# CASE DEFINITIONS

# NOTIFIABLE COMMUNICABLE DISEASES

## MALDIVES

## 2023

Version 1-2024

Date of approval 1st September 2024

Health Protection Agency

Male' Republic of Maldives

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## Acronyms

| | |
|---|---|
| AFP | Acute Flaccid Paralysis |
| AGE | Acute Gastroenteritis |
| ARI | Acute Respiratory Illness |
| CDC | Centers for Disease Control and Prevention, US |
| CHO | Community Health Officer |
| ELISA | Enzyme-Linked Immunosorbent Assay |
| FHO | Family Health Officer |
| HPA | Health Protection Agency |
| IGMH | Indira Gandhi Memorial Hospital |
| ILI | Influenza Like Illness |
| MOH | Ministry of Health |
| PCR | Polymerase Chain Reaction |
| SARI | Severe Acute Respiratory Illness |
| SEARO | WHO SouthEast Asian Regional Office |
| WHO | World Health Organization |

# Overview

This Case Definition Booklet has been revised from the 2014 version and is now issued in fulfillment of Section 3 (a) of the Notifiable Diseases Regulation (R-164/2021), under the Public Health Protection Act (7/2012). This section of the Regulations mandates HPA to produce a booklet which defines the notifiable diseases reportable to HPA under this regulation.

This book is designed to be used as the reference for the case definition of notifiable communicable diseases in Maldives. The case definitions are those definitions which serve the purpose of surveillance and should not be viewed as case definitions for clinical diagnosis and are presented in alphabetical order for easy search. Each disease has its case definition for the classification, timeframe for reporting, laboratory diagnostic criteria and additional precautions to take (if any).

## Reporting Mechanism, Time Frame and Frequency

According to the Disease Reporting Regulation (2021/R-164), it is mandatory to report all communicable diseases which are identified by the Health Protection Agency (HPA) as notifiable diseases to HPA within 24 hours (12 hours for certain diseases) at the latest, by the healthcare facilities (government and private), schools, tourist establishments (resorts and guest houses), child care facilities, elderly care facilities and closed settings such as drug rehabilitation centers, detention centers, juvenile detention facilities, and any such institution/facility where people are detained (Table 1) (1). The reporting should be done by submitting the report to HPA surveillance email (phpse.hpa@health.gov.mv) (Figure 1) (1).

## Reporting mechanism for notifiable diseases

The reporting mechanism may be direct reporting to HPA or an indirect reporting through a secondary facility such as the atoll hospital. Initial notification may be through telephone/mobile, but the specific reporting form must be submitted to HPA through the HPA email given below:

phpse.hpa@health.gov.mv

Note: Reporting to a secondary facility will be done according to the reporting mechanism established by that facility, but this secondary facility must report to HPA via the reporting mechanism described above.

a. Healthcare professionals (doctors, nurses, health workers, clinical support staff, ward clerks, clinical assistants and lab technicians) working in hospitals or clinics in the Greater Male' Area or the Greater Male' Industrial Zone are to follow the diseases reporting guideline and report directly to HPA.

   Note: Greater Male Area includes Male', Hulhumale and Vilimale. Greater Male' Industrial Zone includes Thilafushi and Gulhifalhu.

b. Island health facilities should report via the atoll surveillance focal points to HPA.

c. School health officers are to report directly to HPA, but they must also inform the education ministry and copy the report to the island/atoll health facility for schools outside of the Greater Male' Area.

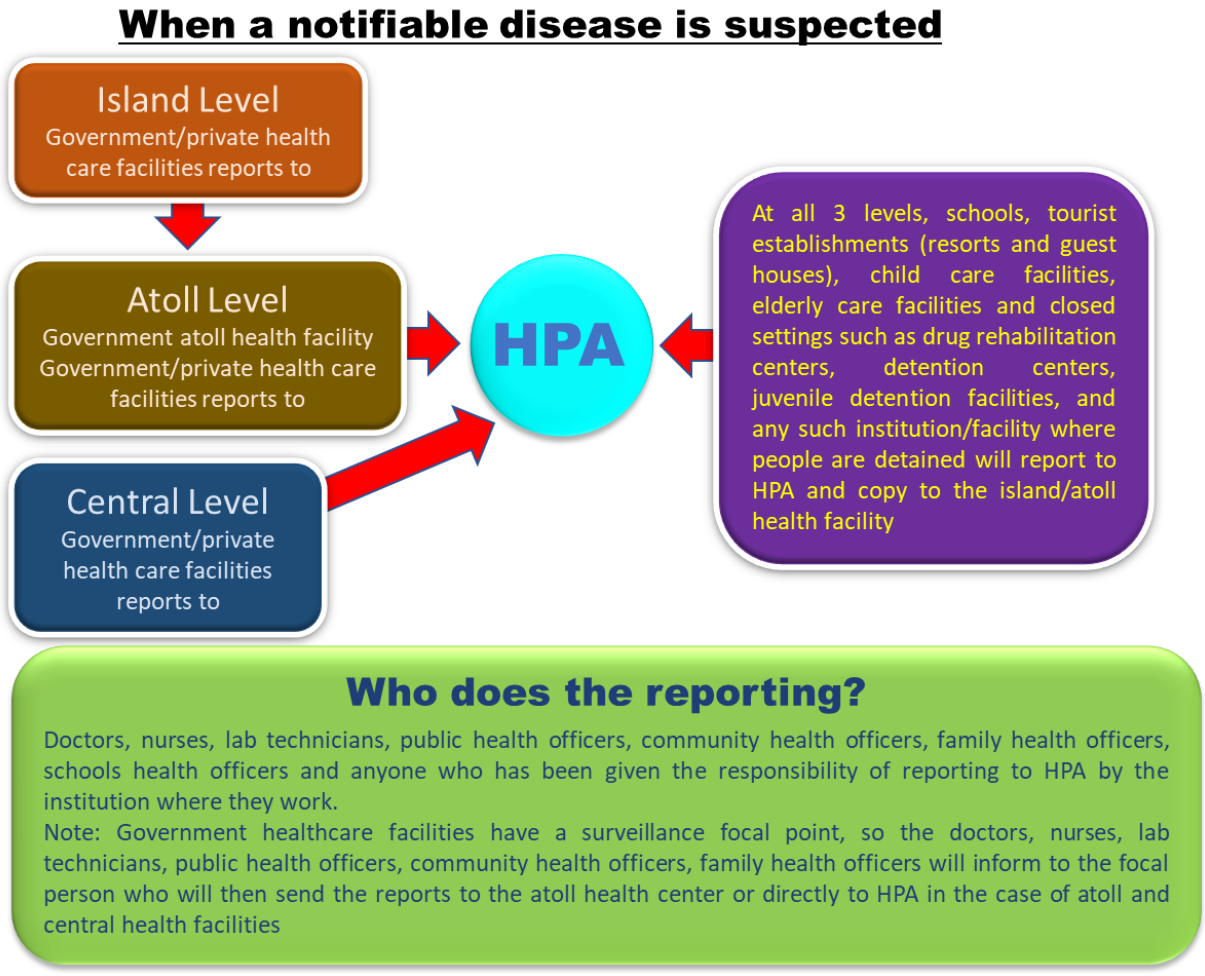
d. Tourist establishments (resorts and guest houses), childcare facilities, elderly care facilities and closed settings such as drug rehabilitation centers, detention centers, juvenile detention facilities, and any such institution/facility where people are detained must report directly to HPA (Figure 1).

e. All health care facilities should have a focal person who will do the reporting to HPA. The doctors, nurses, health workers, clinical support staff, ward clerks, clinical assistants and lab technicians will inform this focal person and where relevant, they will help fill in the reporting form.

f. All the schools, tourist establishments (resorts and guest houses), childcare facilities, elderly care facilities and closed settings such as drug rehabilitation centers, detention centers, juvenile detention facilities, and any such institution/facility where people are detained must have a focal person who will compile the reporting form and report to HPA.

1. **Hotline**
   The general public who wish to report a health risk or a specific disease can be report to HPA via **+9607220071** or email to hpa@health.gov.mv /phpse.hpa@health.gov.mv .

**Figure 1: Reporting Mechanism**



# Types of Surveillance

## Passive surveillance

In Passive surveillance data is collected on notifiable diseases through established mechanisms of very specific parameters. This type of surveillance is done in healthcare facilities on a daily basis. It depends on the patient fitting the case definition showing up to seek treatment. It is inexpensive and has the main limitation of under reporting.

