Communicability: 7 days before rash and 4 days after rash onset

Reservoir: Humans

Modes of transmission: Person-to-person: direct/indirect contact with droplets and nasopharyngeal secretions; Mother to foetus

Clinical features



Febrile maculo-papular rash

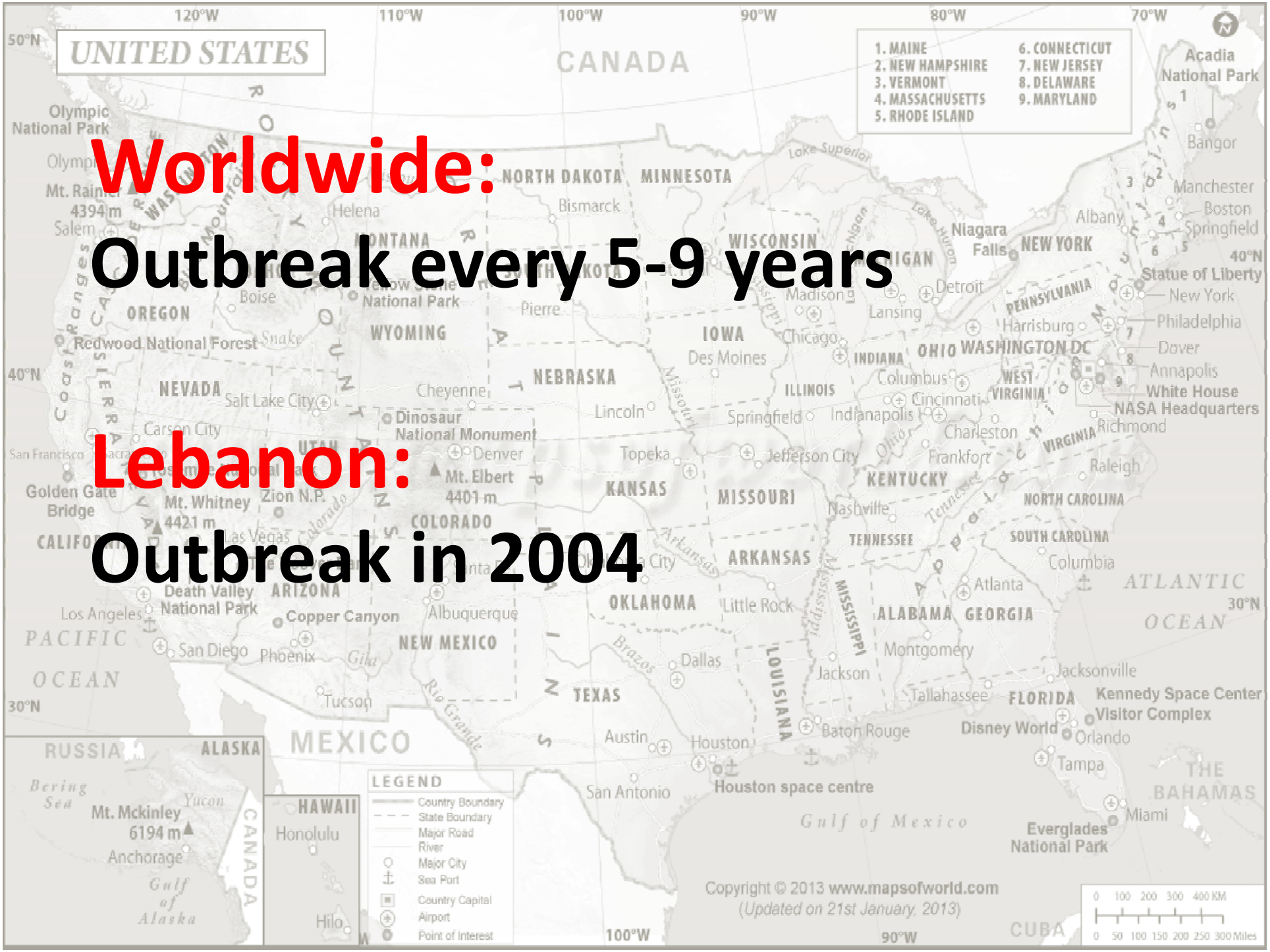
Complication: thrombocytopenia (1/3000), post-infectious

encephalitis (1/6000), rarely chronic arthritis

Congenital rubella syndrome (CRS) up to 90% of infants born to women infected with rubella during the first trimester of pregnancy

Treatment

- There is currently no specific treatment for rubella infection
- Patients can take antipyretics and analgesics
- Defects that occur with congenital rubella syndrome can be treated


Worldwide:
Outbreak every 5-9 years
Lebanon:
Outbreak in 2004
UNITED STATES
CANADA
MEXICO
1. MAINE
2. NEW HAMPSHIRE
3. VERMONT
4. MASSACHUSETTS
5. RHODE ISLAND
6. CONNECTICUT
7. NEW JERSEY
8. DELAWARE
9. MARYLAND
Olympic National Park
Mt. Rainier 4394 m
Redwood National Forest
Golden Gate Bridge
Mt. Whitney 4421 m
Death Valley National Park
Dinosaur National Monument
Mt. Elbert 4401 m
Zion N.P.
Copper Canyon
Yellowstone National Park
Niagara Falls
Acadia National Park
Statue of Liberty
White House
NASA Headquarters
Kennedy Space Center Visitor Complex
Disney World
Everglades National Park
Houston space centre
Mt. Mckinley 6194 m
Anchorage
Honolulu
Hilo
PACIFIC OCEAN
ATLANTIC OCEAN
Gulf of Mexico
Gulf of Alaska
Bering Sea
THE BAHAMAS
LEGEND
Country Boundary
State Boundary
Major Road
River
Major City
Sea Port
Country Capital
Airport
Point of Interest
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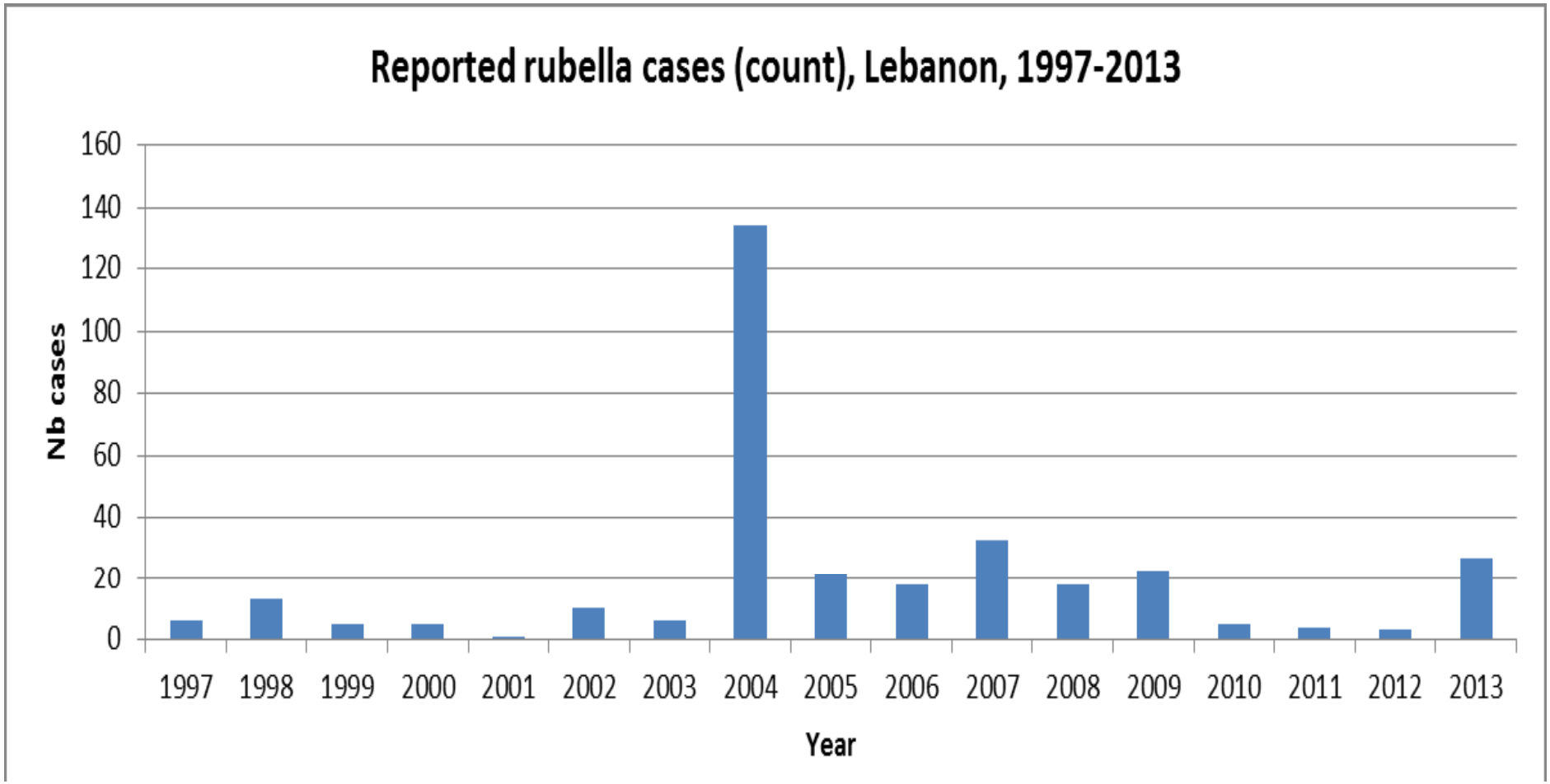
(Updated on 21st January, 2013)

Reported Cases in Lebanon



Surveillance (1)

Surveillance approach: Syndromic (febril macuplo-papular rash)

Investigation:

Data collection: Signs, vaccination status, travel history, contact tracing, pregnancy

Clinical specimen collection from case: Serum, urine, oral fluid, dried blood, throat swab

Surveillance (2)

Investigation

Data collection about contacts: Cases among contact, pregnancy women among contacts, vaccination status of contacts

Clinical specimen collection from contact: If cases among contact

Test: IgM, PCR, culture, genomic sequencing

Laboratories: RHUH; Tunis Pasteur (culture)

Alert level: 1 suspected case

Outbreak level: At least 3 confirmed cases epidemiologically or virologically linked

Control

Primary prevention:

- At least 1 dose during childhood

Case management:

- Symptomatic treatment

Isolation:

- Contact and droplet isolation in the hospital; prevent exposure to pregnant

Outbreak response: Immunization

Case Definition

MOPH circular 12 (2013)

Laboratory Confirmed case *(MOPH circular 12 (2013))*

- A suspected case with laboratory confirmation with presence of rubella-specific IgM antibodies

Epidemiologically-confirmed case *(MOPH circular 12 (2013))*

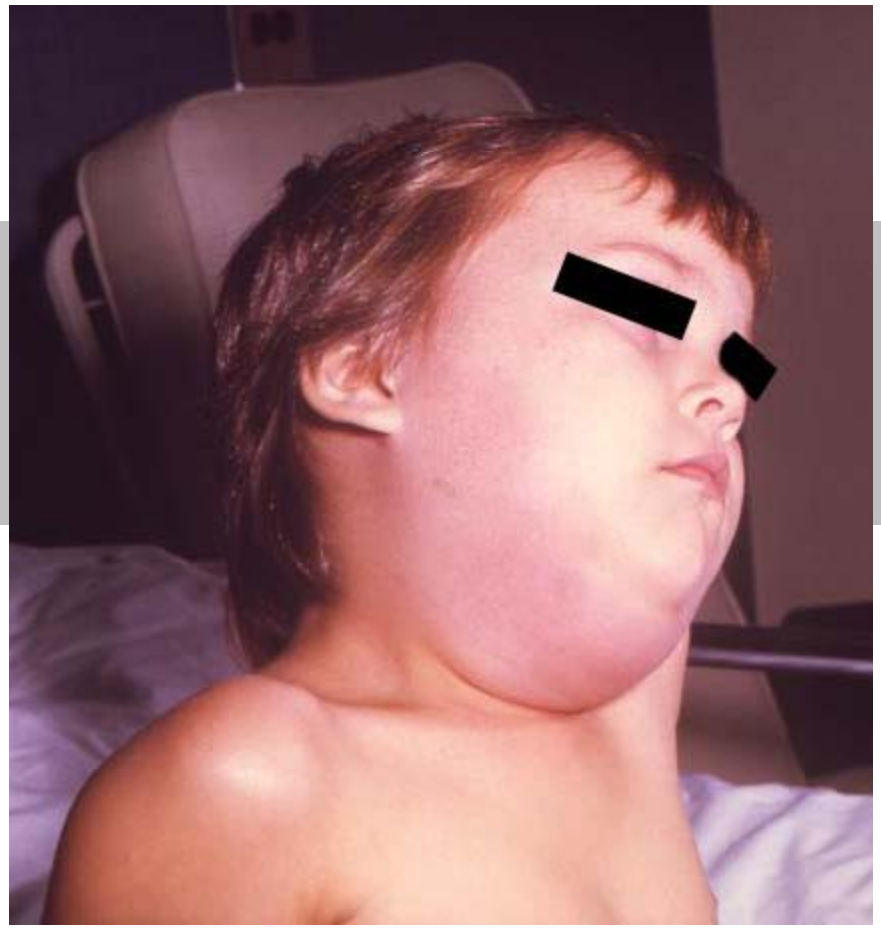
- A suspected case who has not had a blood test and has an epidemiological link to a laboratory-confirmed case of rubella

Case Definition

MOPH circular 12 (2013)

Suspected case/clinical case *(MOPH circular 12 (2013))*

- Any person with: Fever; and maculopapular (non vesicular) rash; Or any person in whom a clinician suspects rubella infection



Mumps

Agent: RNA virus belonging to the rubulavirus genus of the paramyxoviridae

Incubation period: 17 days (14-25 days)

Communicability:

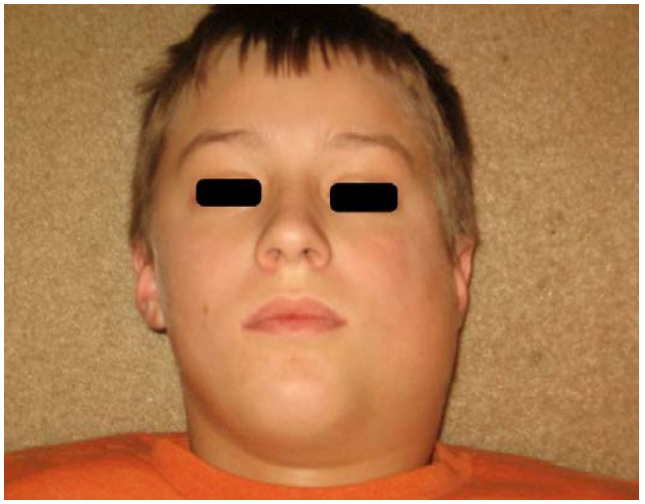
Max 2 days prior and 4 days after

- Virus present in saliva 7 days prior and 9 days after parotiditis onset
- Virus present in urine 6 days prior and 15 days after onset

Reservoir: Humans

Modes of transmission: Person to person: droplets of saliva or mucus from the mouth, nose, or throat of an infected person, usually when the person coughs, sneezes, or talks and can be airborne.