## Active surveillance

Active surveillance is when the health sector actively seeks out cases. This type of surveillance is usually very time consuming and expensive (e.g., a measles case, food poisoning).

## Indicator based surveillance

This type of surveillance is dependent on a specific indicator or set of indicators. This is the systematic collection, collation, analysis and dispersion of the information based on a specific case definition or a specific set of symptoms (syndromic surveillance). This is a passive form of surveillance which can include collecting data from all the healthcare facilities or from selective health facilities (sentinel surveillance). The information collected for this type of surveillance is usually pre-set and has a specific reporting form. In Maldives, there are a set of diseases from which daily aggregate data is collected (e.g., acute respiratory illness, viral fever).

### Case-based Reporting

There are some diseases from which more detailed case-based information is collected daily (e.g., dengue, influenza like illness, severe acute respiratory illness).

### Daily Aggregates Reporting

Daily (24 hour) sum total for each of these diseases/conditions are reported within the next 24 hours. (e.g., ARI, AGE, Viral fever, conjunctivitis).

### Sero-surveillance

We also have Sero-surveillance for some diseases like Rota virus. Sero-surveillance is an application of serology testing, which is a test performed on blood to detect the presence of antibodies.

### Syndromic Surveillance

It is the type of surveillance based on a set of or a combination of symptoms (e.g., acute flaccid paralysis, fever and rash)

## Event based surveillance

Event based surveillance is active surveillance performed when and if a specific notifiable disease or condition like food poisoning occurs and data is collected about the specific event. In Maldives there is a guideline on event-based surveillance and how to report it. This sort of surveillance is used for diseases or conditions which do not occur frequently.

## PHEIC (Public health emergency of international concern)

A PHEIC is defined in the IHR (2005) as, “an extraordinary event which is determined to constitute a public health risk to other States through the international spread of disease and to potentially require a coordinated international response”. This definition implies a situation that is:

- Serious, sudden, unusual or unexpected.
- Carries implications for public health beyond the affected State’s national border.

- May require immediate international action (2).

## Table 1: List of Notifiable Communicable Diseases/Conditions/Syndromes

| | Diseases/Conditions/Syndromes | | Diseases/Conditions/Syndromes |
|---|---|---|---|
| 1 | Acute Flaccid Paralysis (AFP) | 32 | Lymphogranuloma Venereum |
| 2 | Acute Gastroenteritis (AGE) | 33 | Malaria |
| 3 | Acute Respiratory Infections (ARI) | 34 | Measles and Rubella |
| 4 | Chancroid | 35 | Meningitis |
| 5 | Chickenpox (Varicella) | 36 | Middle East Respiratory Syndrome |
| 6 | Chikungunya | 37 | Mpox (Monkeypox) |
| 7 | Chlamydia Trachomatis Infection | 38 | Mumps |
| 8 | Cholera | 39 | Ophthalmia Neonatorum |
| 9 | Conjunctivitis | 40 | Plague |
| 10 | Covid 19 | 41 | Pertussis (Whooping Cough) |
| 11 | Dengue | 42 | Pneumonia |
| 12 | Diphtheria | 43 | Poliomyelitis |
| 13 | Dysentery | 44 | Pyrexia of unknown Origin (PUO) |
| 14 | Ebola Virus Disease | 45 | Rabies |
| 15 | Encephalitis | 46 | Rotavirus Infection |
| 16 | Lymphatic Filariasis | 47 | Scabies |
| 17 | Food Poisoning | 48 | Scrub Typhus |
| 18 | Genital Herpes | 49 | Sepsis (Children under 5 years) |
| 19 | Genital Warts | 50 | Shigella – Shigellosis |
| 20 | Genital ulcers | 51 | Small Pox |
| 21 | Gonorrhea | 52 | Syphilis |
| 22 | Granuloma Inguinale | 53 | Tetanus |
| 23 | Guillain-Barré Syndrome | 54 | Toxoplasmosis |
| 24 | Hemophilus Influenzae Disease (including Hib) | 55 | Tuberculosis |
| 25 | Hand Foot and Mouth Disease | 56 | Typhoid Fever/Paratyphoid Fever |
| 26 | Viral Hepatitis (A, B, C, D & E) | 57 | Urethral Discharge Syndrome |
| 27 | Herpangina | 58 | Vaginal Discharge Syndrome |
| 28 | HIV Infection | 59 | Warts (Anogenital Warts) |
| 29 | Influenza (Viral Influenza) ILI and SARI | 60 | Yellow Fever |
| 30 | Leprosy | 61 | Zika Virus Disease |
| 31 | Leptospirosis | | |

## Table 2: List of Guidelines

| Number | Name of the Guideline | Year | Version |
|---|---|---|---|
| HPA-SUR-U000135-GG-2015-1 | CD Reporting Guideline | 2015 | 1 |
| HPA-SUR-U000137-GG-2015-2 | Event Based Surveillance Guide PHU | 2015 | 1 |
| HPA-SUR-U000138-GG-2016-2 | Guillian -Barre Syndrome (GBS) Surveillance Guidelines | 2016 | 1 |
| HPA-SUR-U000140-GG-2016-1 | Maldives Reporting Guidelines for the | 2016 | 1 |

| | | | |
|---|---|---|---|
| | Surveillance of Microcephaly | | |
| HPA-SUR-U000141-GG-2016-2 | Measles Rubella CRS SUR Guide | 2016 | 2 |
| HPA-SUR-U000142-GG-2013-1 | Scrub Typhus clinician information guide | 2013 | 1 |
| HPA-SUR-U000143-GG-2017-1 | Zika Lab Surveillance Guideline | 2017 | 1 |
| HPA-SUR-U000144-GG-2017-1 | AEFI Guide | 2017 | 1 |
| HPA-SUR-U000145-GG-2021-1 | COVID-19-QR - SOP | 2021 | 11 |
| NA | Guideline for the establishment of voluntary counseling and testing centers in the Maldives | 2009 | 1 |
| NA | Guideline for the prevention of Mother to Child Transmission (PMTCT) of HIV | 2013 | 1 |
| NA | Guideline for Prevention of HIV Infection Following an Occupational Exposure to healh care worker | 2011 | 1 |
| NA | Guideline on Post exposure Prophylaxis for HIV and the Use of Co-Trimoxazole Prophylixis for HIV-Related Infections among Adults, Adolescents and Chilren: Recommendations for a Public Health Approach - WHO | 2014 | 1 |
| NA | Antiretroviral Therapy for HIV infection in adults, adolescents and Children | 2015 | 1 |
| NA | Handbook on Sexually Transmitted Infections (STIs) syndromic management | 2013 | 1 |
| NA | National Guidelines for the Programmatic Management of Tuberculosis in Maldives | 2019 | 4 |
| NA | Guidelines for Prevention and Treatment of Childhood Tuberculosis in Maldives | 2015 | 2 |
| NA | National Guidelines for the Managament of Multi Drug resistant Tuberculosis | 2015 | 1 |

*Note: In the document number, HPA (Health Protection Agency), SUR (surveillance), GG (general guideline), year, last number is the version*

All these Guidelines are available at Ministry of Health website

## Table 3: List of Forms for Reporting Communicable Diseases

| Document Number (HPA) | Name of the document |
|---|---|
| HPA-SUR-U00047-F-2017-3 | AFP Form |
| HPA-SUR-U00049-F-2019-8 | Communicable Disease Form |
| HPA-SUR-U00075-F-2018-1 | Pertussis Case Investigation Form |

| | |
|---|---|
| HPA-SUR-U00066-F-2014-1 | Daily Surveillance Form |
| HPA-SUR-U00067-F-2019-1 | Event Based Surveillance Initial Assesment Form |
| HPA-SUR-U00068-F-2021-2 | Fever with rash Investigation form |
| HPA-SUR-U00069-F-2014-1 | Food Poisoning Investigation Form |
| HPA-SUR-U00070-F-2016-1 | Measles Rubella & AFP Weekly Reporting Form |
| HPA-SUR-U00071-F-2019-2 | Weekly lab Surveillance Form |
| HPA-SUR-U00072-F-2019-1 | Rota Virus Lab Surveillance Form |
| HPA-SUR-U00073-F-2016-1 | Weekly SARI Reporting Form |
| HPA-SUR-U00074-F-2016-1 | Typhoid Case investigation Form |
| HPA-SUR-U000132-F-2019-1 | Guillain-Barre' Syndrome (GBS) form |
| HPA-SUR-U000133-F-2017-1 | Investigation of Suspected Zika Infection in Maldives |
| HPA-SUR-U000134-F-2016-1 | Congenital Rubella Surveillance Form |
| HPA-SUR-U000211-F-2022-1 | Monkeypox Investigation Form |
| HPA-SUR-U000139-F-2016-1 | Influenza Surveillance Form |

*Note: In the document number, HPA (Health Protection Agency), SUR (surveillance), F (form), year, last number is the version*

All these forms are available Ministry of Health website

Table 4: Time Frame and Type of Reporting for Notifiable Communicable Diseases

| | Name of Disease/Condition/Syndrome | Type of Reporting | Time frame |
|---|---|---|---|
| **1** | Acute Flaccid Paralysis (AFP) | CB | 12 |
| **2** | Adverse Event Following Immunization (AEFI) | CB | 1 |
| **3** | Cholera/ Shigella infection | CB | 12 |
| **4** | Congenital Rubella Syndrome (CRS) | CB | 12 |
| **5** | Covid 19 | CB | 24 |
| **6** | Dengue | CB | 24 |
| **7** | Diphtheria | CB | 1 |
| **8** | Ebola Virus Disease | CB | 1 |
| **9** | Encephalitis | CB | 12 |
| **10** | | CB | 12 |
| **11** | | CB | 12 |
| **12** | Food Poisoning | CB | 1 |
| **13** | | CB | 12 |
| **14** | Guillain-Barré syndrome | CB | 12 |
| **15** | Hemophilus Influenzae Disease (including Hib) | CB | 12 |
| **16** | Viral Hepatitis (A, B, C, D & E) | CB | 12 |
| **17** | | | |
| **18** | HIV | CB | 12 |
| **19** | Influenza ILI and SARI | CB | 24 |
| | Invasive Meningococcal Disease (Including Meningitis due to *N. Meningitidi*s) | CB | 1 |
| **20** | Leprosy | CB | 12 |
| **21** | Leptospirosis | CB | 12 |
| **22** | Lymphatic Filariasis | CB | 12 |
| **23** | Malaria | CB | 1 |
| **24** | Measles | CB | 1 |

| | | | |
|---|---|---|---|
| **25** | Meningitis | CB | 12 |
| **26** | Middle East Respiratory Syndrome (MERS) | CB | 1 |
| **27** | Mpox (Monkeypox) | CB | 1 |
| **28** | Mumps | CB | 12 |
| **29** | | CB | 12 |
| **30** | | CB | 12 |
| **31** | Pertussis (Whooping Cough) | CB | 1 |
| **32** | | CB | 12 |
| **33** | Plague | CB | 1 |
| **34** | Poliomyelitis | CB | 1 |
| **35** | Rabies | CB | 1 |
| **36** | Rubella | CB | 1 |
| **37** | | CB | 12 |
| **38** | Small Pox | CB | 1 |
| **39** | Tetanus/ Neonatal Tetanus | CB | 12 |
| **40** | Toxoplasmosis | CB | 12 |
| **41** | Tuberculosis | CB | 12 |
| **42** | Yellow Fever | CB | 1 |
| **43** | Zika Virus Disease | CB | 12 |
| **44** | Acute Gastroenteritis (AGE) | DA | 24 |
| **45** | Acute Respiratory Infections (ARI) | DA | 24 |
| **46** | Chickenpox (Varicella) | DA | 24 |
| **47** | Chikungunya | CB | 24 |
| **48** | Conjunctivitis | DA | 24 |
| **49** | Hand Foot and Mouth Disease/ Herpangina | DA | 24 |
| **50** | | DA | 24 |
| **51** | Pyrexia of unknown Origin (PUO) | DA | 24 |
| **52** | Rota Virus | CB | 24 |
| **53** | | CB | 24 |
| **54** | Scabies | CB | 1 |
| **55** | Scrub Typhus | CB | 24 |
| **56** | STIs-Gonorrhea/Chlamydia/Genital Warts/Genital ulcers/Genital Herpes/Syphilis, chancroid/Granuloma Inguinale/Lymphogranuloma Venereum/Urethral or vaginal discharge syndrome | CB | 24 |
| **57** | Typhoid Fever | CB | 24 |
| **58** | Viral Fever | DA | 24 |
| | Any other disease that HPA has declared (temporarily) as a notifiable disease. Report within the specified time frame given by HPA. | | |

***CB: Case based reporting, DA: daily aggregates reporting, report within 12 or 24 hours***

## Table 5: Endemicity of Notifiable Communicable Diseases and conditions

| | DISEASES | ENDEMICITY |
|---|---|---|
| **1** | | |
| **2** | Acute Gastroenteritis (AGE) | Endemic |
| **3** | Acute Respiratory Infections (ARI) | Endemic |
| **4** | Chancroid | Sporadic |
| **5** | Chickenpox (Varicella) | Endemic |
| **6** | Chikungunya | Endemic with outbreaks every few years |
| **7** | Chlamydia Trachomatis Infection | Sporadic |
| **8** | Cholera | Non-endemic |
| **9** | Conjunctivitis | Endemic |
| **10** | Covid 19 | Endemic |
| **11** | Dengue | Endemic with seasonal outbreaks |
| **14** | Diphtheria | Non Endemic |
| **15** | | |
| | Ebola Virus Disease | Non Endemic |
| **17** | Lymphatic Filariasis | Eliminated Disease |
| **24** | Hemophilus Influenzae Disease (including Hib) | Sporadic |
| **25** | Hand Foot And Mouth Disease/ Herpangina | Sporadic |
| **26** | Viral Hepatitis (A, B, C, D & E) | Sporadic |
| **28** | HIV | Sporadic |
| **29** | Influenza ILI and SARI | Endemic |
| **30** | Leprosy | Sporadic |
| **31** | Leptospirosis | Sporadic |
| **33** | Malaria | Eliminated Disease |
| **34** | Measles | Eliminated Disease |
| **36** | Middle East Respiratory Syndrome | Non-endemic |
| **37** | Mpox - Monkeypox | Non-endemic |
| **38** | Mumps | Sporadic |
| **40** | Plague | Non-endemic |
| **43** | Poliomyelitis | Eliminated Disease |
| **45** | Rabies | Non-endemic |
| **46** | Rotavirus Infection | Endemic |
| **47** | Rubella | Eliminated Disease |
| **48** | Scabies | Sporadic |
| **49** | Scrub Typhus | Sporadic |
| **50** | Small Pox | Eradicated |
| **51** | Syphilis | Sporadic |
| **53** | Toxoplasmosis | Sporadic |
| **54** | Tuberculosis | Endemic |
| **55** | Typhoid Fever | Sporadic |
| **59** | Yellow Fever | Non-endemic |
| **60** | Zika Virus Disease | Sporadic |

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**Figure 2: Icons used in this book and their meanings**


Report within 24 hours


Report within 12 hours


Report within 12 hours


Report within 24 hours


Daily aggregate reporting


Case-based reporting

# Acute Flaccid Paralysis (AFP)


A

Acute flaccid paralysis is defined as onset of weakness and floppiness within 2 weeks in any part of the body in a child less than 15 years of age. The common causes of acute flaccid paralysis are acute paralytic poliomyelitis, Guillain-Barre' syndrome, traumatic neuritis and transverse myelitis. Other causes include non-polio enterovirus infections, encephalitis, meningitis, toxins, etc (4). Acute Flaccid Paralysis is a communicable disease found sporadically in Maldives. AFP reporting is part of the surveillance of Polio which is a vaccine preventable disease (VPD).

## Suspected Case

A child less than 15 years of age presenting with recent or sudden onset of floppy paralysis or muscle weakness due to any cause, or any person of any age with paralytic illness if poliomyelitis is suspected by a clinician (3). The specimens of all AFP cases must be processed in a WHO-accredited laboratory within the GPLN. (See Poliomyelitis).

## Probable Case

Not applicable.

## Confirmed case

Not applicable.

Form: Acute Flaccid Paralysis (AFP) Notification Form

Lab Tests: WHO collaborating center

## Etiology of AFP

Acute paralytic poliomyelitis, Guillain-Barre' syndrome, traumatic neuritis and transverse myelitis. Other
causes include non-polio enterovirus infections, encephalitis, meningitis, toxins (4).

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# Acute Gastroenteritis (AGE)


Acute gastroenteritis is a common diarrheal disease of the GI tract which may be caused by a variety of pathogens including viruses, parasites and bacteria. The most common manifestations of such infections are diarrhoea and vomiting, which may also be associated with systemic features such as abdominal pain, fever, etc. Although several non-infectious causes of diarrhoea are well recognized, the bulk of childhood diarrhoea relates to infectious disorders (4). Acute Gastroenteritis is a communicable disease that is hyperendemic in Maldives. It is one of the diseases for which the daily counts are reported.