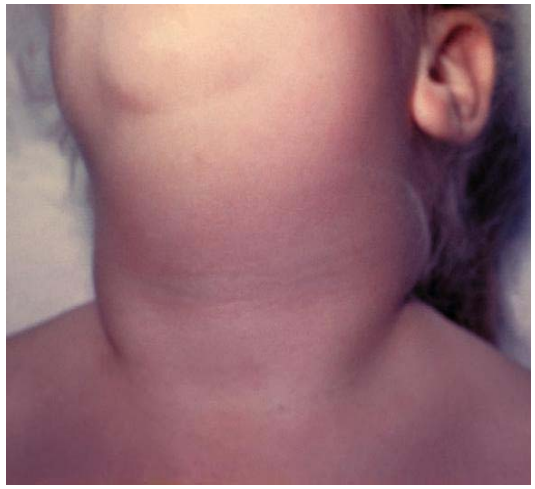
Clinical features



- Parotiditis most common manifestation (30-40%);

  Asymptomatic in 20%

- Complication: orchitis, oophoritis, sensoneuronal loss, hearing loss, pancreatitis (4%), aseptic meningitis /encephalitis



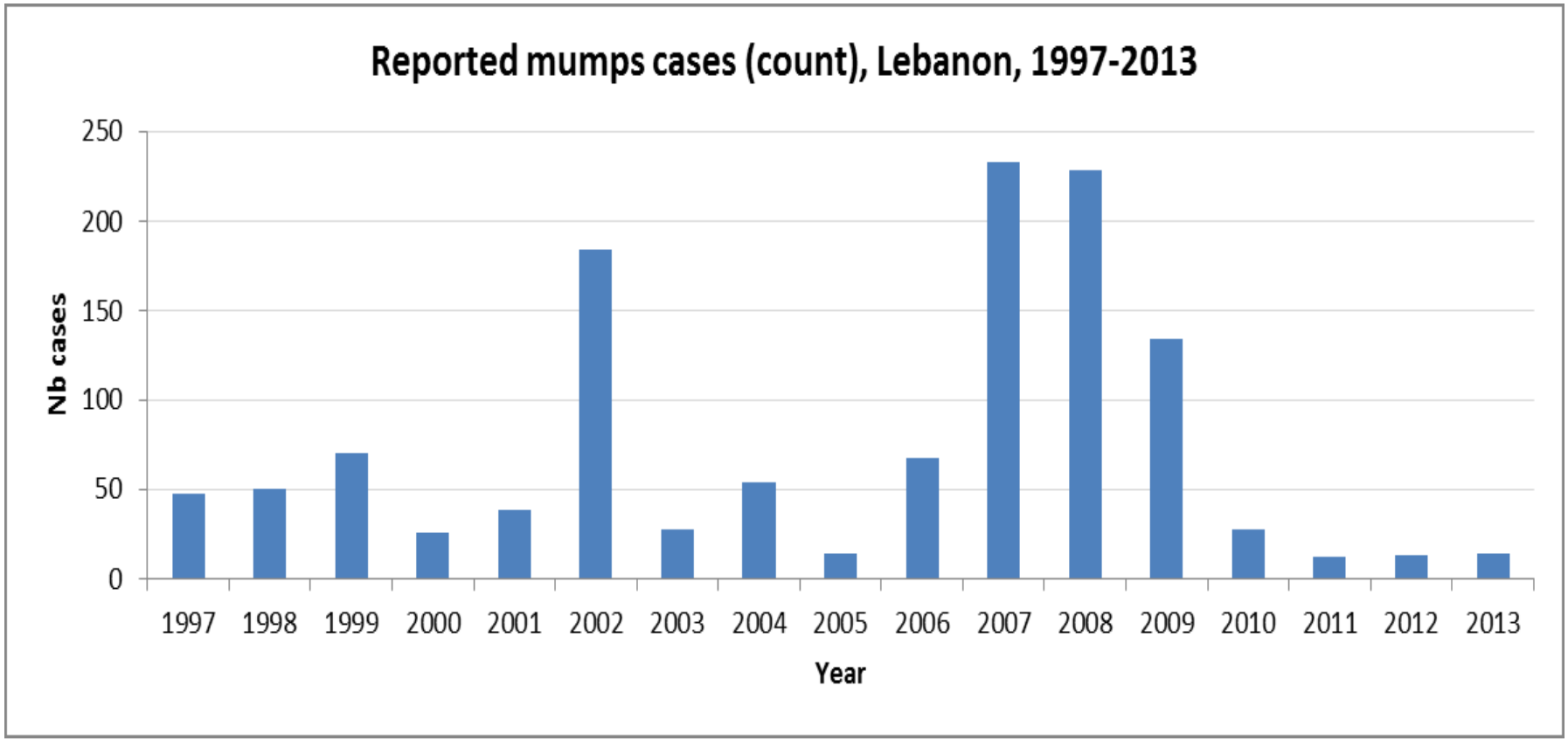
- Rarely nephritis, arthropathy,

  cardia abnormalities, death

Treatment

- There is currently no specific treatment for mumps infection
- Instead, treatment is focused on relieving symptoms until the body's immune system fights off the infection
- Patients can take antipyretics and analgesics

Reported cases in Lebanon



Surveillance (1)

Surveillance approach: Disease

Investigation:

Data collection: Signs, complications, vaccination status, institution, profession, other cases in surroundings

Surveillance (2)

Investigation :

Clinical specimen collection from case: Serum, urine, oral fluid (1-6 weeks after onset) CSF if meningitis

Data collection about contacts: Cases among contact

Clinical specimen collection from contact: Specimen only if they meet the case definition.

Test: IgM, PCR, Virological culture

Laboratories: Reference laboratories

Alert level: Relative increase >2

Outbreak level:

- Institutional outbreak = at least 3 cases epidemiologically linked with at least one confirmed case.
- Community outbreak = if the number is higher than expected based on the historical data for a given population

Control

Primary prevention: At least 2 doses > 1 year

Case management: Symptomatic treatment

Isolation: Airborne precautions: cases requiring hospitalization should be in an isolation room using airborne precautions until 5 days after the onset of glandular swelling

Contact prevention: Susceptible contacts should be offered immunization with MMR vaccine. Immunoglobulin is not effective in preventing mumps

Case Definition

MOPH circular 110 (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)

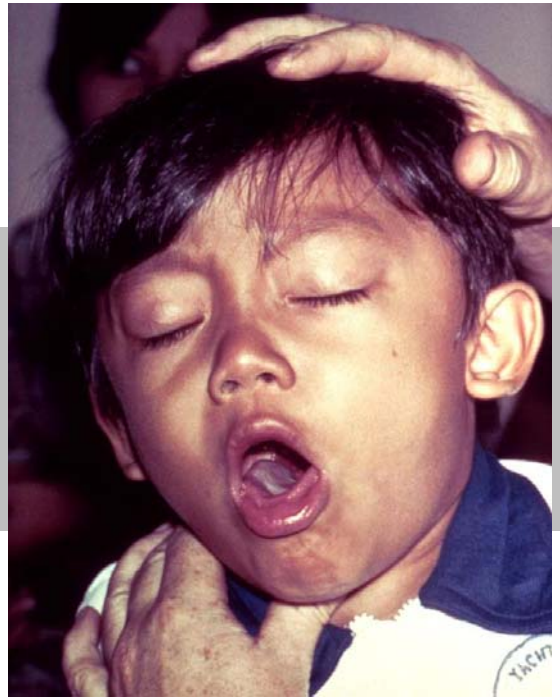
-Seroconversion or significant rise (at least fourfold) in serum mumps IgG titre (in the absence of mumps immunization in the preceding 6 weeks)

Positive serological test for mumps–specific IgM antibodies (in the absence of mumps immunization in the preceding 6 weeks).

Case Definition

MOPH circular 110 (2006)

- **Probable Case** *(MOPH circular 110 (2006))*
  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.



Pertussis

Pertussis

- Vaccine preventable disease but immunity wanes with time
- Catarrhal stage: insidious onset with irritating cough. Lasts 1-2 weeks
- Paroxysmal stage: repeated violent coughing, high-pitched inspiratory whoop, frequently end with the expulsion of clear, tenacious mucus, often followed by vomiting. Lasts for 1-2 months
- Vaccinated patients do not have the typical cough

Agent: Bacteria:

- Bordetella pertussis (the bacillus of pertussis)
- Bordetella parapertussis (causes parapertussis): occasional and milder disease

Incubation: 9-10 days (6-20 days)

Communicability:

- During the early catarrahal phase (up to 3 weeks)
- No longer after 5 days of antibiotic treatment

Reservoir

- Humans
- Ovines (sheep) for B. parapertussis

Modes of transmission

Person-to-person: direct contact with respiratory discharges and droplets, rarely by indirect contact though contaminated objects

Clinical features

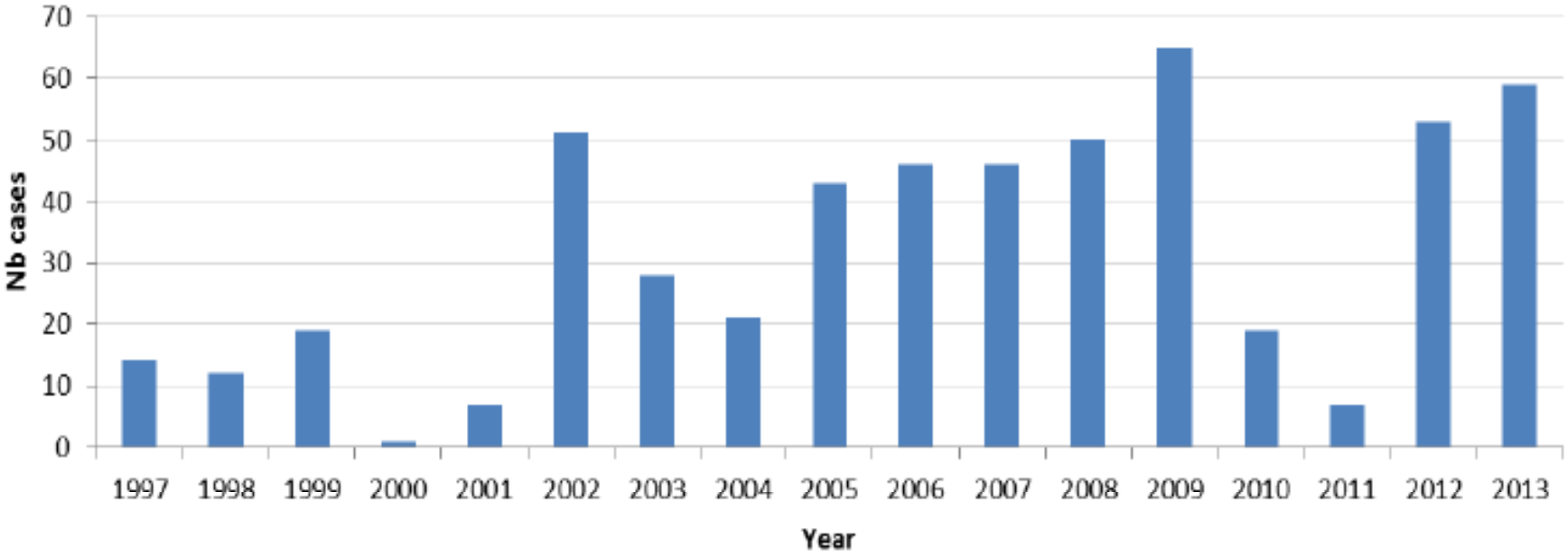
- Upper respiratory infection
- Complications: apnea (<1 y)
- Encephalopathy, hernias, death
- Misdiagnosed among adults

Worldwide

- Outbreak every 3-4 years (in pre-vaccine era)

- In high coverage area: incidence <15 y is <1/100000

Reported pertussis cases (count), Lebanon
1997- 2013



Surveillance (1)

Surveillance approach: Disease

Investigation:

Data collection: Signs, complications, vaccination status

Clinical specimen collection from case:

- Throat swab during catarrhal and early paroxysmal stages cultured on Bordet-Gengou or Regan-Lowe media
- PCR on the same biological samples
- Paired serology (serology cannot be used during the year following vaccine)

Surveillance (2)

Investigation:

Data collection about contacts: Children under 1 year among close contacts

Clinical specimen collection from contact: None

Test: Culture

Laboratories: RHUH (planned)

Alert: Relative increase >2

Outbreak level:

- Institutional outbreak = at least 3 cases epidemiologically linked with at least one confirmed case
- Community outbreak = if the number is higher than expected based on the historical data for a given population

Control (1)

Primary prevention:

- Vaccine
- Primary immunization of infants and young children
- Administer 1 dose of Tdap vaccine to pregnant women during each pregnancy (preferred during 27 to 36 weeks gestation)
- Persons aged 11 yrs or older should receive a dose of Tdap followed by Td booster doses every 10 yrs thereafter
- For unvaccinated adults administer Td-containing vaccines, including a Tdap dose. The first two vaccines at least 4 weeks apart and the third 6 to 12 months after the second.

Control (2)

Post-exposure prevention: Erythromycin, clarithromycin or azithromycin

Case management: Erythromycin or clarithromycin

Isolation: Cases should be excluded for five days after starting antibiotic treatment

Control (3)

Contact prevention: 7 days course of Erythromycin or clarithromycin or a 5 day course of azithromycin is recommended for households where there is a child under 1 year

Mass prevention:

- Childhood vaccination
- Adults should receive a booster with acellular pertussis

Control (4)

Quarantines:

Inadequately immunized household contacts under 7 years may be excluded from schools, day care centers and public gatherings for 21 days after last exposure or until the cases and contacts have received 5 days of appropriate antibiotics.

Case Definition

MOPH circular 109 (2006)

Confirmed case:

- A suspected case that is laboratory confirmed with :

  - Isolation of *Bordetella pertussis*

  - Or detection of genomic sequences by polymerase chain reaction (PCR)

- Or positive paired serology

Case Definition

MOPH circular 109 (2006)

Suspected case:

- A person with a cough lasting at least 2 weeks with at least one of the following symptoms:

  - Paroxysms (fits) of coughing
  - Inspiratory “whooping”
  - Post-tussive vomiting (vomiting immediately after coughing)

- **OR** a case diagnosed as pertussis by a physician

Acute Jaundice

Agent: Hepatitis A virus (HAV)

But also can be caused by:

-Fecal oral transmission: Hepatitis E virus HEV

-Blood or sexual transmission: Hepatitis B virus HBV

-Hepatitis C virus HCV, and Hepatitis D virus HDV.

Incubation period:

-HAV: 28-30 days (15-50 days)

-HEV: 3-8 weeks (40 days)

Communicability:

-HAV: during the second half of the incubation period and up to one week after jaundice onset

-HEV: unkown

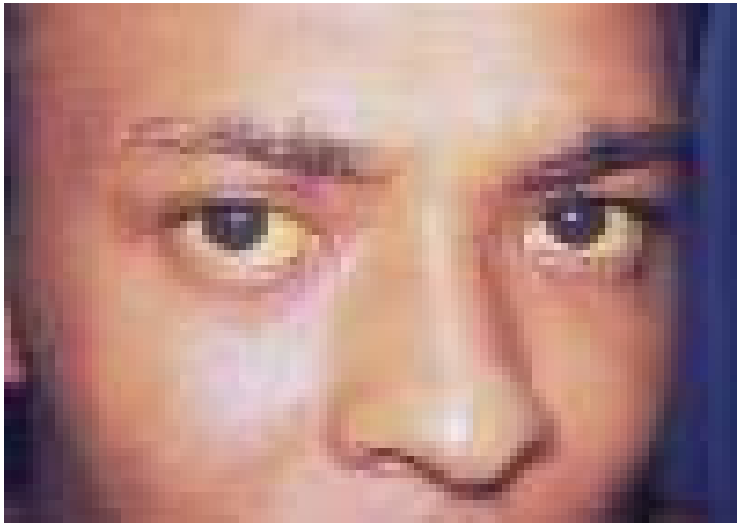
Reservoir: HAV: Humans, rarely chimpanzees and other primates

Modes of transmission: For HAV and HEV:

Person-to-person transmission: fecal oral route; Ingestion of contaminated food: by food handler or by harvested from contaminated water (shellfish or salad vegetables); Ingestion of contaminated water or drinks

HAV Clinical features

- Febrile jaundice
- Asymptomatic in childhood
- Case fatality: 0.1-0.3 % (1.8% for >50 years)