Suspected case

For the purposes of surveillance there is no need for a laboratory confirmation of acute gastroenteritis. however, if further investigations reveal the case to be due to a bacterial cause or some other specific causes which are not due to the common causes of AGE, it should be reported separately in a case-based form.

A

At least 3 episodes of watery diarrhoea within 24 hours. Diarrhoea is defined as the passage of three or more loose or watery stools per day (or more frequent passage than is normal for the individual). Additional symptoms may include nausea, vomiting, fatigue and abdominal cramps or

pain (4) (5).
Note: Frequent passing of formed stools is not diarrhoea, nor is the passing of loose, "pasty" stools by breastfed babies (5).

### Probable Case

Not applicable.

### Confirmed Case

Not applicable.

Form: Daily Surveillance Report format

Lab Tests: Stool culture, blood culture, stool for parasites, Rota virus & Noro virus PCR

### Pathogens that commonly cause AGE

Most common AGE is due to viral causes (e.g., Rotavirus, Adenovirus, Norwalk) or bacterial (C. jejuni, Clostridium difficile, E. coli, Salmonella, Shigella) or parasitological (G. lamblia, E. histolytica) (4).

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## Acute Respiratory Infections (ARI)

ARIs are upper or lower respiratory tract infections mostly caused by a viral infection. They have a short duration and are mostly resolved within a week. Some cases may be severe and cause pneumonia and even be fatal (4) (68). Acute Respiratory Infection (ARI) is a communicable disease that is hyperendemic in Maldives.

24 hrs. DA

### Suspected case

For the purposes of surveillance there is no need for a laboratory confirmation.
Acute onset of respiratory symptoms (with or without fever) within at least the last 10 days.
Respiratory symptoms defined as having at least one of the following.

a. Shortness of breath
b. Sore throat
c. Coryza
d. Cough

### Probable Case

Not applicable.

### Confirmed Case

Not applicable.

Form: Daily Surveillance Report format

Lab Tests: Sputum culture, sputum AFB smear, Bio fire Respiratory panel &Bio fire Pneumonia panel PCR

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## Chancroid

DA

Chancroid is a sexually transmitted infection in which a suppurating ulcer forms in the genital area caused by Hemophilus ducreyi (which is a short gram-negative bacillus). Chancroid is a sexually transmitted Infection that is sporadic in Maldives.

### Suspected Case

For the purposes of surveillance there is no need for a laboratory confirmation.
It is a single or multiple painful suppurative ulcers with ragged undermined edges in the genital area with inguinal adenopathy.

### Probable Case

Not applicable.

### Confirmed case

A case may be confirmed with the isolation of Hemophilus ducreyi from a clinical specimen. This is not done in most cases, however, if there is no evidence of T. pallidum infection by darkfield examination of ulcer exudate or by syphilis serologic testing performed at least 7 days after onset of ulcers or if a test for herpes simplex virus performed on the ulcer exudate is negative, it may be confirmed as chancroid by exclusion (6) (7).

Form: Communicable Disease Notifying Form

Lab Tests: STI PCR panel, Gram's stain, Bacterial culture

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## Chickenpox (Varicella)

DA

Chickenpox is a highly contagious disease caused by the varicella-zoster virus. It can cause an itchy, blister-like rash among other symptoms. The rash first appears on the chest, back, and face, and then spreads over the entire body (4). Chickenpox is a holoendemic disease in Maldives. It is one of the diseases for which the daily counts are reported. For the purposes of surveillance having the clinical presentation is sufficient, there is no need for a laboratory confirmation.



### Suspected case

It presents as an itchy rash with fluid filled vesicles and fever (4). For the purposes of surveillance, a suspected case definition is sufficient.

### Probable case

Not applicable.

### Confirmed Case

Not applicable.

Form: Daily Surveillance Report format

Lab Tests: CSF panel PCR

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## Chikungunya

24 hrs. DA

Chikungunya is an alphavirus that causes fever, rash and arthropathy. It is found principally in Africa and Asia, including India. Humans and non-human primates are the main reservoir and the main vector is the Aedes aegypti mosquito. The incubation period is 2–12 days. A period of fever may be followed by an afebrile phase and then recrudescence of fever. Newborns infected around the time of birth, older adults (≥65 years), and people with medical conditions such as high blood pressure, diabetes, or heart disease are at high risk. Children may develop a maculopapular rash. Adults are susceptible to arthritis, which causes early morning pain and swelling, most often in the small joints. Arthritis can persist for months and may become chronic in individuals who are positive for human leucocyte antigen (HLA)-B27 (6) (69). Chikungunya is a vector borne disease that is endemic in Maldives. It is one of the diseases for which the daily counts are reported. For the purposes of surveillance, a serological test is required for confirmation.

### Suspected Case

Acute onset of fever >38.5ºC and severe arthralgia/arthritis not explained by other medical conditions (8).

### Probable Case

Acute onset of fever >38.5ºC and severe arthralgia/arthritis not explained by other medical conditions residing or having visited epidemic areas having reported transmission within 15 days prior to the onset of symptoms (8).

### Confirmed Case

A suspected case with laboratory confirmation including either virus isolation, the presence of viral RNA by RT-PCR, the presence of virus-specific IgM antibodies in a single serum sample collected in the acute or convalescent stage or a four-fold increase in IgG values in samples collected at least three weeks apart (8).



Form: Communicable Disease Notifying Form

Lab Tests: Trioplex PCR

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## Chlamydia Trachomatis Infection

24 hrs. DA

Infection with Chlamydia trachomatis may result in urethritis, epididymitis, cervicitis, acute salpingitis, or other syndromes when sexually transmitted; however, the infection is often asymptomatic in women. Perinatal infections may result in inclusion conjunctivitis and pneumonia in newborns. Other syndromes caused by C. trachomatis include lymphogranuloma venereum and trachoma. Trachoma is a chronic keratoconjunctivitis caused by Chlamydia trachomatis, and is the most common cause of avoidable blindness. The onset is usually insidious and it may be asymptomatic, lasting for years, may be latent over long periods and may recrudesce. The conjunctiva of the upper lid is first affected with vascularization and cellular infiltration. Early symptoms include conjunctival irritation and blepharospasm. The early follicles are characteristic, but clinical differentiation from conjunctivitis due to other viruses may be difficult. Scarring causes inversion of the lids (entropion) so that the lashes rub against the cornea (trichiasis). The cornea becomes vascularized and opaque. The problem may not be detected until vision begins to fail (6).

### Suspected Case

Not applicable.

### Probable Case

Not applicable.

### Confirmed Case

Diagnose of chlamydia may be confirmed with nucleic acid amplification tests (NAATs), from intracellular inclusions in the conjunctival scrapings by staining with iodine or immunofluorescence. Chlamydia may be isolated in chick embryo or cell culture (6).

Form: Communicable Disease Notifying Form

Lab Tests: STI panel PCR

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## Cholera


Cholera, caused by the Vibrio cholerae bacteria serotype causing acute watery diarrhoea. Severe diarrhoea without pain or colic begins suddenly and is followed by vomiting. Following the evacuation of normal gut fecal contents, typical ‘rice water’ material is passed, consisting of clear fluid with flecks of mucus (6).

### Suspected Case

- In areas where a cholera outbreak has not yet been declared, any person aged 2 years or older presenting with acute watery diarrhoea and severe dehydration or dying from acute watery diarrhoea.
- In areas where a cholera outbreak has been declared, any person presenting with or dying from acute watery diarrhoea (9).

Note: Children under 2 years of age can be affected by cholera and need to be treated immediately. When a cholera outbreak has been declared, children under 2 years of age who meet the cholera case definition should be recorded in the register, reported to the surveillance unit and considered in the epidemiological analysis (9).

### Probable Case

Not applicable.

### Confirmed Case

A suspected case with *V. cholerae* O1 or O139 confirmed by culture or PCR (9).

Form: Communicable Disease Notifying Form

Lab Tests: Stool for Hanging drop, bacterial culture

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## Conjunctivitis

Inflammation of the conjunctiva causing redness and swelling. It can be caused my bacteria, virus, allergen or an irritant.


### Suspected Case

For Surveillance purposes, clinical presentation is sufficient, which includes:
Redness of the conjunctiva
Excessive tears
Irritation, itching or burning
Pus or mucous
Crusting of the eyelids and lashes (in the morning)

### Probable Case

Not applicable.

### Confirmed Case

Not applicable.