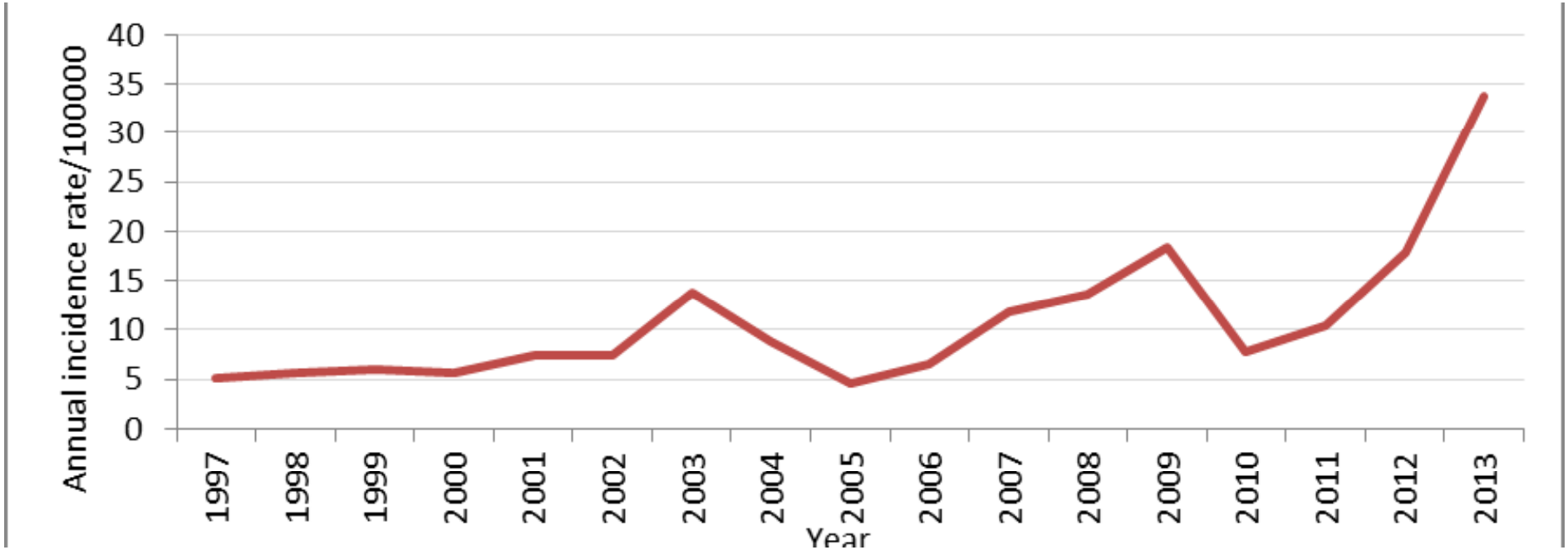


Treatment

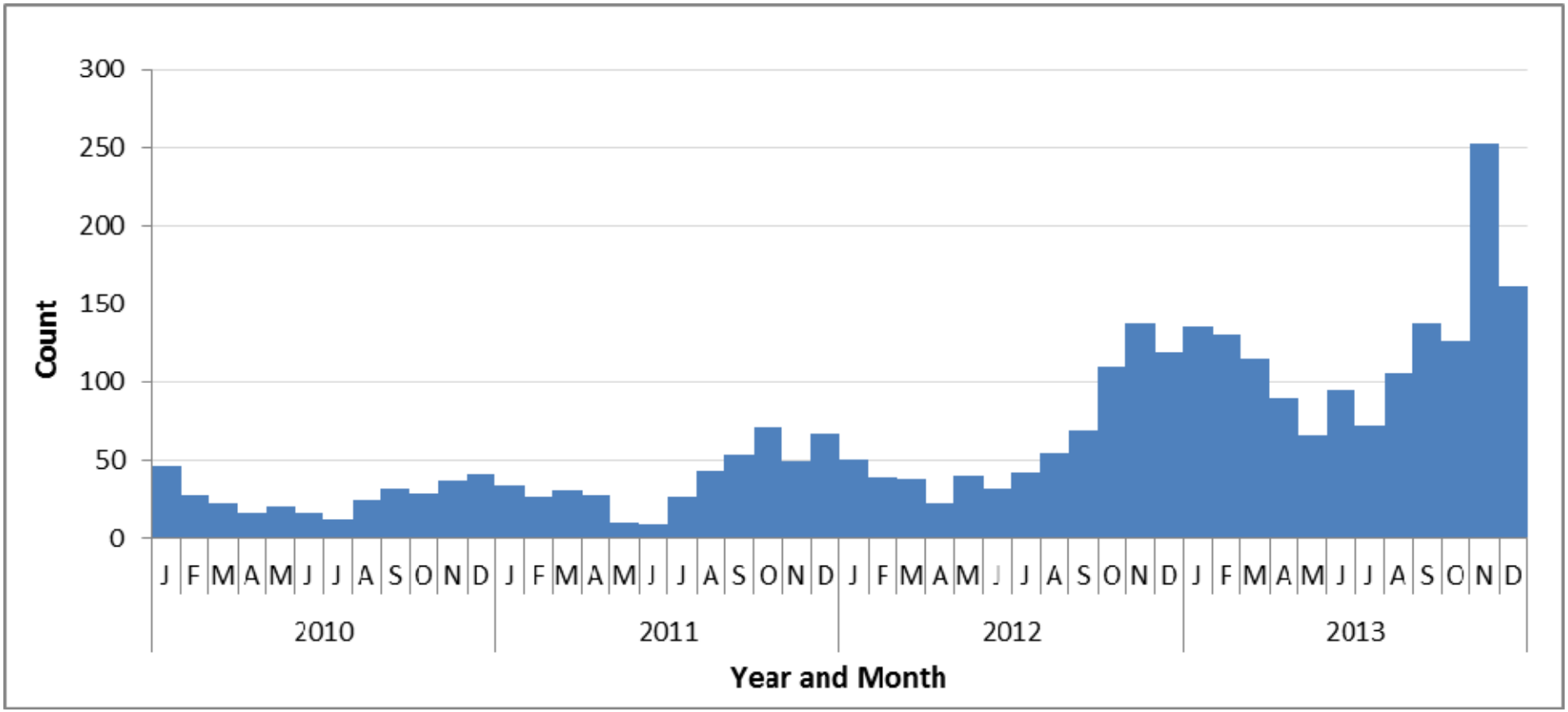
- There is currently no specific treatment for HAV infection
- Treatment is focused on relieving symptoms and preventing dehydration

Reported Annual Incidence of VHA

1997-2013



Monthly count of reported VHA in Lebanon, 2010-2013



Surveillance

Surveillance approach: Syndromic (Acute Jaundice)

Investigation:

Data collection: Clinical, occupation, drinking water consumption, food consumption, other cases among contact

Clinical specimen collection from case: Serum

Clinical specimen collection from contact: Water, food…

Test: VHA IgM serology

Laboratories: VHA: Clinical laboratories ; VHE: national reference laboratories

Alert level:

- If relative increase of cases reached 2 or more for the current week compared to the average of the 3 previous weeks
- If the proportion or ratio reached 2 SD from the average proportion/ratio observed in the previous 3 years, in stable population

Outbreak level:

- VHA: Occurrence of unexpected increase of cases of in specified time, place and person
- VHE 1 case of confirmed is an outbreak

Control

Primary prevention: Personal hygiene, water safety, food safety, and sanitation. Hepatitis

Case management: Symptomatic treatment

Isolation: Enteric precautions

Outbreak response: Control the sources and risk factors

The vaccine is recently introduced in the Lebanese immunization calendar

HAV Case Definition

MOPH circular 47 (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 A (negative IgM anti-HAV) and viral hepatitis B (negative IgM anti-HBc or HbsAg antigens) and viral hepatitis C (negative anti-HCV antibodies).

HAV Case Definition

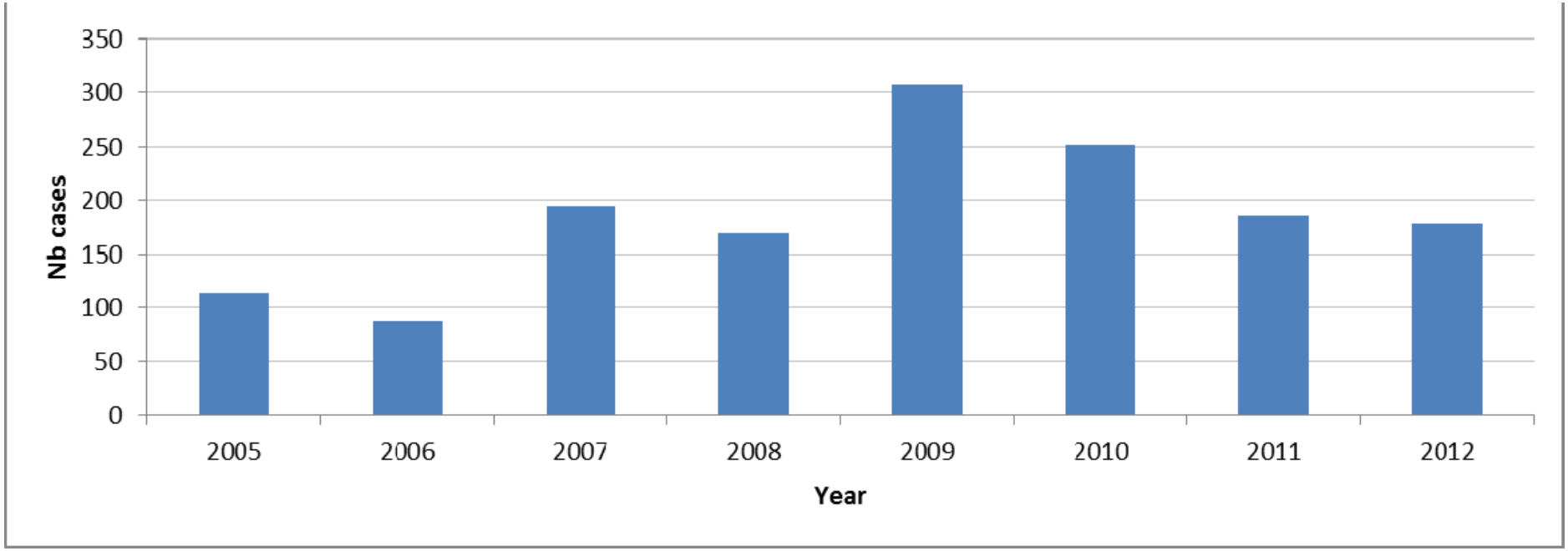
MOPH circular 47 (2007)

Suspected case/clinical 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.

Watery and Bloody Diarrhea

Reported Amibiasis (count), Lebanon
2005-2012



Agents

Etiological agents can be viral, bacterial, and parasitic:

Viral gastroenteritis: Rotavirus, Norovirus, Adenovirus, and Astrovirus …

Bacterial gastroenteritis: Cholera, Campylobacter sp., Escherichia coli, Salmonella, Shigella, Clostridium, Staphylococus aureus, Bacillus cereus…

Parasitic gastroenteritis: Giardia lambia,Cryptosporidim sp. …

Three clinical presentations

1) Acute watery diarrhea

2) Acute bloody diarrhea or dysentery

3) Persistent diarrhea lasting 14 days or longer

Agent	Incubation period
Virus	
Adenovirus	1-10 days
Human rotavirus	1-3 days
Norovirus	12-48 hours
Bacteria	
Cholera	1-3 days
Campylobacter	2-5 days
E .coli	1-8 days
Salmonella	6-48 hours
Shigella	1-3 days
Staphylococcus aureus	2-6 hours
Parasite	
Giardia lamblia	7-14 days
Entamoeba histolytica	2-4 weeks

Incubation period cont.

- <2hrs: chemical agent
- 2-7 hrs: preformed toxin (*Staph aureus*, *Bacillus cereus*)
- 8-14 hrs: C. perfringens, high dose bacterial pathogens
- >14 hrs: Most bacterial or viral pathogens

Period of Communicability

- As long as the agent is excreted, in particular during the active disease
- For Salmonella, the excretion can last for several weeks

Agent	Reservoir
Virus	
Adenovirus	Humans
Human rotavirus	Humans
Norovirus (Norwalk-like virus)	Humans
Bacteria	
Cholera	Humans, aquatic environments
Campylobacter	Domestic animals (cats, dogs), livestock (pigs, cattle, sheep), birds (poultry), polluted water
E .coli	Mainly humans, cattle (for some E coli)
Salmonella	Domestic and wild animals. Also humans, i.e. patients and convalescent carriers.
Shigella	Humans
Staphylococcus aureus	Humans (skin, nose, throat). S. aureus is carried by about 25–40 % of the healthy population.

Agent	Reservoir
Parasite	
Giardia lamblia	Humans (principal reservoir), dogs, cats, beavers, and other animals
Entamoeba histolytica	Mainly humans, but also dogs and rats. The organism is also found in sewage used for irrigation.

Modes of transmission

- Person-to-person transmission: fecal oral route
- Ingestion of contaminated food: by food handler or harvested from contaminated water (seafood and vegetables)
- Ingestion of contaminated water or drinks

Infectious dose

• Shigella	10-100
• Giardia and C parvum	30-100
• ST-producing E coli	10-100
• Norwalk virus	100
• Salmonella	1000-100000
• Campylobacter	1000=100000
• Vibrio chlolerae	1000000
• Enterotoxigenic E coli	100000000

Agent	Clinical
Virus	
Adenovirus	Fever, vomiting, watery non-inflammatory diarrhoea
Human rotavirus	Fever, vomiting, watery non-inflammatory diarrhoea
Norovirus (Norwalk-like virus)	Watery diarrhea, vomiting, nausea
Bacteria	
Cholera	Profuse watery diarrhoea, which can lead to severe dehydration, collapse and death within a few hours
Campylobacter	Fever, severe abdominal pain, nausea and diarrhoea which can vary from slight to profuse and watery, sometimes containing blood or mucus

Agent	Clinical
Bacteria	
E .coli	Fever, abdominal pain, vomiting, diarrhea (watery or bloody)
Salmonella	Fever, headache, nausea, vomiting, abdominal pain and diarrhoea
Shigella	Fever, abdominal pain, vomiting, diarrhea (watery or bloody)
Staphylococcus aureus	Severe nausea, cramps, vomiting and sometimes diarrhea
Parasite	
Giardia lamblia	The majority of infections are asymptomatic. Symptoms are low grade fever, nausea, chills, epigastric pain and sudden onset of watery diarrhea. Chronic infections can occur and diarrhea leads to dehydration, malabsorption, weight lost and impaired pancreatic function.
Entamoeba histolytica	Fever, severe bloody diarrhoea, stomach pains, and vomiting. Most infections remain symptomless.

Different types of E coli

	Pathogen	Characteristics	Main Reservoir	Treatment
Enterohemorrhagic	STEC	HUS	Cattle	supportive
Enterotoxigenic	Heat labile and heat stable enterotoxin	Children and travelers	Humans	supportive
Enteroinvasive	Shigella like	Developing countries	Humans	Antibiotics for severe cases
Enteropathogenic		Nursery outbreak		
Enteroaggregative		Pediatric		
Diffuse-adherence		Pediatric		

Surveillance (1)

Surveillance approach: Syndromic: acute diarrhea

Surveillance (2)

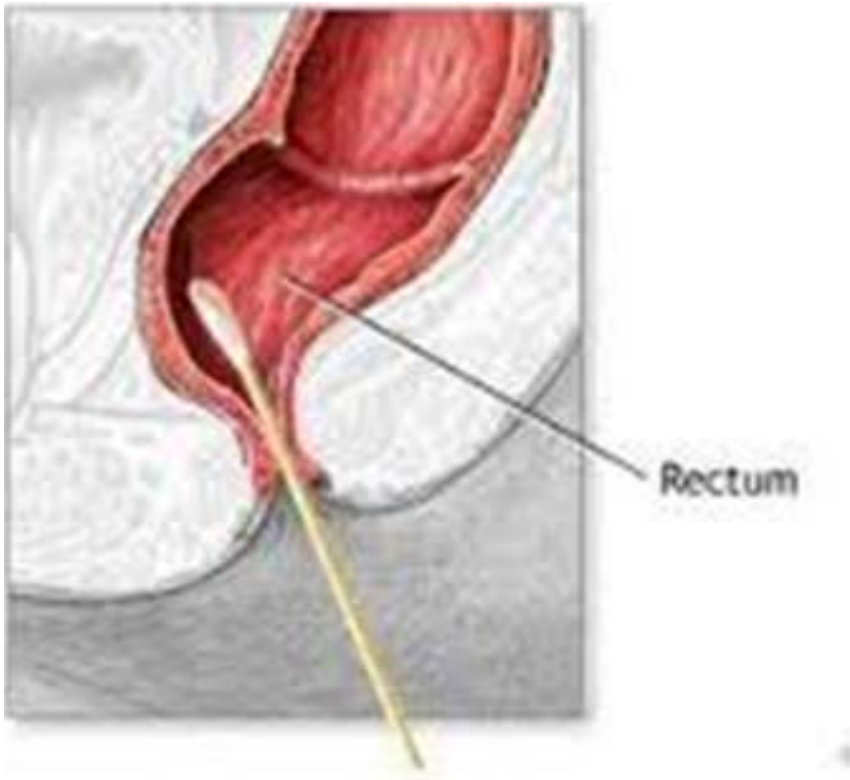
Investigation:

Data collection about case: Clinical presentation, drinking water consumption, food consumption, other cases among contacts, occupation

Clinical specimen collections from case: Stool in clean container or Cary Blair swab

Data collection about case: Search of other cases among contacts

Cary Blair swab



Surveillance (3)

Investigation:

Other specimens

- Stool from cases among contact
- Water samples
- Food samples

Tests

For clinical specimens:

- Stool direct exam (Entamoeba),
- Stool bacteriological culture (bacteria)
- Antigen detection in stool (Rotavirus)
- Virus detection in stool as PCR (Norovirus, Adenovirus…)

Laboratories

Bacteriological culture: clinical laboratories

Bacterial typing: national reference laboratories (PulseNet)

Virus detection: reference laboratories

Water testing: laboratories of the Ministry of Agriculture, of the Ministry of Industry, some public hospitals, laboratories of the Chambers of Commerce

Food testing: laboratories of the Ministry of Agriculture

Alert level

- If occurrence of dehydration or death for a case aged 5 years or above: suspicion of cholera
- If relative increase of cases reached 2 or more for the current week compared to the average of the 3 previous weeks
- If the proportion or ratio reached 2SD from the average proportion/ratio observed in the previous 3 years, in stable population

Outbreak level

- 1 case of confirmed cholera: outbreak
- Occurrence of unexpected increase of cases in specified time, place and person with specific clinical criteria
- Occurrence of unexpected increase of cases in specified time, place and person with specific identified infectious agent

Control

Prevention:

- Personal hygiene and hand washing
- Ensure safe drinking water
- Ensure safe food
- For specific agents: vaccination (Cholera, Rotavirus)

Isolation: Enteric precautions

Outbreak response: Control of the source of infection and risk factors

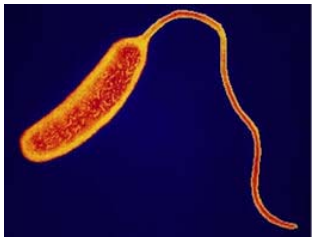
Case management

- Ensure adequate rehydration
- Ensure antibiotics if bacterial agents
- Ensure anti-parasitic treatment if parasite agents

Indications for Empiric Antimicrobial Therapy

- Febrile and dysenteric illness
- Shigellosis: fluoroquinolone for 3 days
- Campylobacteriosis: erythromycin or azithromycin for 3 days
- Typhoid: FQ 7-10 days
- Non typhoid salmonellosis: no treatment unless complicated(<3months, >65 yrs, immunosuppressed, prosthesis). Treatment with ceftriaxone or fluoroquinolone for a week.

Cholera



- Agent: Bacteria: Vibrio cholera, serogroup O1 (biotype classical or El Tor, subtype Ogawa or Inaba), or serogroup O139. Enterotoxin producer.
- Incubation period: 1-3 days (can be few hours).
- Communicability: As long as the bacteria is excreted in feces, up to few days after recovery.
- Reservoir: Humans, brackish waters and estuaries
- Modes of transmission: -Consumption of contaminated water and food: by water, by human feces, by soiled hands, raw or undercooked seafood; Person-to-person transmission: fecal-oral route

Clinical Features

Acute abundant watery diarrhea (rice-water)

Asymptomatic infection is common

Complication: dehydration and death

Case fatality can reach 5% if untreated, and is <1% if treated

Treatment (1)

- Cholera is an easily treatable disease
- Up to 80% of people can be treated successfully through prompt administration of oral rehydration salts (WHO/UNICEF ORS standard sachet)

Treatment (2)

- Very severely dehydrated patients require administration of intravenous fluids and appropriate antibiotics
- Mass administration of antibiotics is not recommended, as it has no effect on the spread of cholera and contributes to increasing antimicrobial resistance

Case definitions

Case definitions: watery diarrhea

- >=3 loose and/or bloody and/or mucous stools in the past 24 hours with/without dehydration

Bloody/mucous diarrhea

MOPH Circular 51 (2007

- A case presenting with acute diarrhea with bloody or mucoid diarrhea

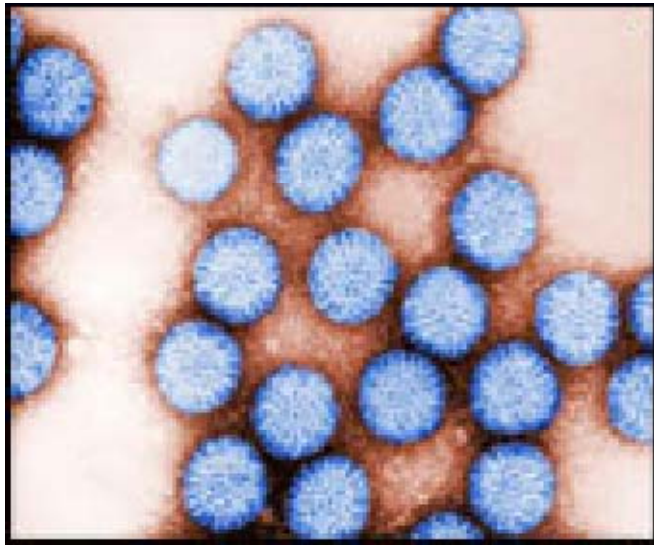
Cholera: suspected case

MOPH circular 112 (2006)

- **In area where the disease is not known to be present**: severe dehydration or death from acute watery diarrhea in a patient aged 5 years or more
- **In area where cholera is endemic**: acute watery diarrhea, with or without vomiting in a patient aged 5 years or more
- **In an area where there is a cholera epidemic**: acute watery diarrhea, with or without vomiting in any patient

Adenovirus: confirmed case

- A case presenting watery diarrhea with laboratory identification of the virus using antigen detection, or polymerase chain reaction PCR assay, or virus isolation.



Amebic dysentery: confirmed case

MOPH Circular 51 (2007)

- A case presenting acute diarrhoea with bloody or mucoid diarrhoea with laboratory confirmation through microscopic demonstration of trophozoites or cysts of *Entamoeba histolytica* in fresh or suitable preserved faecal specimens or other clinical specimens.

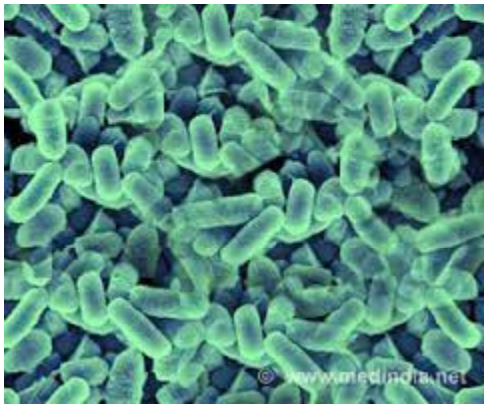
Campylobacter: confirmed case

- A case presenting acute diarrhoea watery or bloody with bacterium isolation in a stool specimen.

Cholera: confirmed case

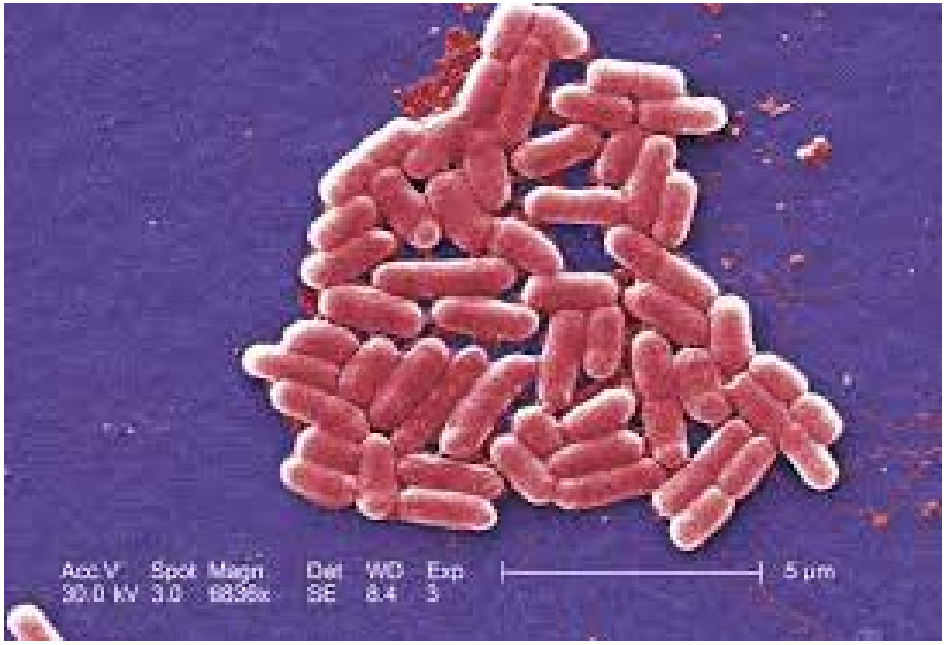
MOPH circular 112 (2006)

- Isolation of *Vibrio cholerae* O1 or O139 from stools in any patient with diarrhoea.



E coli, confirmed cases

- Watery or bloody diarrhea with laboratory confirmation through bacterium isolation from stool specimen.



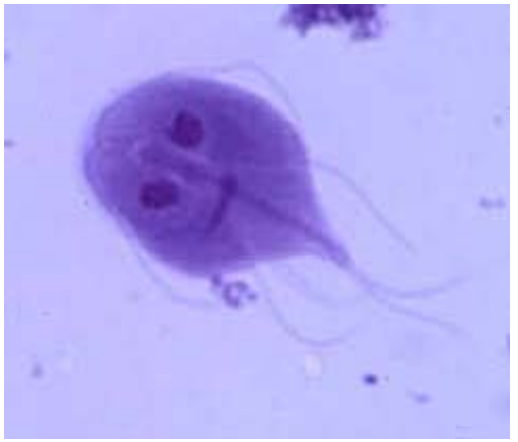
Giardia lamblia: confirmed case

- Watery diarrhea with laboratory confirmation using

  - Demonstration of G. lamblia cysts in stool

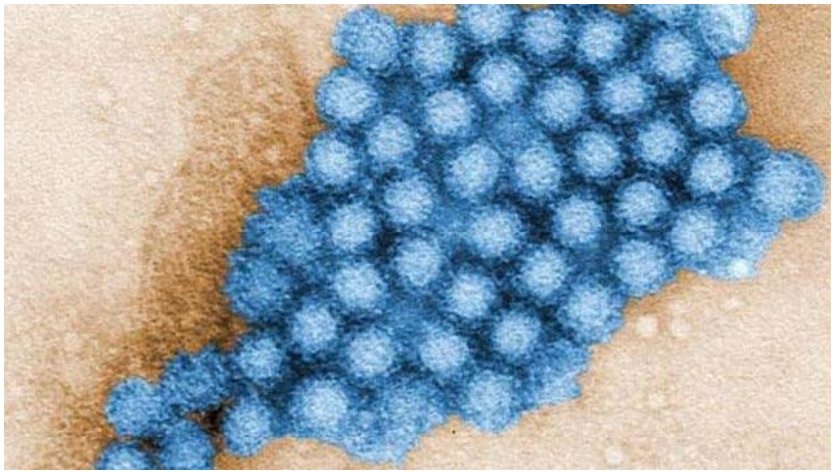
  - Demonstration of G. lamblia trophozoites in stool, duodenal fluid, or small-bowel biopsy, or

  - Demonstration of G. lamblia antigen in stool by a specific immunodiagnostic test (e.g., enzyme-linked immunosorbent assay).



Norovirus: confirmed case

- Watery diarrhea with laboratory confirmation through virus detection by reverse transcription-polymerase chain reaction (RT-PCR) method using stool (or vomitus specimen).

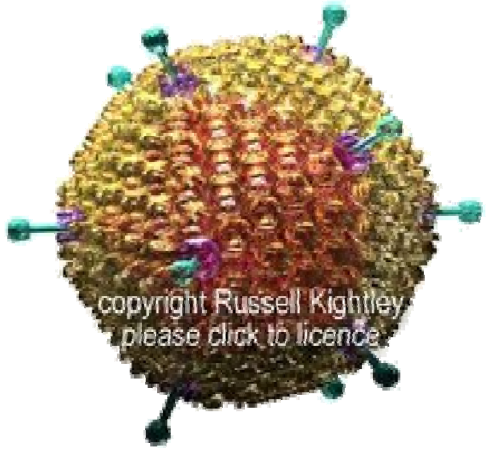


Rotavirus: confirmed case

- A case presenting watery diarrhea with laboratory confirmation through:

  - Detection of rotavirus antigen in stool with an enzyme immunoassay (EIA)

  - Reverse transcriptase polymerase chain reaction (RT-PCR) methods



Salmonellosis: confirmed case

- A case presenting acute diarrhoea with laboratory confirmation through isolation of *Salmonella sp* from stools

Shigellosis: confirmed case

MOPH Circular 51 (2007)

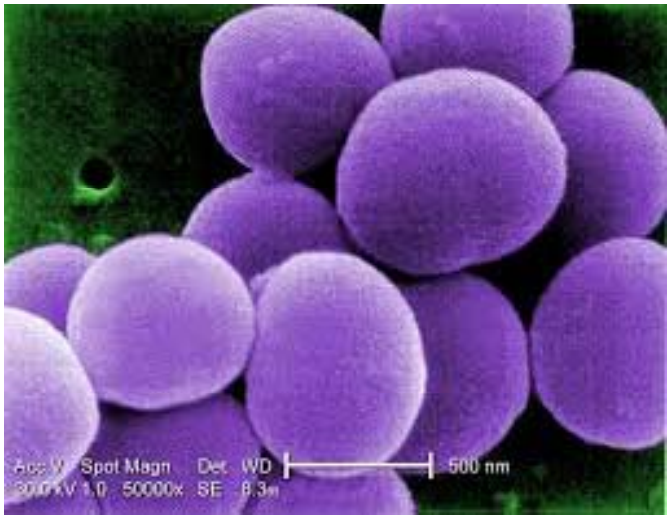
- A case presenting acute diarrhoea with visible blood in stools, with:

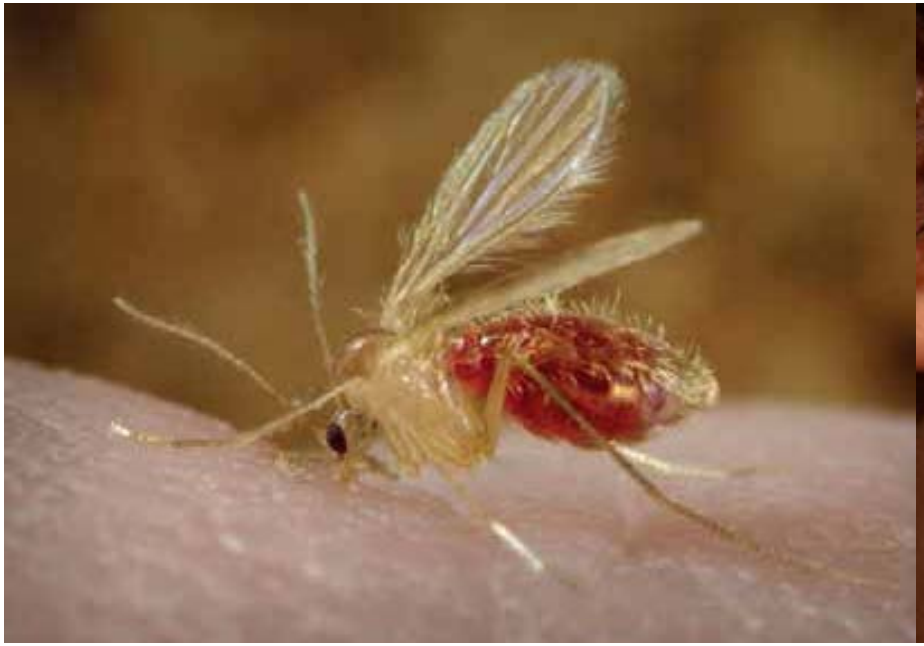
  - Laboratory confirmation through isolation of *Shigella sp* from stools

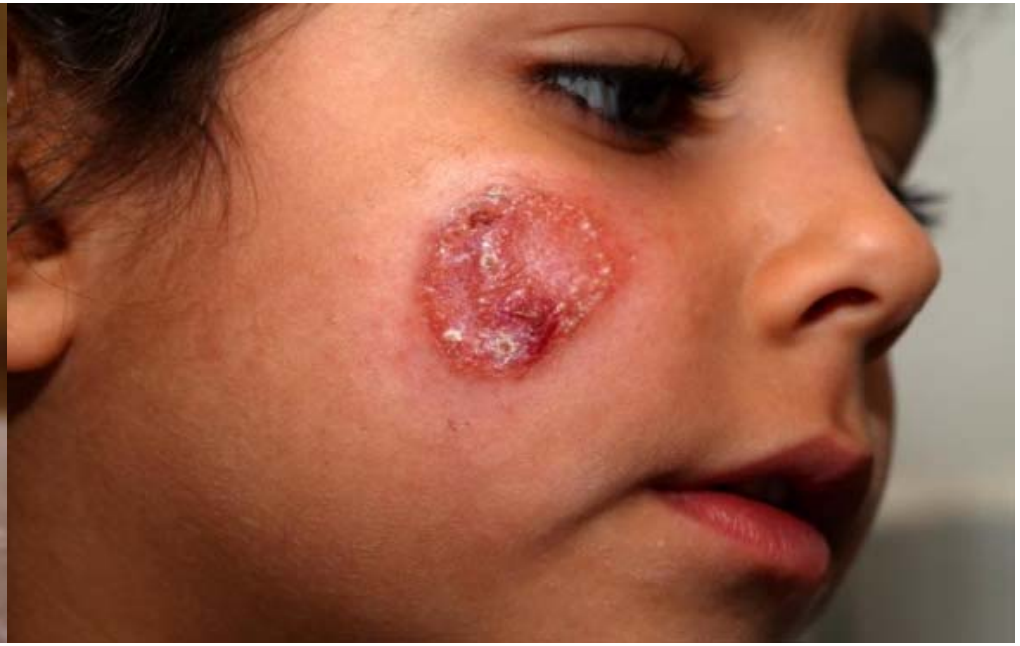
  - Or, during epidemic situation, presence of an epidemiological link to a laboratory confirmed case.

Staphylococcus aureus: confirmed case

- A case presenting diarrhea with a laboratory confirmation through toxin-producing *Staphylococcus aureus* detection in stool (or vomit specimens).







LEISHMANIA

Agent: Protozoa: Leishmania

Cutaneous form: 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:

Cutaneous form: 1 week to several months

Visceral form: 2-6 months

Reservoir

Cutaneous form: Humans, wild rodents, hyraxes, edentates, marsupials, domestic dogs

Visceral form: Humans, wild canidae, domestic dogs

Worldwide

- **Worldwide Cutaneous form:** Asia, Middle East, sub-saharan Africa, Central and South America
- **Visceral form:** Asia, Middle East, Central/South America, Africa

Transmission and symptoms

Transmission: Bite of infective female phelbotomines (sandflies)

Symptoms

-**Clinical Cutaneous form:** Intracellular parasite in humans causing single or multiple macule skin lesions then papule that enlarge and become indolent ulcer. 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.

Complications: death if untreated.

Case definitions (1)

Cutaneous Leishmania:

Suspected case (*MOPH circular 34 (2013)*

- 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 common 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

Case definitions (2)

Confirmed cases:

- A suspected case with laboratory confirmation: With parasitological confirmation: positive stained or positive culture from lesion of Leishmania

  And/or, for mucosal leishmaniasis only, serological confirmation: immunofluorescent assay, ELISA

- A person showing clinical signs: prolonged irregular fever, splenomegaly and weight loss, with laboratory confirmation:

  - Parasitological confirmation: stained smears from bone marrow, spleen, liver, lymph node, blood or culture of *Leishmania from a biopsy or* aspirated material

  - Or serological confirmation: immunofluorescent assay, ELISA, Direct Agglutination Test.