Form: Daily Surveillance Report format

Lab Tests: Bacterial culture

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## Covid 19


COVID-19 is the disease caused by a coronavirus called SARS-CoV-2. WHO first learned of this new virus on 31 December 2019, following a report of a cluster of cases of so-called viral pneumonia in Wuhan, People's Republic of China. The most common symptoms of COVID-19 are fever, chills, sore throat. Other symptoms that are less common and may affect some patients include: muscle aches, severe fatigue or tiredness, runny or blocked nose, or sneezing, headache, sore eyes, dizziness, new and persistent cough, tight chest or chest pain, shortness of breath, hoarse voice, heavy arms/legs, numbness/tingling, nausea, vomiting, abdominal pain/ belly ache, or diarrhoea, appetite loss, loss or change of sense of taste or smell and difficulty sleeping (70).

### Suspected Case

A:
A person who meets the clinical OR epidemiological criteria:
Clinical criteria:

Acute onset of fever AND cough (ILI)
OR
Acute onset of ANY THREE OR MORE of the following signs or symptoms: fever, cough,

general weakness/fatigue1, headache, myalgia, sore throat, coryza, dyspnea, nausea/diarrhoea/anorexia.

Epidemiological criteria:

Contact of a probable or confirmed case, or linked to a COVID-19 cluster.

B:

A patient with severe acute respiratory illness (SARI: acute respiratory infection with history of fever or measured fever of ≥38 °C; and cough; with onset within the last 10 days; and requires hospitalization).

C:

A person with no clinical signs or symptoms OR meeting epidemiologic criteria with a positive professional-use or self-test SARS-CoV-2 Antigen-RDT (10).

### Probable Case

A:

A patient who meets clinical criteria AND is a contact of a probable or confirmed case, or linked to a COVID-19 cluster.

B:

Death, not otherwise explained, in an adult with respiratory distress preceding death AND who was a contact of a probable or confirmed case or linked to a COVID-19 cluster (10).

### Confirmed Case

A:

A person with a positive Nucleic Acid Amplification Test (NAAT), regardless of clinical criteria OR epidemiological criteria.

B:

A person meeting clinical criteria AND/OR epidemiological criteria (suspect case A) with a positive professional-use or self- test SARS-CoV-2 Antigen-RDT (10).

Form: Report through Sampler

Lab Tests: Covid 19 PCR, Covid 19 Antigen test, Covid 19 GeneXpert PCR

D

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## Dengue

CB

### Dengue (without warning signs)

Dengue is a vector borne viral infection caused by the dengue virus (DENV), transmitted to humans through the bite of infected mosquitoes. The virus is transmitted to humans through the bites of infected female mosquitoes, primarily the Aedes aegypti mosquito. Other species within the Aedes genus can also act as vectors, but their contribution is secondary to Aedes aegypti. If symptoms occur, they usually begin 4–10 days after infection and last for 2–7 days. Symptoms may include: high fever (40°C/104°F), severe headache, pain behind the eyes, muscle and joint pains, nausea, vomiting, swollen glands, rash.
Individuals who are infected for the second time are at greater risk of severe dengue. Severe dengue symptoms often come after the fever has gone away: severe abdominal pain, persistent vomiting, rapid breathing, bleeding gums or nose, fatigue, restlessness, blood in vomit or stool, being very thirsty, pale and cold skin and feeling weak (71). Dengue is a vector borne disease that is endemic in Maldives.

### Suspected Case

Fever (40°C/104°F) and two of the following:

1. Nausea, vomiting

2. Rash
3. Aches and pains
4. Leukopenia
5. Positive tourniquet test
6. Laboratory confirmed dengue

With the ability to:

7. To tolerate adequate volumes of oral fluid replacement
8. To pass urine at least once every 6 hours (11)

### Probable Case

Not applicable

### Confirmed Case

Case that meets the suspected case definition and confirmed with a Nucleic acid amplification test. NAATs should be performed on serum specimens collected 7 days or less after symptom onset.

Laboratory confirmation can be made from a single acute-phase serum specimen obtained early (≤7 days after fever onset) in the illness by detecting viral genomic sequences with rRT-PCR or dengue nonstructural protein 1 (NS1) antigen by immunoassay.

Presence of virus by rRT-PCR or NS1 antigen in a single diagnostic specimen is considered laboratory confirmation of dengue in patients with a compatible clinical and travel history (12).

D

Form: Communicable Disease Notifying Form

Lab Tests: Dengue IgM & IgG ELISA, Trio plex, PCR, Dengue Rapid NS1, IgM & IgG, Platelet count

## Dengue (with warning signs)

### Suspected Case

Not applicable.

### Probable Case

Not applicable.

### Confirmed Case

Confirmed dengue case without warning signs who develop at least one of the following warning signs:

1. Abdominal pain or tenderness
2. Persistent vomiting
3. Clinical fluid accumulation
4. Mucosal bleed (gingival bleeding, epistaxis, conjunctival bleeding, hematemesis, melena, fresh blood per rectum, hematuria, or vaginal bleeding)
5. Lethargy/restlessness
6. Liver enlargement >2 cm
7. Increased HTC with concurrent decrease in platelet count (≤100,000 platelets/mm3).

OR

At least one comorbid condition such as:

1. Pregnancy
2. Infancy
3. Old age
4. Diabetes mellitus
5. Renal failure

OR
Social circumstances such as

1. Living alone
2. Living far from hospital (6)

Form: Communicable Disease Notifying Form

Lab Tests: Dengue IgM, IgG ELISA, Dengue Rapid (NS1 Ag, IgM, IgG), Trio plex PCR, Platelet count

### Severe Dengue Fever

### Suspected Case

Not applicable.

### Probable Case

Not applicable.

### Confirmed Case

A confirmed dengue case without any warning signs who develops any of the following features:

1. Severe plasma leakage leading to shock
2. Fluid accumulation leading to respiratory distress
3. Severe bleeding as evaluated by clinician

Severe organ involvement:

1. Liver: AST or ALT > = 1000 IU/L
2. CNS: impaired consciousness.
3. Heart and other organs. (6)

Form: Communicable Disease Notifying Form

Lab Tests: Dengue IgM, IgG ELISA, Dengue Rapid NS1, IgM & IgG, Trio plex PCR, Platelet count

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## Diphtheria

12 hrs. CB

Diphtheria is an infection caused by a bacteria called Corynebacterium diphtheriae that produces a toxin that can cause people to get very sick. Diphtheria can infect the respiratory tract (parts of the body involved in breathing) and skin. Symptoms of diphtheria depend on the body part that is affected. People who are exposed to diphtheria usually start having symptoms in 2–5 days if they get sick. Signs and Symptoms include: Pharyngitis, nasopharyngitis, tonsillitis, laryngitis, adherent pseudo membrane, fever, systemic disease (heart, brain, etc.) and cutaneous lesions.

### Suspected Case

An illness of the upper respiratory tract characterized by the following:
Pharyngitis, nasopharyngitis, tonsillitis or laryngitis
AND
Adherent pseudo membrane of the pharynx, tonsils, larynx and/or nose.
A diphtheria pseudo membrane is an exudate that is greyish, thick, firmly adherent and patchy to confluent. Dislodging the pseudo membrane is likely to cause profuse bleeding.
Epidemiologically linked case. An epidemiologically linked case meets the definition of a suspected case and is linked epidemiologically to a laboratory confirmed case. In this situation, a

person has had intimate respiratory or physical contact with a laboratory-confirmed case within the 14 days prior to onset of sore throat.

Some other signs and symptoms associated with diphtheria are:

- Dysphagia;
- Difficulty in breathing;
- Headache;
- Change of voice (hoarseness or thick speech); and
- Nasal regurgitation and serosanguineous nasal discharge.
- Some patients may also present with “bull neck” diphtheria, which is marked by massive cervical lymphadenopathy with edematous swelling of the submandibular region and the surrounding areas (13).

D

### Clinically compatible case

This type of case meets the definition of a suspected case and lacks both a confirmatory laboratory test result and epidemiologic linkage to a laboratory-confirmed case

### Probable Case

Not applicable.

### Confirmed case

A confirmed case is a person with Corynebacterium spp. isolated by culture and positive for toxin production, regardless of symptoms. Toxigenicity must be confirmed by the phenotypic Elek test in all instances. Polymerase chain reaction (PCR) can complement surveillance and may qualify as laboratory confirmed after reviewing the epidemiology and clinical manifestations of the case. Non respiratory laboratory-confirmed diphtheria cases have a skin lesion or non-respiratory mucosal infection (for example, eye, ear or genitalia) from which Corynebacterium spp. Is isolated by culture and tests positive for toxin production (13).