Surveillance

Investigation:

1- data collection:

Nationality, travel history, date of onset, cases among contacts

2- Clinical specimen collection from the case

Cutaneous form: Skin punch biopsy

Visceral form: bone marrow, spleen, liver, lymph node, blood

Test: Dermato-anatomapathology

Serological tests …

Control

Prevention:

- Reduce exposition of skin to sand flies (cover skin)
- Apply insect repellent
- Use insecticides

Case management: Specific treatment protocols in designated MOPH public hospitals (Glucantime IL or IM) Annex 5

Isolation: Cover the cutaneous lesions

Outbreak response: Vector control

ملحق رقم (5)

Leishmania Treatment protocol[1]

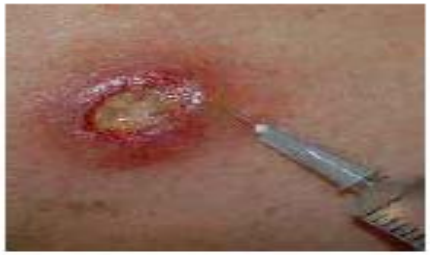
1- Topical treatment:

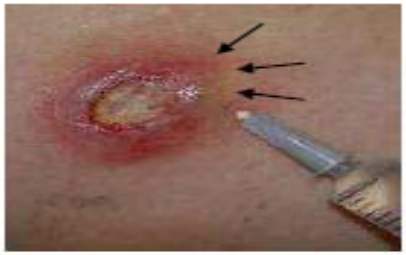
Intralesional (IL) injections are done ONCE a week, preferably with local anesthesia mixed to antimonials:

1. when the lesions are small (<4-5cm),
2. the number of lesions is not more than five (due to practical difficulties) and
3. if there is no complications such as sporotrichoid
4. lesions are not close to a vital organ or in the joint
5. no immunosuppression
6. no potentially disfiguring or disabling lesions (eye, joints, toes, fingers…)
7. and possibility for follow-up

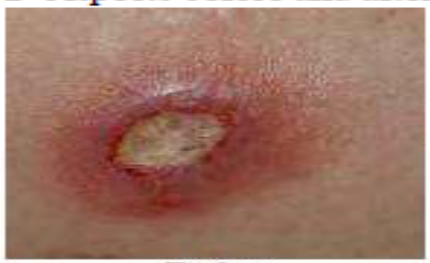
Injection is done around the lesion with an insulin needle (see below) with usually a dose of 0.5-5ml

1- Inject the Antimony into the lesion and induce blanching of the borders (arrows), until the lesion is entirely swollen.

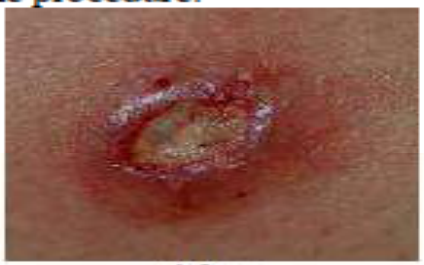




2- Aspects before and after the procedure:



Before



After

Repeat the procedure once a week, until complete healing of lesions. Generally 3–6 sessions are sufficient to cure most lesions.

In addition to use intralesional (IL) injections of Glucantime, and if available, freeze the lesion(s) with N2, the combination facilitates the healing process and minimizes pain during IL injection. The freezing is done every other week and prior to IL injection.

2- Systemic treatment:

Systemic treatment is used for:

1. Numerous lesions (more than 5)
2. Large lesions, more than 5 cm
3. Disfiguring lesions, mucocutaneous lesions or close to a vital organ
4. Lesions in face
5. Or evidence of visceral Leishmaniasis.

In these cases, speciation might be needed and systemic therapy with either Glucantime or Lipid formulation Amphotericin B is recommended under the supervision of an ID physician who should follow side effects of the drug.

GLUCANTIME inj. recommended dose is 20mg/Kg/day, usually IM.

Follow-up:

- Every 2 weeks, CBC, SGOT, SGPT, Cr, and ECG
- Strict hygiene rules should be advised to the patients and local care of the lesion with antiseptics should be applied between visits.

Topical antibiotics can be helpful in avoiding bacterial superinfection.

- **Pregnancy/Reproduction: No Studies on Glucantime in pregnancy neither in humans nor in animals are available.**

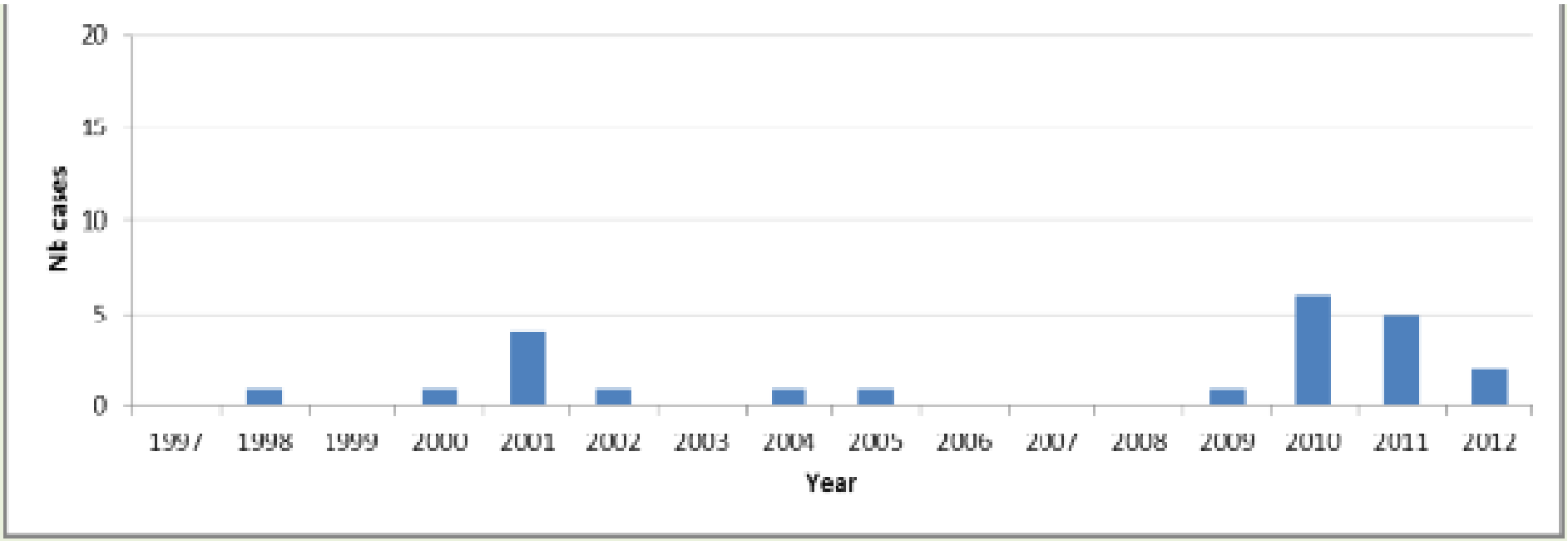
- **Immunosuppression including HIV: Patient should be referred to ID Clinic.**

(1) References:

- Lebanese Society of Infectious Diseases
- Leishmania Protocol in Syria
- Expert opinion from EMRO
- Manual for Case Management of Cutaneous Leishmaniasis in the WHO Eastern Mediterranean Region, Draft 14-26 July 2012, WHO

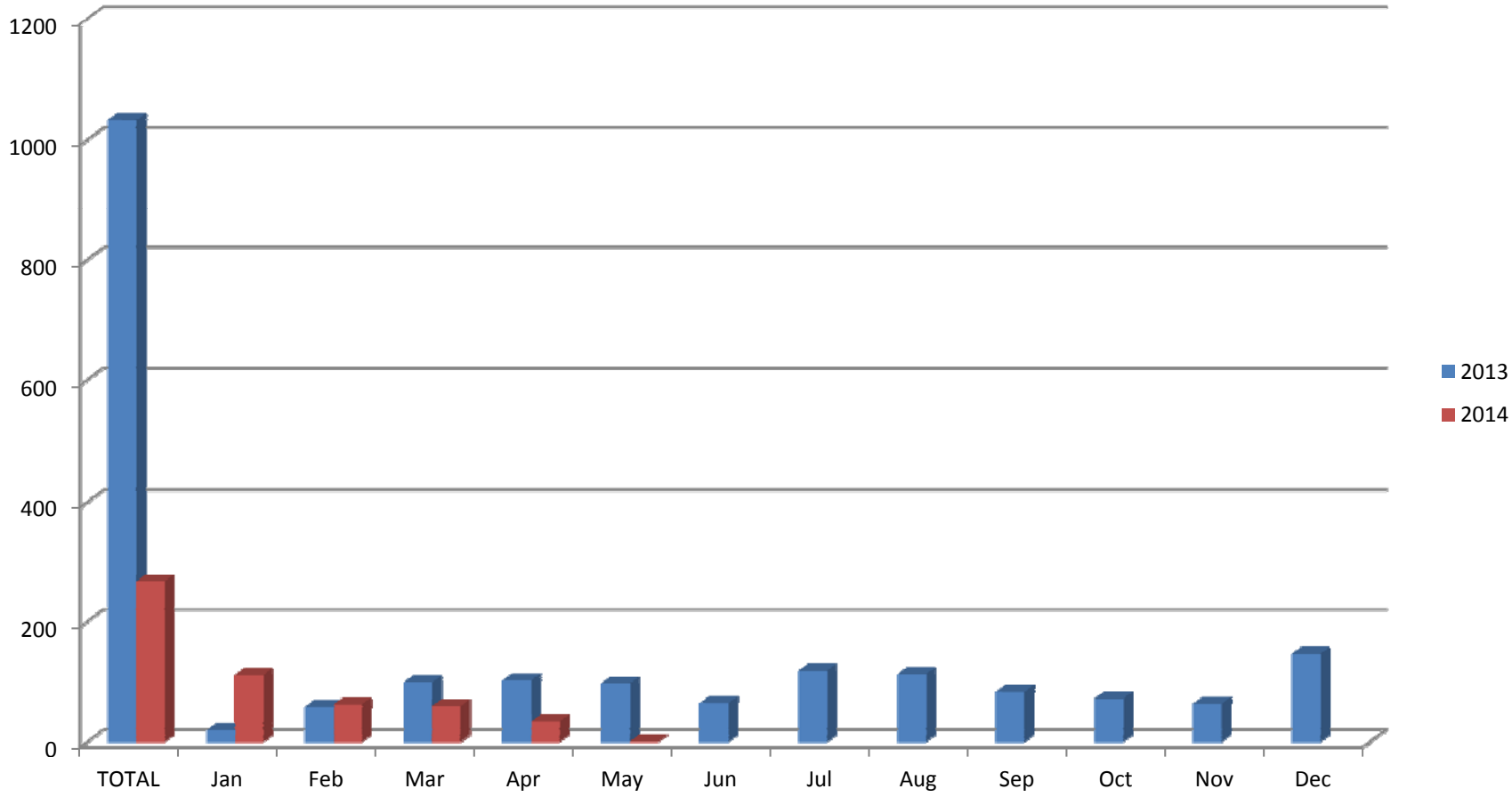
Reported Leishmaniasis cases (count), Lebanon

1997-2012

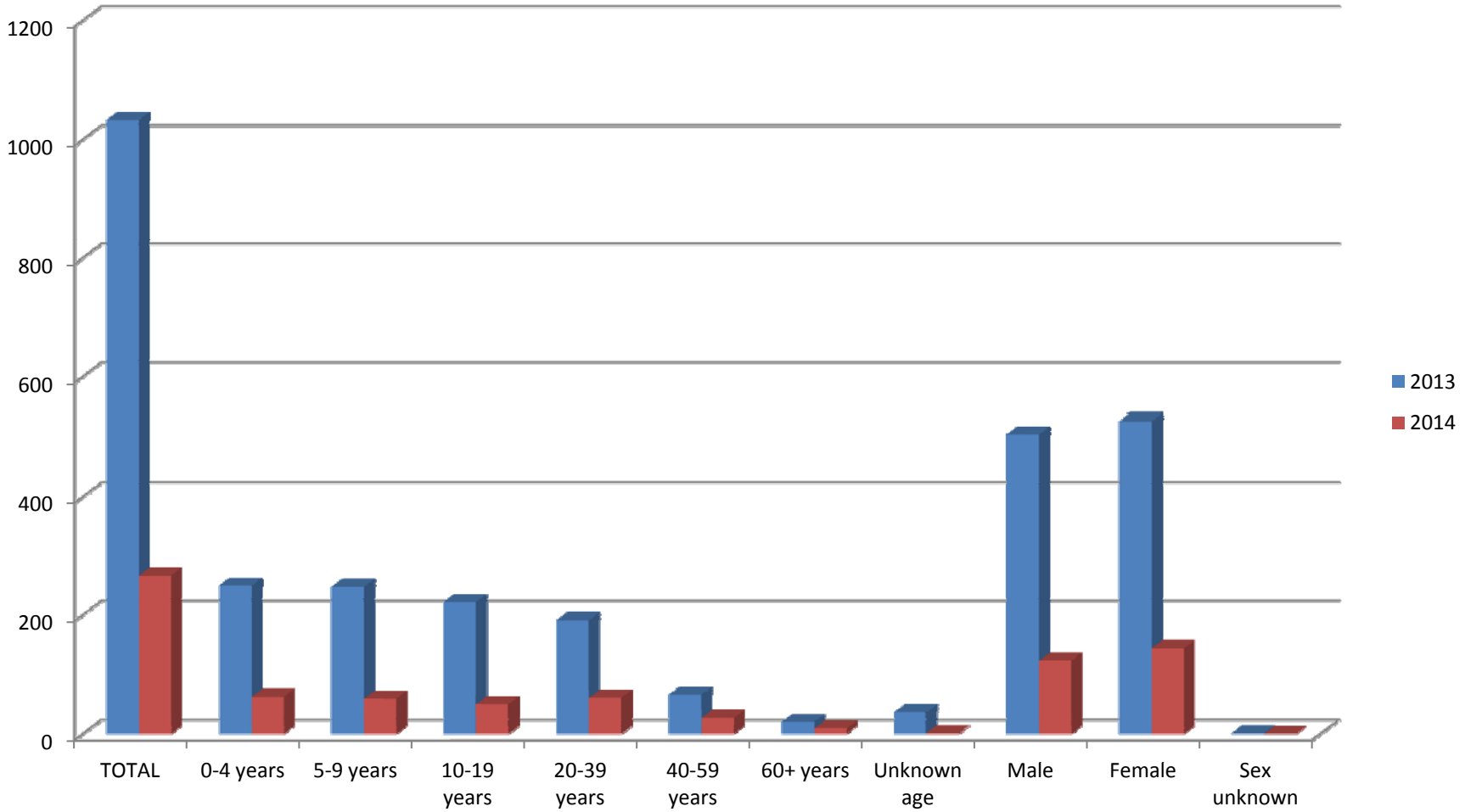


In 2013, the reported cases of Leishmaniasis increased to 1033. Almost all of them were Syrian refugees.