Form: Communicable Disease Notifying Form

Lab Tests: Albert's stain, bacterial culture

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## Dysentery

Dysentery is an infection of the intestines that causes diarrhoea containing blood or mucus. It can be due to bacteria (Shigella species which are Gram-negative rods) or parasites (Entamoeba histolytica).


### Suspected Case

Diarrhoea containing blood or mucus with colicky abdominal pain and tenesmus.

### Probable Case

Not applicable.

### Confirmed Case

Amoebic Dysentery can be confirmed by:
Demonstration of cysts or trophozoites of Entamoeba histolytica in stool.
Demonstration of trophozoites in tissue biopsy or ulcer scrapings by culture or histopathology

Bacillary Dysentery can be confirmed by the isolation of Shigella spp. from stool or rectal swab specimens.

Form: Communicable Disease Notifying Form

Lab Tests: Stool culture, blood culture, stool for parasites, Rota virus & Noro virus PCR

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## Ebola Virus Disease


Ebola is introduced into the human population through close contact with the blood, secretions, organs or other bodily fluids of infected animals such as fruit bats, chimpanzees, gorillas, monkeys, forest antelope or porcupines found ill or dead or in the rainforest. It is a rare but deadly viral disease that is transmitted to people by touching infected animals when preparing, cooking or eating them or by touching body fluids of an infected person such as saliva, urine, feces or semen. It can also be transmitted by touching things that have the body fluids of an infected person like clothes or sheets. Ebola enters the body through cuts in the skin or when touching one's eyes, nose or mouth. Incubation period ranges from 2 to 21 days (14).

### Suspected Case

A patient with the travel history to an active Ebola epidemic or an active cluster of Ebola, within the last 21 days presents with the symptoms of Ebola infection which can include:

- Fever
- Fatigue
- Muscle pain
- Headache
- Sore throat
- These are followed by vomiting, diarrhoea, rash, and internal and external bleeding.

It can be difficult to clinically distinguish Ebola virus disease from other infectious diseases such as malaria, typhoid fever and meningitis (14).

### Probable Case

Not applicable.

### Confirmed Case

Confirmation that symptoms are caused by Ebola virus infection are made using the following diagnostic methods:

- Antibody-capture enzyme-linked immunosorbent assay (ELISA)
- Antigen-capture detection tests
- Serum neutralization test
- Reverse transcriptase polymerase chain reaction (RT-PCR) assay
- Electron microscopy
- Virus isolation by cell culture (14).

Form: Communicable Disease Notifying Form

Lab Tests: WHO collaborating center

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# Encephalitis

Encephalitis is inflammation of the active tissues of the brain caused by an infection or an autoimmune response. The inflammation causes the brain to swell. It is commonly due to viral infections but it can be caused by autoimmune, bacterial, fungal and parasitic infections (84).

12 hrs. CB

## Acute Encephalitis Syndrome

For surveillance purposes, only syndromic surveillance is done for acute encephalitis syndrome.

## Suspected Case

The AES clinical case definition is a person of any age at any time of year with the acute onset of fever and at least one of the following:
a change in mental status (including symptoms such as confusion, disorientation, coma or inability to talk)
OR
A new onset of seizures (excluding simple febrile seizures).

**A simple febrile seizure** is defined as a seizure that occurs in a child aged 6 months to < 6 years old, whose only finding is fever and a single generalized convulsion lasting less than 15 minutes, and who recovers consciousness within 60 minutes of the seizure.

## Probable Case

Not Applicable for AES.

## FINAL CASE CLASSIFICATION of AES

Laboratory-confirmed: An AES case that has been laboratory-confirmed as Japanese encephalitis or an etiologic agent other than JE virus is identified.

AES of unknown etiology is an AES case in which no diagnostic testing is performed or in which testing was performed but no etiologic agent was identified, or in which the test results were indeterminate (15).

## Etiology of AES

Acute disease with impaired brain function maybe due to causes such as:

- Japanese encephalitis
- Meningitis (viral and bacterial, including tuberculosis)
- Encephalopathy due to toxins
- Cerebral malaria
- Viral encephalitis due to herpes simplex virus, mumps virus or neurovirulent
- enteroviruses (e.g. enterovirus 68 or enterovirus 71 with hand, foot and mouth syndrome)
- Post-infectious meningoencephalitis (e.g. post-measles or post-varicella) (15)

Forms to send to HPA: Communicable Disease Notifying Form

Lab Tests: WHO collaborating center, if needed further investigation

E

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## Encephalitis (Japanese B encephalitis)

12 hrs. CB

This flavivirus is an important cause of endemic encephalitis in 25 countries. There has been no reported confirmed case of Japanese B encephalitis. The incubation period is usually 5 to 15 days (18). Most infections are subclinical in childhood and 1% or less of infections lead to encephalitis. Initial systemic illness with fever, malaise and anorexia is followed by photophobia, vomiting, headache and changes in brainstem function. Neurological features other than encephalitis include meningitis, seizures, cranial nerve palsies, flaccid or spastic paralysis, and extrapyramidal features. There 25% mortality with 50% neurological damage (6). Japanese encephalitis should be considered in a patient with evidence of a neurologic infection (e.g., meningitis, encephalitis, or acute flaccid paralysis) who has recently traveled to or resided in an endemic country in Asia or the western Pacific (18).

## Suspected Case

If there are signs and symptoms of Acute Encephalitis Syndrome (AES) in a patient living in a country endemic for Japanese encephalitis or if there is history of travel to an endemic country with Japanese encephalitis within the last 15 days (16).
A suspected Japanese Encephalitis (JE) case is a person whose condition matches the definition of AES. The clinical case definition of AES refers to a person of any age who, at any time of the year, develops a fever of acute onset and at least one of the following:

- A change in mental status (including symptoms such as confusion, disorientation, coma or inability to talk);

OR

- New onset of seizures, excluding simple febrile seizures.

A simple febrile seizure is defined as a seizure among children who are between 6 months and 6 years of age, in whom the only findings are fever and a single generalized convulsion lasting less than 15 minutes, and who recover consciousness within 60 minutes of the seizure (15).

## Probable Case

Not applicable.

## Confirmed Case

If there are signs and symptoms of encephalitis in a patient living in a country endemic for Japanese encephalitis or if there is history of travel to an endemic country with Japanese encephalitis within the last 15 days and there is detection of specific IgM antibodies that are present in the cerebrospinal fluid and serum of patients 10 days after the onset of clinical symptoms (16).

### Key features in diagnosing encephalitis

Characteristic brain biopsy findings of encephalitis are all that are needed to meet level 1 but it is recognized this will rarely be obtained.
To meet the criteria for diagnostic level 2 or 3 is encephalopathy or focal/multifocal neurologic signs along with evidence of brain inflammation (fever, CSF pleocytosis, characteristic CT/MRI/EEG findings in encephalitis) and absence of alternative diagnoses (meningitis, para-meningeal processes such as brain abscess, traumatic brain injury, encephalopathy associated with: sepsis, toxin, metabolic abnormality, neurodegenerative disease, endocrine disorder and neoplastic disease) (17).

### List of countries endemic for Japanese encephalitis

Bangladesh, Bhutan, Brunei, Burma, Cambodia, China, India, Indonesia, Japan, Laos, Malaysia, Nepal, North Korea, Pakistan, Papua New Guinea, Philippines, Russia, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Timor-Leste and Vietnam (18).

Form: Communicable Disease Notifying Form

Lab Tests: WHO collaborating center, if needed further investigation

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## Lymphatic Filariasis


Infection with the filarial worms Wuchereria bancrofti and Brugia malayi is associated with clinical outcomes ranging from subclinical infection to hydrocele and elephantiasis. Lymphatic filariasis, commonly known as elephantiasis, is a neglected tropical disease. Infection occurs when filarial parasites are transmitted to humans through mosquitoes. Infection is usually acquired in childhood causing hidden damage to the lymphatic system. Lymphatic filariasis is transmitted by different types of mosquitoes for example by the Culex mosquito, widespread across urban and semi-urban areas, Anopheles, mainly found in rural areas, and Aedes, mainly in endemic islands in the Pacific (6) (72).

### Suspected Case

Acute filarial lymphangitis presents with fever, pain, tenderness and erythema along the course of inflamed lymphatic vessels. Inflammation of the spermatic cord, epididymis and testis is common. In the earliest stages of lymphangitis, the diagnosis is made on clinical grounds, supported by eosinophilia
and sometimes by positive filarial serology. Filarial infections cause the highest eosinophil counts of all
helminthic infections (6).

### Probable Case

A suspected case is confirmed if there is progressive enlargement, coarsening, corrugation, fissuring and bacterial infection of the skin and subcutaneous tissue develop gradually, causing irreversible ‘elephantiasis’ (6).

### Confirmed Case

When microfilariae can be found in the peripheral blood or in a wet blood film or are detected by microfiltration of a sample of lysed blood in a probable case (6).

Form: Communicable Disease Notifying Form

Lab Tests: Thick blood-stained smear, Rapid Antigen testing

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## Food Poisoning


Food poisoning can occur after ingestion of certain microorganism such as Salmonella or E. coli. Symptoms may vary, depending on the infectious agent that was swallowed. Symptoms can range from mild to serious and can last for a few hours or several days (19). An incubation period of less than 18 hours
suggests toxin-mediated food poisoning (6).

### Suspected Case

Food poisoning should be suspected if the following conditions apply:

1. The patient has diarrhea and/or vomiting with any of the additional features such as stomach pain or cramps, nausea and fever.
2. If 2 or more people from the same household or from the same workplace exhibit similar signs and symptoms after eating food from the same source of food preparation.

### Probable Case

Not applicable.

### Confirmed Case

A suspected case becomes a confirmed case when the infectious agent has been identified and a common source of contamination has been identified.

Danger signs in food poisoning cases.

1. Bloody diarrhea.
2. Diarrhea that lasts more than 3 days.
3. High fever (temperature over 102°F).
4. Vomiting so often that you cannot keep liquids down.
5. Signs of dehydration, which include not urinating (peeing) much, a dry mouth and throat, feeling dizzy when standing up (19).
6.


Form: Food Poisoning Case Investigation Form


Lab Tests: Stool culture, blood culture, stool for parasites, Rota virus & Noro virus PCR

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## Genital Herpes

Herpes simplex virus type 1 (HSV-1) or type 2 (HSV-2) infection produces a spectrum of clinical problems. It is usually a sexually transmitted infection (vaginal, anal, oro-genital or oro-anal), but perinatal transmission to the neonate may also occur (6).


### Suspected Case

For surveillance purposes a suspected case definition is sufficient and it does not require a confirmation through laboratory tests. Clinical presentation is with tender ulcers develop on the external genitalia. Lesions at other sites (e.g. urethra, vagina, cervix, peri anal area, anus or rectum) may cause dysuria, urethral or vaginal discharge, or anal, perianal or rectal pain. Other symptoms, such as fever, headache and malaise, are common. Inguinal lymph nodes become enlarged and tender, and there may be nerve root pain in the 2nd and 3rd sacral dermatomes. Extragenital lesions may develop at other sites, such as the buttock, finger or eye, due to auto-inoculation. Oropharyngeal infection may result from oro-genital sex (6). There may or may not be history of sex with a known case with recent infection of genital herpes.



### Probable Case

Not applicable.

### Confirmed Case

Not applicable.

Form: Communicable Disease Notifying Form

Lab Tests: STI panel PCR, Herpes Simplex Virus I & II IgM & IgG

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## Genital Warts


Human papillomavirus (HPV) DNA typing has demonstrated over 90 genotypes, of which HPV-6, HPV-11, HPV-16 and HPV-18 most commonly infect the genital tract through sexual transmission. The genotypes of HPV-6 and 11 cause anogenital warts. Perianal warts, whilst being more commonly found in MSM, are also found in heterosexual men and in women (6).

### Suspected Case

For surveillance purposes a suspected case definition is sufficient and it does not require a confirmation through laboratory tests. Anogenital warts caused by HPV may present clinically as a single or multiple, exophytic, papular or flat warts (or condylomas) (6).

### Probable Case

Not applicable.

### Confirmed Case

Not applicable.

Forms to send to HPA: Communicable Disease Notifying Form

Lab Tests: STI panel PCR (done in IGMH)

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## Genital ulcers


The most common cause of genital ulcer is genital herpes. Classically, multiple painful ulcers affect the glans, coronal sulcus or shaft of penis, but solitary lesions occur rarely. Perianal ulcers may be seen in MSM (men having sex with men). The diagnosis is made by gently scraping material from lesions and sending this in a transport medium for culture or detection of HSV DNA by polymerase chain reaction (PCR). Increasingly, laboratories will also test for Treponema pallidum by PCR (6).

### Suspected Case

For surveillance purposes a suspected case definition is sufficient and it does not require a confirmation through laboratory tests. However, an elimination test for syphilis is necessary. Genital ulcers may present as multiple painful ulcers (solitary lesions may occur rarely) affect the glans, coronal sulcus or shaft of penis or as perianal ulcers (6).

### Probable Case
Not applicable.

### Confirmed Case
Not applicable.

Form: Communicable Disease Notifying Form

Lab Tests: Syphilis CMIA IgG/IgM combined, RPR, TPHA, HSV IgG & IgM Elisa, STI PCR panel

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## Gonorrhea

12 hrs. CB

Gonorrhea is caused by infection with Neisseria gonorrhea The columnar epithelium in the lower genital tract, rectum, pharynx and eyes may become infected. Transmission is usually the result of vaginal, anal or oral sex. Gonococcal conjunctivitis may be caused by accidental infection from contaminated fingers. Untreated mothers may infect babies during delivery, resulting in ophthalmia neonatorum. Infection of children beyond the neonatal period usually indicates sexual abuse. The incubation period is usually 2–10 days (6).

### Suspected Case
A suspected case may present with mucopurulent or purulent urethral discharge, dysuria, rectal infection in MSM is usually asymptomatic but may present with anal discomfort, discharge or rectal bleeding. Most (80%) of women who have gonorrhea are asymptomatic. There may be vaginal discharge or dysuria (6).

### Probable Case
Not applicable.

### Confirmed Case
A suspected case is confirmed when microscopy reveals gram-negative diplococci in smears from infected sites. Pharyngeal smears are difficult to analyze due to the presence of other diplococci, so the diagnosis must be confirmed by culture or NAAT (Nucleic Acid Amplification Test) (6).

Form: Communicable Disease Notifying Form

Lab Tests: Gram's smear, bacterial culture, STI PCR

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## Granuloma Inguinale

12 hrs. CB

Granuloma inguinale is a genital ulcerative infection caused by Klebsiella granulomatis (Donovan bodies in microscopy). The incubation period varies from 3–40 days. They present clinically as usually painless ulcers or hypertrophic granulomatous lesions. There is swelling of inguinal nodes which may form an abscess or ulcers (6).

### Suspected Case
Not applicable.

### Probable Case
Not applicable.

### Confirmed Case
They present as painless ulcers or hypertrophic granulomatous lesion with swollen lymph nodes. Conformation is through microscopy of cellular material for intracellular bipolar-staining Donovan bodies (6).

Form: Communicable Disease Notifying Form

Lab Tests: Gram's stain, Giemsa stain

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## Guillain-Barré Syndrome


Guillain-Barré syndrome (GBS) is a rare disorder where the body's immune system causes nerve damage which causes muscle weakness and sometimes paralysis. While its cause is not fully understood, the syndrome often follows infection with a virus or bacteria (73).

### Suspected Case
GBS is difficult to diagnose and the key diagnostic findings include:

1. Recent onset, within days to at most four weeks of symmetric weakness, usually starting in the legs.
2. Abnormal sensations such as pain, numbness, and tingling in the feet that accompany or even occur before weakness.
3. Absent or diminished deep tendon reflexes in weak limbs
4. Elevated cerebrospinal fluid protein without elevated cell count. This may take up to 10 days from onset of symptoms to develop.
5. Abnormal nerve conduction velocity findings, such as slow signal conduction
6. Sometimes, a recent viral infection or diarrhea (20).

If the doctor/specialist treating the patient, decides on it being a suspected case of GBS it is sufficient for surveillance purposes.

### Probable Case
Not applicable.

### Confirmed Case
Not applicable.

Form: Guillain-Barre Syndrome (GBS) Surveillance Case Report

Lab Tests: WHO collaborating center

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## Hemophilus Influenzae Disease (including Hib)

Haemophilus influenzae disease is a name for any illness caused by the bacteria, H. influenzae. It can cause ear infections to bloodstream infections, which are very serious. In spite of the name, H. influenzae does not cause influenza (the flu). Vaccines are available for one type of H. influenzae (type b or Hib) disease. Hib disease is a vaccine preventable disease (21).
The most common types of invasive disease caused by H. influenzae are:

1. Pneumonia (lung infection)
2. Bloodstream infection
3. Meningitis (swelling of the lining of the brain and spinal cord)
4. Epiglottitis (swelling in the throat)
5. Cellulitis (skin infection)
6. Infectious arthritis (inflammation of the joint)
7. H. influenzae can also be a common cause of ear infections in children and bronchitis in adults (74).