Reported Leishmaniasis cases per month, Lebanon, 2013-2014

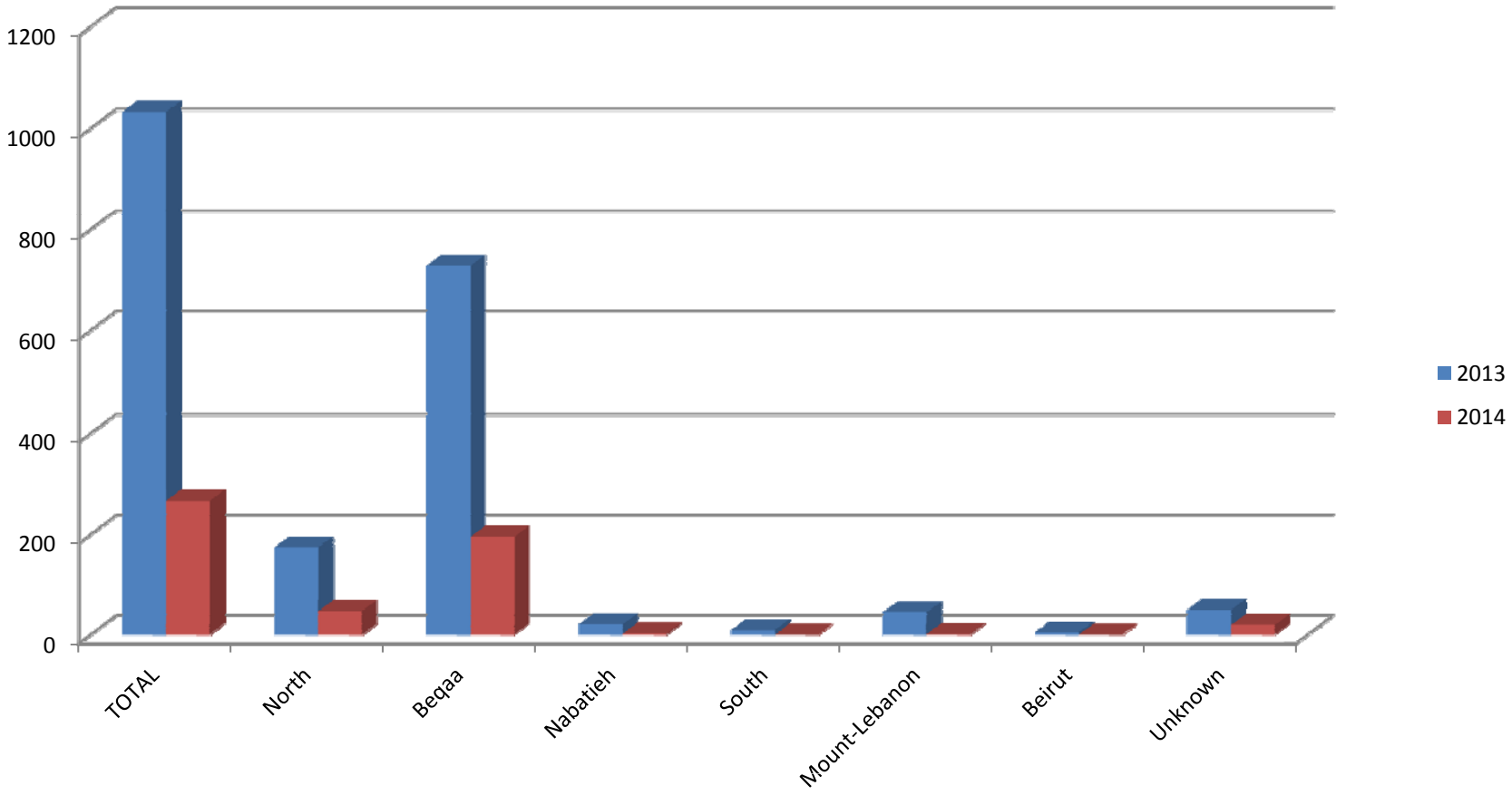


Leishmania Distribution per age and sex, Lebanon, 2013-2014



Leishmania Distribution per region, Lebanon

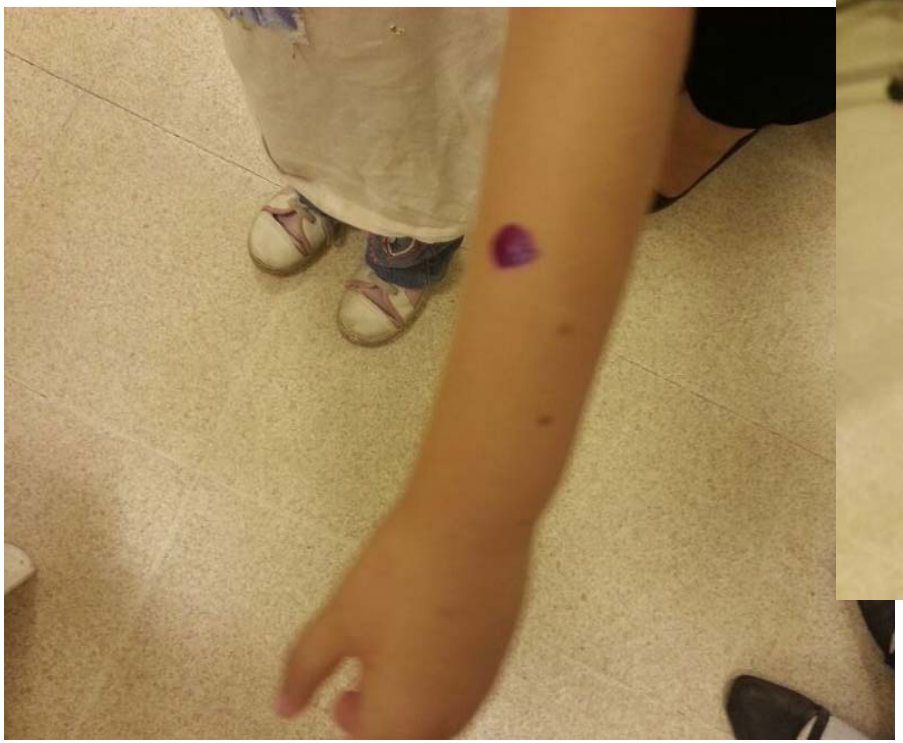
2013-2014

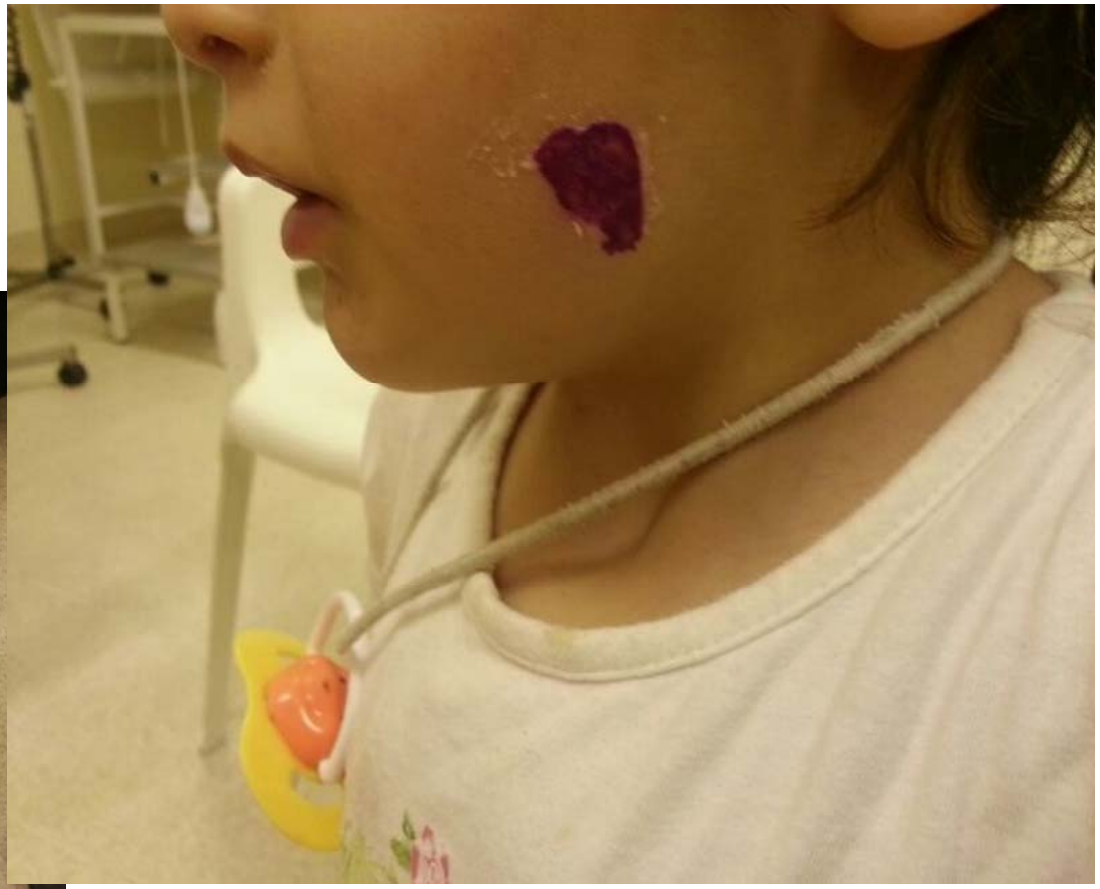


Cumulative treated patients V/S Distributed Glucantime, Lebanon

(2013- as per June 2014)

Leishmania clinics all over Lebanon	Number of treated patients	Distributed Glucantime ampoules (5ml)
Total	1393	5091






EBOLA Outbreak 2014

History

- Ebola first appeared in 1976 in 2 simultaneous outbreaks, in Nzara, Sudan, and in Yambuku, Democratic Republic of Congo. The latter was in a village situated near the Ebola River, from which the disease takes its name.

Chronology of previous Ebola virus disease outbreaks (1)

Year	Country	Ebolavirus species	Cases	Deaths	Case fatality
2012	**Democratic Republic of Congo**	Bundibugyo	57	29	**51%**
2012	**Uganda**	Sudan	7	4	**57%**
2012	**Uganda**	Sudan	24	17	**71%**
2011	**Uganda**	Sudan	1	1	**100%**
2008	**Democratic Republic of Congo**	Zaire	32	14	**44%**
2007	**Uganda**	Bundibugyo	149	37	**25%**
2007	**Democratic Republic of Congo**	Zaire	264	187	**71%**
2005	**Congo**	Zaire	12	10	**83%**
2004	**Sudan**	Sudan	17	7	**41%**
2003 (Nov-Dec)	**Congo**	Zaire	35	29	**83%**
2003 (Jan-Apr)	**Congo**	Zaire	143	128	**90%**

Chronology of previous Ebola virus disease outbreaks (2)

Year	Country	Ebolavirus species	Cases	Deaths	Case fatality
2001-2002	**Congo**	Zaire	59	44	**75%**
2001-2002	**Gabon**	Zaire	65	53	**82%**
2000	**Uganda**	Sudan	425	224	**53%**
1996	**South Africa (ex-Gabon)**	Zaire	1	1	**100%**
1996 (Jul-Dec)	**Gabon**	Zaire	60	45	**75%**
1996 (Jan-Apr)	**Gabon**	Zaire	31	21	**68%**
1995	**Democratic Republic of Congo**	Zaire	315	254	**81%**
1994	**Cote d'Ivoire**	Taï Forest	1	0	**0%**
1994	**Gabon**	Zaire	52	31	**60%**
1979	**Sudan**	Sudan	34	22	**65%**
1977	**Democratic Republic of Congo**	Zaire	1	1	**100%**
1976	**Sudan**	Sudan	284	151	**53%**
1976	**Democratic Republic of Congo**	Zaire	318	280	**88%**

Current outbreak: Total Reported Cases

(As per Aug 19, 2014)

Suspected and Confirmed Case Count: **2240**

Suspected Case Deaths: **1229**

Laboratory Confirmed Cases: **1383**

Fatality rate: 54.8%

Reported Cases by Country (As per Aug 19, 2014)

Guinea

- Suspected and Confirmed Cases: **543**
- Suspected Case Deaths: **394**
- Laboratory Confirmed Cases: **396**

Liberia

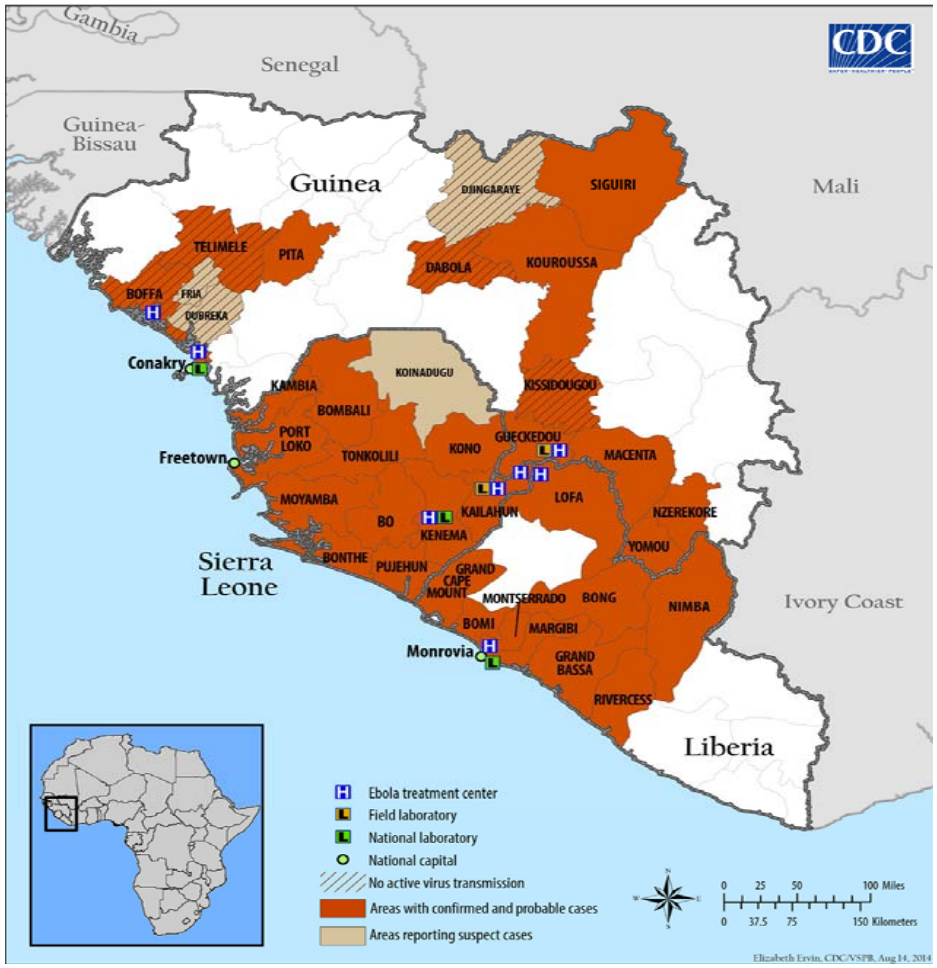
- Suspected and Confirmed Cases: **834**
- Suspected Case Deaths: **466**
- Laboratory Confirmed Cases: **200**

Nigeria

- Suspected and Confirmed Cases: **15**
- Suspected and Confirmed Case Deaths: **4**
- Laboratory Confirmed Cases: **12**

Sierra Leone

- Suspected and Confirmed Cases: **848**
- Suspected and Confirmed Case Deaths: **365**
- Laboratory Confirmed Cases: **775**

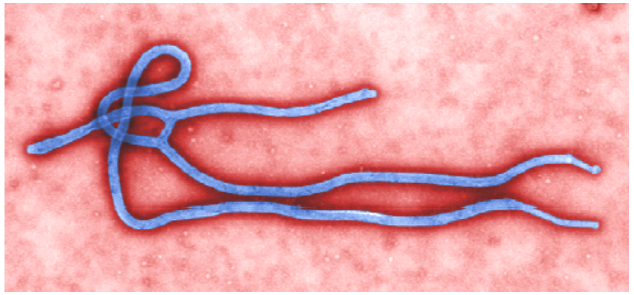



Gambia
Senegal
Guinea-Bissau
Guinea
Mali
Ivory Coast
Liberia
Sierra Leone
CDC
SAFER·HEALTHIER·PEOPLE
DJINGARAYE
SIGUIRI
TELIMELE
PITA
DABOLA
KOUROUSSA
BOFFA
FRIA
DUBREKA
Conakry
KOINADUGU
KISSIDOUGOU
KAMBIA
BOMBALI
PORT LOKO
Freetown
TONKOLILI
KONO
GUECKEDOU
MACENTA
MOYAMBA
KAILAHUN
LOFA
BO
KENEMA
NZEREKORE
YOMOU
BONTHE
PUJEHUN
GRAND CAPE MOUNT
MONTSERRADO
BONG
NIMBA
BOMI
MARGIBI
Monrovia
GRAND BASSA
RIVERCESS
Ebola treatment center
Field laboratory
National laboratory
National capital
No active virus transmission
Areas with confirmed and probable cases
Areas reporting suspect cases
N
W
E
S
0 25 50 100 Miles
0 37.5 75 150 Kilometers
Elizabeth Ervin, CDC/VSPB, Aug 14, 2014


0 200 400 Miles
0 200 400 600 Kms
Azores (Portugal)
ATLANTIC
OCEAN
Madeira (Portugal)
Canary Is. (Spain)
FRANCE
Pyrenees
ANDORRA
PORTUGAL
SPAIN
Balearic Is. (Spain)
MONACO
Corsica (France)
Sardinia (Italy)
ITALY
SLOV.
CROATIA
BOSNIA HERZ.
YUGO-SLAVIA
ROMANIA
BULG.
SAN MARINO
ALBANIA
R.Y.R. MAC.
GREECE
Athens
Sicily
MALTA
Mediterranean Sea
Djerba
TUNISIA
Gulf of Sirte
MOROCCO
WESTERN SAHARA
ALGERIA
LIBYA
MAURITANIA
MALI
NIGER
CHAD
SENEGAL
GAMBIA
GUINEA BISSAU
GUINEA
BURKINA FASO
SIERRA LEONE
LIBERIA
1752
IVORY COAST
GHANA
Lake Volta
TOGO
BENIN
NIGERIA
SUDAN
CAMEROON
CENTRAL AFRICAN REPUBLIC
Gulf of Guinea
WORLD LAND TRUST


EBOLA
SIGNS AND SYMPTOMS
IF YOU HAVE FEVER, DIARRHOEA AND VOMITING WITH OR WITHOUT BLEEDING
Go Immediately to the Nearest HEALTH FACILITY
For more Information Call: 117 (Toll Free)

What is Ebola?



- Ebola virus is a viral hemorrhagic fever disease from the *Filoviridae* family (filovirus)
- **Incubation period:** 2 to 21 days after exposure, although 8-10 days is most common.
- **Signs & symptoms**:

  Sudden onset of fever, intense weakness, muscle pain, headache and sore throat, followed by vomiting, diarrhea, rash, impaired kidney and liver function, and in some cases, internal and external bleeding.
- People are infectious as long as their blood and secretions contain the virus.

Laboratory findings & differential diagnosis

- Low white blood cell and platelet counts and elevated liver enzymes.

- **Differential diagnosis** include other HF, malaria, some diarrheal diseases…

- ***EVD outbreaks have a case fatality rate of up to 90%.***
- ***PCR lab test is done outside Lebanon (France)***

How is Ebola transmitted? (1)

- Ebola is introduced into the human population through close contact with the blood, secretions, organs or other body fluids of infected animals.
- In Africa, infection has been documented through the handling of infected animals (such as chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found ill or dead or in the rainforest).
- human-to-human transmission, with infection resulting **from direct contact** (through broken skin or mucous membranes) with the blood, secretions, organs or other body fluids of infected people, **and indirect contact** with environments contaminated with such fluids.

How is Ebola transmitted? (2)

- Burial ceremonies with direct contact with the body of the deceased person can also play a role in the transmission of Ebola.
- Men who have recovered from the disease can still transmit the virus through their semen for up to 7 weeks after recovery from illness.

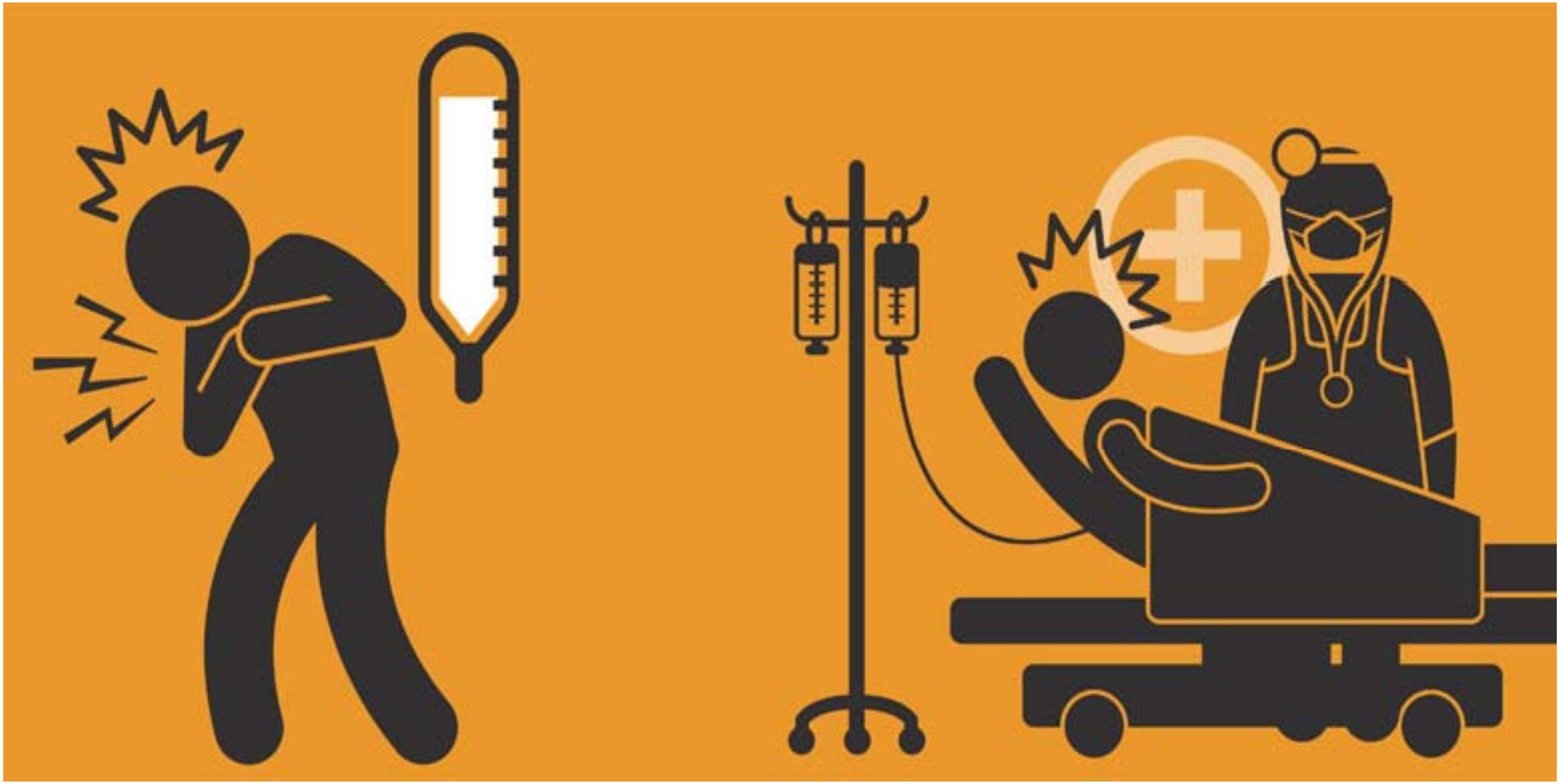
Can Ebola be transmitted through the air or via contaminated food and water?

- **No.** Ebola is not a respiratory disease like the flu, so it is not transmitted through the air, and it is not a foodborne nor a watreborne illness.

Can Ebola be transmitted from a person who is infected but doesn't have any symptoms?

- **No.** A person infected with Ebola virus is not contagious until symptoms appear.

VACCINE & TREATMENT



Vaccine and treatment

- No licensed vaccine for EVD is available. Several vaccines are being tested, but none are available for clinical use.
- Severely ill patients require intensive supportive care. Patients are frequently dehydrated and require oral rehydration with solutions containing electrolytes or intravenous fluids.
- No specific treatment is available. New drug therapies are being evaluated

Are there any cases of individuals contracting Ebola in Lebanon?

- **No.** As of August 20, no confirmed Ebola cases have been reported in Lebanon.
- Two Patients under investigation in Lebanon have tested negative for Ebola.

What is being done to prevent ill passengers in West Africa from getting on a plane?

- WHO and local authorities are collaborating together in West Africa to prevent sick travelers from getting on planes. In addition, airports in Guinea, Liberia, and Sierra Leone are screening outbound travelers for Ebola symptoms, including fever, and passengers are required to respond to a health questionnaire.

What is the MOH doing in the Lebanon? (1)

- On the remote possibility that an ill traveler arrives the Lebanon, the MOH has protocols in place to protect against further spread of disease. These include: notification of ill travelers on a plane before arrival, evaluation of ill travelers isolation and transport to a medical facility if needed (RHGH is designated as referral hospital for Ebola and it is been prepared to admit such patients)
- An update of the case definition was done and disseminated

What is the MOH doing in the Lebanon? (2)

- The MOH, along with the Director of the Airport, have also provided guidance to airlines for managing ill passengers and crew.
- The MOH has issued some circulars and letters reminding healthcare workers of the importance of taking steps to prevent the spread of this virus: Letter to the MOFA, letter to the MOT, circular to private and public hospitals, letter and circular to the airport

What is the MOH doing in the Lebanon? (3)

- Five ID specialists were designated in all mohafaza as referral focal persons to any potential outbreak
- Preventive and Control measures were disseminated to all hospitals
- The MOH has also done trainings to all hospitals on infection control measures
- An awareness note is distributed to travelers going and coming to and from infected countries
- The website of the MOH was updated and all info related to the disease are displayed on the web (www.moph.gov.lb)

MERS-CoV Surveillance

Coronaviruses (CoVs)

- Large family of RNA viruses that cause a range of illnesses in humans and some animals

- In Humans:
  - Usually: common cold
  - Rarely, severe diseases as:
    - Severe Acute Respiratory Syndrome (SARS)
    - MERS-CoV

Modes of transmission

- Zoonotic transmission from animals, camels, to humans
- Human-to-human transmission:

  -Nosocomial transmission is occurring between health care workers and between patients resulting in large health care setting outbreaks (about 90% of the reported cases)

  -Very little human-to-human transmission is occurring among family members in household settings

- Transmission via environmental or fomite contamination

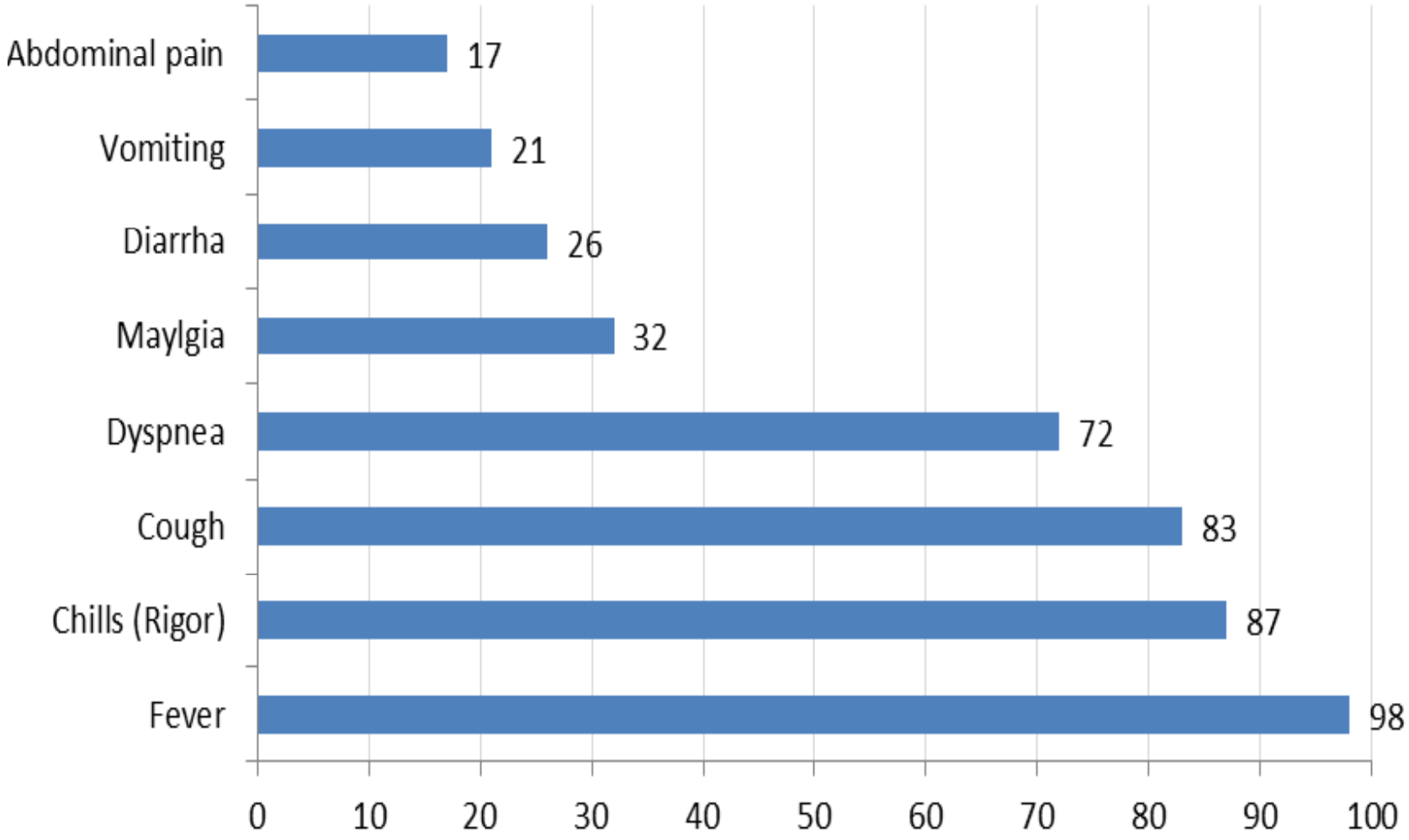
  Experimental studies of virus persistence on surfaces and at different environmental conditions show that MERS-CoV can be transmitted via contact or fomite

Symptoms (1)

A typical case of MERS consists of

- Acute respiratory infection:
  - Fever
  - Cough
  - Shortness of breath / Dyspnea
  - Pneumonia is a common finding on examination
- Gastrointestinal symptoms: diarrhea may be reported
- Severe illness:
  - Respiratory failure requiring mechanical ventilation and support in intensive-care unit
  - Organ failure: renal failure, septic shock
- Approximately 27% of patients with MERS have died
- More severe disease is observed in immunocompromised patients and those suffering from chronic illnesses.

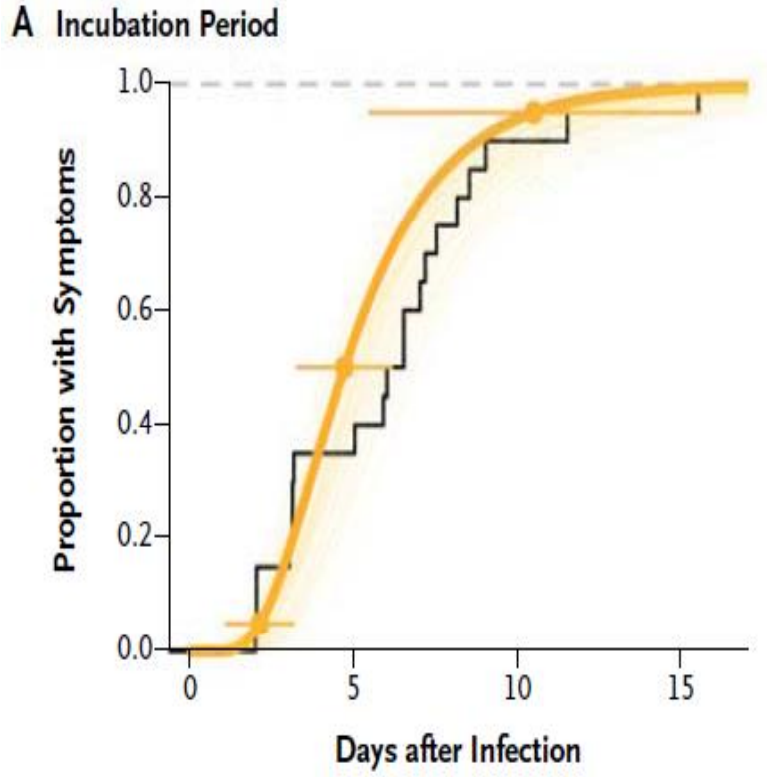
Symptoms (2)


Abdominal pain
17
Vomiting
21
Diarrha
26
Maylgia
32
Dyspnea
72
Cough
83
Chills (Rigor)
87
Fever
98
0
10
20
30
40
50
60
70
80
90
100

Some people with MERS infection appear to have mild or unusual symptoms

Incubation period

- **Usually 5 days**
- **Range: 2-14 days**



Source: Hospital Outbreak of Middle East Respiratory Syndrome Coronavirus - n engl j med 369;5 nejm.org august 1, 2013

For how long a patient will be contagious?

From the beginning of symptoms

till 2 weeks after their disappearance

Treatment/Vaccine

Treatment

- No specific treatment is available until now
- Supportive medical care is provided based on the patient's clinical condition

Vaccine

- No vaccine is currently available

Reported cases globally (1)

(As of 8 May 2014)

Since April 2012

- **536** laboratory-confirmed cases have been reported to WHO
- **145 deaths**

The affected countries:

- **Middle East**: Jordan, Kuwait, Oman, Qatar, KSA, UAE and Yemen
- **Africa**: Egypt, Tunisia
- **Europe**: France, Germany, Greece, Italy and the United Kingdom
- **Asia**: Malaysia and Philippines
- **North America**: USA

Reported cases globally (2)
(As of 8 May 2014)

Exposure:

– All cases reported outside the Middle East have recently traveled from countries inside of the Middle East (KSA, UAE)

Gender:

– 65.5% of the cases are male

Age:

– Median age is 49 years old (range: 9 months-94 years old)

Reported cases globally (3)
(As of 8 May 2014)

Increase of cases since mid-March 2014

- Essentially in KSA and UAE,
- where healthcare-associated outbreaks are occurring

Increase of number of cases who acquired the infection presumably from non-human sources has also increased since mid-March.

Some have reported contacts with animals, including camels, bats...

Reported cases globally (4)

(As of 8 May 2014)

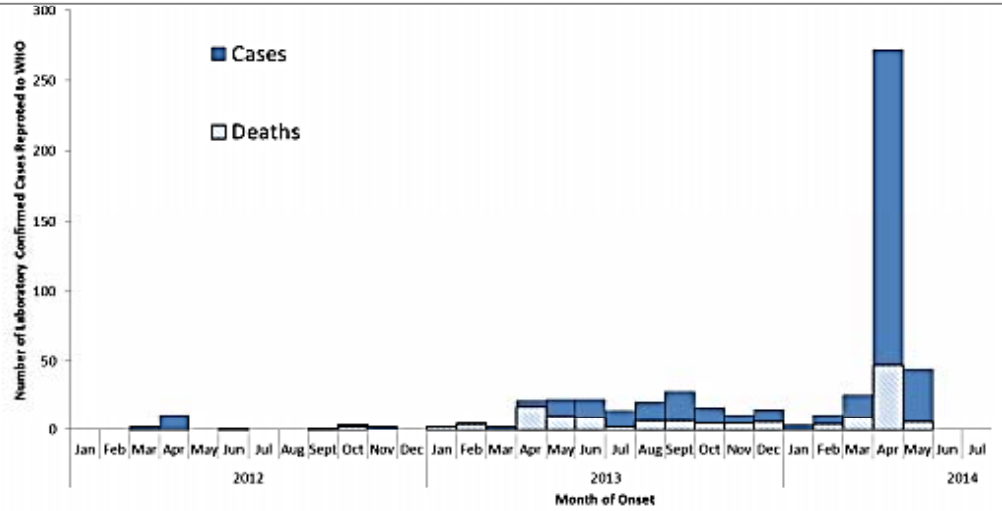


Figure 2. Epidemic curve of 536 laboratory-confirmed cases MERS-CoV cases by outcome (as of 8 May 2014)

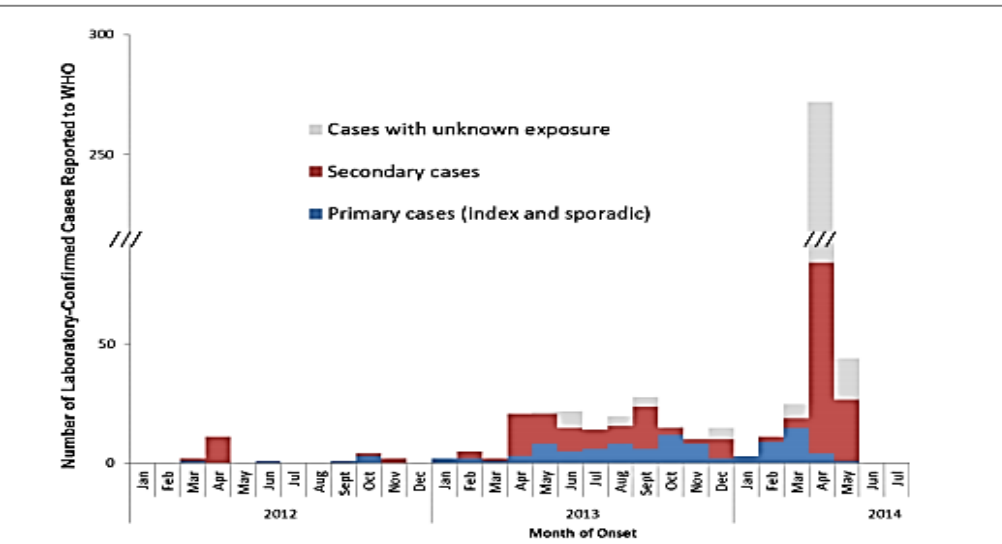
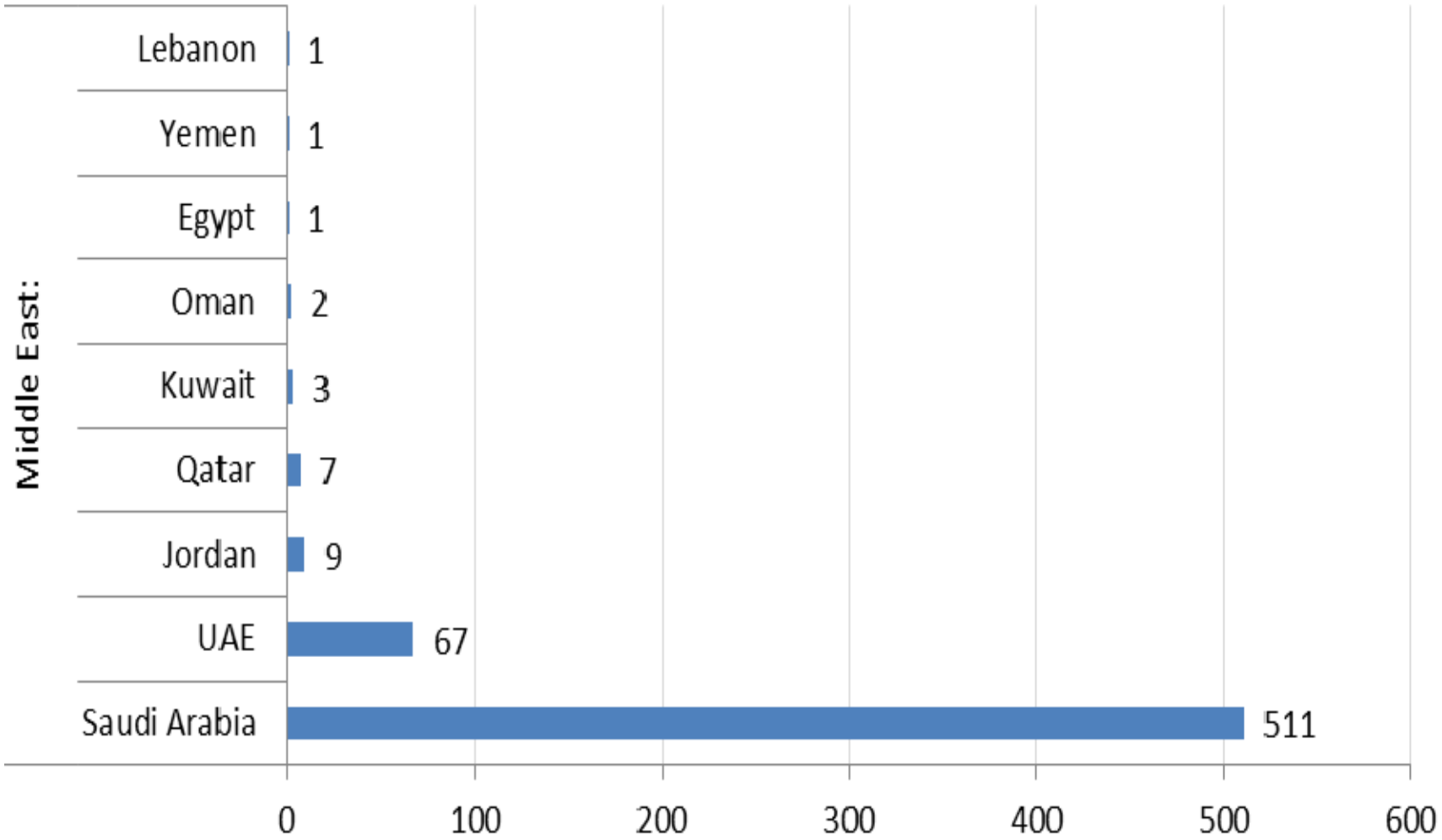


Figure 3. Epidemic Curve of 536 laboratory-confirmed MERS-CoV patients by case type (primary vs secondary; as of 8 May 2014)

Place: of onset (up to 16May 2014)



Reporting Form

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

Novel Coronavirus Infection Reporting Form

ESU number: LB-nCoV- |_____|

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 ☐

ARDS ☐ Hypotension requiring vasopressors ☐

Acute Renal Failure ☐ Pregnancy ☐

Multi-organ failure ☐ Other, specify ☐ _____

F. Risk factors/Exposure in the 10 days prior to illness onset

Travel ☐ Where _____

Travel of Family member ☐ Where _____

Contact with confirmed nCoV cases ☐ Who _____

Contact with non confirmed nCoV ☐ Who _____

Contact with SARI ☐ Who _____

Health Care Worker ☐ Where _____

G. Comorbidities

Cancer ☐ Kidney failure ☐

Diabetes ☐ Chronic liver disease ☐

Chronic lung disease ☐ Heart disease ☐

Asthma ☐ Deficient immune system ☐

Hematogical disorder ☐ Other, specify: ☐ _____

H. Outcome

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

I. Specimens

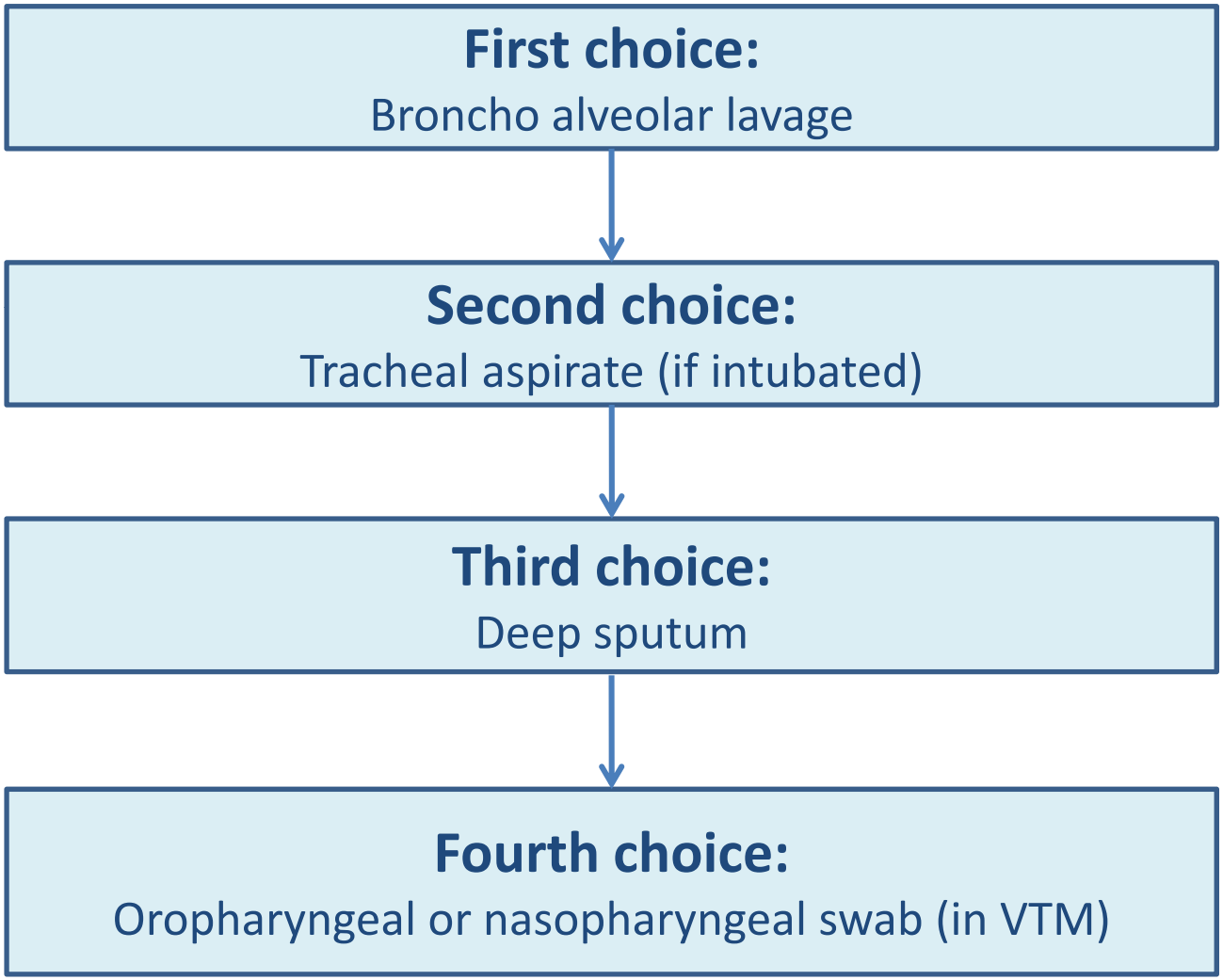
Sputum ☐ date |____|____|_____| Bronchoalvealar lavage ☐ date |____|____|_____|

Tracheal aspirate ☐ date |____|____|_____| Nasal/throat swab ☐ date |____|____|_____|

Serum (paired sera) ☐ date |____|____|_____| Blood EDTA ☐ date |____|____|_____|

J. Date and signature:

Specimen Type Algorithm



Case Definition (MERS-CoV Infection) (1)

Confirmed case ⇨	Any person with positive laboratory confirmation of infection with MERS-CoV

Case Definition (MERS-CoV Infection) (2)

Probable case ⇨

Any possible case with close contact during the last 10 days before onset of illness with a symptomatic confirmed case of MERS-CoV infection.
Close contact is defined as:
Anyone who provided care for a nCoV patient
Or anyone who stayed at the same place while a nCoV patient was ill.

Case Definition (MERS-CoV Infection) (3)

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 history travel 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.

What to do in case of a suspected or probable case at your healthcare facility?

It is not always possible to identify patients with MERS-CoV early or without testing because symptoms and other clinical features may be nonspecific.

- **First: Isolate the patient**
  - Patient should wear a surgical mask to prevent the spread of the virus
  - provide tissues and no-touch receptacles (e.g., foot-pedal operated lid waste basket) for disposal of tissues.
  - Cough etiquette
  - Hand washing…

- **Second: when caring for patients with probable or confirmed MERS-CoV infection:**

  Usually standard and droplets precautions, airborne precautions when performing aerosol generating procedures

- **Third: Contact and report any case to the Ministry of Public Health for further investigation**

International travel & health recommendations (1)

Health care practitioners

- Consider the possibility of MERS-CoV infection in travelers with fever, cough, shortness of breath, or breathing difficulties, or other symptoms suggesting an infection, and with a recent history of travel in the Middle East.

- If a diagnosis of MERS–CoV infection is considered possible, apply infection prevention and infection control measures

International travel & health recommendations (2)

Ministry of Public Health

- Review current surveillance guidance and case definitions for case reporting available on the WHO coronavirus website.
- Alert health care practitioners to the possibility of MERS-CoV infection in symptomatic travelers with a recent history of travel in the Middle East.
- Provide health care practitioners with clear instructions for referral of patients suspected of having infection with the MERS-CoV for appropriate management and testing.
- Hospital based training on infection control

International travel & health recommendations (3)

Travelers (1)

- Avoiding close contact with people suffering from acute respiratory infections.
- Avoiding visiting HC facilities
- Frequent hand-washing, especially after direct contact with ill people or their environment.
- Cough etiquette (maintain distance, cover coughs and sneezes with disposable tissues or clothing)
- Adhering to food safety and hygiene rules such as avoiding undercooked meats, raw fruits and vegetables unless they have been peeled or unsafe water.

International travel & health recommendations (4)

Travelers (2)

- Avoiding close contact with animals.
- It is recommended for pilgrims with chronic diseases to wear surgical mask during their trip
- Travelers to the Middle East who develop symptoms either during travel or after their return should seek medical attention and share their history of travel.
- People with symptoms of acute respiratory infection should delay travel until they are no longer symptomatic.

At Point of Entry

Based on the information available, WHO does not advise special screening at points of entry nor does it currently recommend the application of any travel or trade restrictions.

Awareness flyer to travelers

إرشادات خاصة للمسافرين
والحجاج والمعتمرين
حول فيروس الكورونا الجديد
MERS

الجمهورية اللبنانية
وزارة الصحة العامة

منظمة
الصحة العالمية

• ما هو فيروس كورونا الجديد MERS وما هي عوارضه؟

يعتبر فيروس الكورونا الجديد من الفيروسات التي تسبب عوارض تنفسية حادة قد تكون خطرة.

من أبرز عوارض هذا المرض: ارتفاع درجة الحرارة، ألم في الجسم، احتقان بالحلق، رشح وسعال وضيق في التنفس واسهال وتستمر هذه العوارض عادة فترة أسبوع.

• ما هي فترة الحضانة؟
وعلى يبدأ المريض بالعدوى؟

تتراوح فترة حضانة المرض من أسبوع إلى أسبوعين. يصبح المريض مصدراً للعدوى ابتداء من ظهور العوارض وحتى أسبوعين بعد زوالها.

• ما هي طرق العدوى بالفيروس؟

قد تشبه طرق انتقال الانفلونزا من حيث:

- الانتقال المباشر عن طريق الرذاذ المتطاير من السعال، العطس واللعاب والانتقال غير المباشر عبر تلوث اليدين و من ثم لمس الفم أو الأنف أو العين.

علما إن أغلب الحالات التقطت العدوى في المستشفيات والمؤسسات الصحية.

• ما هي طرق الوقاية من هذا الفيروس؟

تنصح وزارة الصحة الحجاج والمعتمرين والمسافرين إلى مناطق موبوءة بالتقيد بالإرشادات الصحية التالية لتفادي الاصابة بالمرض والحد من انتشاره وهي:

- المداومة على غسل اليدين جيدا بالماء والصابون أو المواد المطهرة الأخرى، خصوصا بعد السعال أو العطس أو المصافحة.

- استخدام المنديل لتغطية الفم والأنف عند السعال أو العطاس، ثم التخلص منه في سلة النفايات. واذا لم يتوفر المنديل فيفضل السعال أو العطس على أعلى الذراع وليس على اليدين.

- وضع الكمامات في أماكن التجمعات والازدحام أثناء الحج أو العمرة، خاصة للذين يعانون من أمراض مزمنة.

- تجنب الاحتكاك بالمرضى وزيارة المؤسسات الصحية واحرص على الالتزام بمسار مناسك الحج والعمرة.

- تجنب الاحتكاك بالحيوانات عند السفر إلى بلدان موبوءة.

- حافظ على العادات الصحية الأخرى كالتوازن الغذائي والنشاط البدني وأخذ قسط كاف من النوم.

- المحافظة على النظافة العامة.

• عند العودة إلى لبنان:

في حال أُصيب أحد المسافرين أو الحجاج أو المعتمرين خلال أسبوعين من عودته إلى لبنان بمرض حاد في الجهاز التنفسي مصحوب بحمى وسعال عليه الحصول على عناية طبية فورية وإعلام الطبيب أنه كان مسافراً إلى دولة موبوءة.

لمزيد من المعلومات الاتصال بوزارة الصحة العامة:
برنامج الرصد الوبائي: ٠١٦١٤١٩٤ - ٠١٦١٤١٩٦
دائرة مكافحة الأمراض الانتقالية: ٠١٦١١٨٤٥
www.moph.gov.lb

Thank you