Common presentations of Haemophilus influenzae disease



## Pneumonia

Symptoms of pneumonia usually include:

1. Fever and chills
2. Cough
3. Shortness of breath or difficulty breathing
4. Sweating
5. Chest pain
6. Headache
7. Muscle pain or aches
8. Excessive tiredness

## Bloodstream infection

Symptoms of bloodstream infection usually include:

1. Fever and chills
2. Excessive tiredness
3. Pain in the belly
4. Nausea with or without vomiting
5. Diarrhea
6. Anxiety
7. Shortness of breath or difficulty breathing
8. Altered mental status (confusion)
9. A bloodstream infection from H. influenzae can occur with or without pneumonia

## Meningitis

Symptoms of meningitis typically include sudden onset of:

1. Fever
2. Headache
3. Stiff neck
4. Nausea with or without vomiting
5. Photophobia (eyes being more sensitive to light)
6. Altered mental status (confusion)

**Babies with meningitis may:**

1. Be irritable
2. Vomit
3. Feed poorly
4. Appear to be slow or inactive
5. Have abnormal reflexes (21).

## Suspected Case

A suspected case is any case reported by the doctor/specialist as a case of Haemophilus influenzae disease with all/some of the symptoms given above for the different types of the disease (21).

**Suspected case of meningitis** (for case finding) are persons who present with the following: Sudden onset of fever (> 38.5°C rectal or >38°C axillary) AND at least one of the following signs:

- Neck stiffness,
- Bulging fontanel,
- Altered or reduced level of consciousness,
- Convulsions,
- 6 years: any seizure
- 6 months to 2 generalized brief convulsions within 24 hour period
- Poor sucking and irritability (> 2 months old)
- Prostration or lethargy,
- Toxic appearance,
- Petechial or purpureal rash (22)

**Suspected Pneumonia** (for case finding) Any child aged 0–59 months demonstrating cough or difficulty breathing and displaying fast breathing when calm, as defined by age:

- Age 0 to < 2 months: 60 breaths/minute or more
- Age 2 to < 12 months: 50 breaths/minute or more
- Age 12 to ≤ 59 months: 40 breaths/minute or more (22)

## Probable Case

Not applicable.

## Confirmed Case

A confirmed case is a suspected case which has been laboratory confirmed as having Haemophilus influenzae disease. The most common laboratory testing methods is to culture the organism from a sample of blood or spinal fluid (21).

**Note: If it is a child under 5 look under meningitis and pneumonia (children under 5) heading.**

Form: Communicable Disease Notifying Form

Lab Tests: Bio fire, CSF panel PCR, Bacterial culture

## Hand Foot and Mouth Disease


Hand, foot, and mouth disease is caused by viruses that belong to the enterovirus family (Coxsackievirus A16, Coxsackievirus A6 and Enterovirus 71 (EV-A71). The virus can spread to others through an infected person's nose and throat secretions, such as saliva, drool, or nasal mucus, through the fluid from blisters or scabs and from the feces. It is common in children under 5 years (23).

### Suspected Case

The clinical presentation of the symptoms of hand, foot, and mouth disease usually include fever, mouth sores, and skin rash of children under 5 years of age. The rash is commonly found on the hands and feet (23). The suspected case is sufficient for the surveillance purposes and does not require laboratory confirmation.

H

### Probable Case

Not applicable.

### Confirmed Case

Not applicable.

Form: Daily Surveillance Report format

Lab Tests: WHO collaborating center, if needed further investigation

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## Viral Hepatitis (A, B, C, D & E)


Viral hepatitis due to the Hepatitis A, B, C, D and E virus are a group of infections of the liver which may have an acute phase and a chronic phase. A non-specific prodromal illness is characterized by headache, myalgia, arthralgia, nausea and anorexia usually precedes the development of jaundice by a few days to 2 weeks. Vomiting and diarrhoea may follow, and abdominal discomfort is common. Dark urine and pale stools may precede jaundice. There are usually few physical signs. The liver is often tender but only minimally enlarged. Occasionally, mild splenomegaly and cervical lymphadenopathy are seen. Elevated LFTs develops, with serum transaminases typically between 200 and 2000 U/L in an acute infection (usually lower and fluctuating in chronic infections). The plasma bilirubin reflects the degree of liver damage. The ALP rarely exceeds twice the upper limit of normal. Prolongation of the PT indicates the severity of the hepatitis but rarely exceeds 25 seconds, except in rare cases of acute liver failure. The white cell count is usually normal with a relative lymphocytosis. Serological tests confirm the etiology of the infection (6).

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### Suspected Case

Not applicable.

### Probable Case

Discrete onset of an acute illness with signs/symptoms of (i) acute infectious illness (e.g., fever, malaise, fatigue) and (ii) liver damage (e.g., anorexia, nausea, jaundice, dark urine, right upper quadrant tenderness, AND/OR raised alanine aminotransferase (ALT) levels more than ten times the upper limit of normal (24).

### Confirmed Case

For surveillance purposes only laboratory confirmed cases will be used.

1. Detection of Anti-HAV of the IgM type is diagnostic of Hepatitis A.
2. Detection of IgM anti-HBc positive is confirmed case of Hepatitis B (24).
3. Detection of anti-HDV of IgM type is diagnostic of Hepatitis D. There often superinfection of Hepatitis B and D.
4. A confirmed case of acute hepatitis C is a case that is HCV RNA positive and anti-HCV negative OR seroconversion to anti-HCV OR anti-HCV positive AND IgM anti-HBc negative AND anti-HAV IgM negative AND anti-HEV IgM negative (24).
5. Detection of IgM antibodies to HEV are diagnostic of active infection of Hepatitis E (6).

Form: Communicable Disease Notifying Form

Lab Tests: HBsAg CMIA, HBsAg confirmatory CMIA, Anti Hbs, Hepatitis Bcore IgM Ab, Hepatitis B core total Ab, HBeAg, HBeAb, HAV IgM, Hepatitis C virus CMIA, Hepatitis C viral load (GeneXpert)

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## Herpangina


Herpangina is an infection caused by the coxsackie virus that can be distinguished from a primary herpetic infection by the position of the vesicles. Herpangina lesions also do not combine to generate significant areas of ulceration; they are located in the tonsillar or pharyngeal region. The ailment is transient (4).

### Suspected Case

The clinical presentation is sufficient for surveillance purposes. Small vesicles at the soft/hard palate junction are its defining feature. High fever, an excruciatingly sore throat, and headache are frequently also present. The lesions don't last long; they usually rupture after two to three days and don't last longer than a week (6).

### Probable Case

Not applicable.

### Confirmed Case

Not applicable.

Form: Communicable Disease Notifying Form

Lab Tests: Not available

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## HIV Infection

The RNA retrovirus known as HIV is an encapsulated member of the lentivirus family. Following mucosal exposure, dendritic cells carry HIV to the lymph nodes, where infection takes hold followed by viremia and spread to lymphoid tissues which is the main site for viral replication. HIV positive people can develop the acquired immunodeficiency syndrome (AIDS). AIDS is caused by the human immunodeficiency virus (HIV), which progressively impairs cellular immunity leading to several other disease conditions and superinfections (6).

### Suspected Case
Not applicable.

### Probable Case
Not applicable.

### Confirmed Case
Only confirmed cases of HIV are used for surveillance purposes. HIV can be diagnosed by the presence of host antibodies, which can be found in the laboratory using enzyme-linked immunosorbent assay (ELISA) assays. The majority of tests find HIV-1 and HIV-2 antibodies. To prove infection, only two positive immunoassay antibody tests are required. Additionally, Western blot assays may be utilized to verify the infection (6).

Form: Communicable Disease Notifying Form

Lab Tests: HIV ELISA (4th gen), HIV RDT (3rd gen), HIV CMIA (4th gen)

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## Influenza (Viral Influenza) ILI and SARI


The influenza viruses cause global seasonal flu and cause acute respiratory infections. There are 4 different subtypes of influenza viruses which are A, B, C, and D. Seasonal epidemics are brought on by the influenza A and B viruses (26).

### Suspected Case
There are two types of suspected cases of Influenza.

### Influenza Like Illness (ILI) case definition
An acute respiratory infection with fever of ≥ 38 C° and cough with the onset of symptoms within the last 10 days.

### Severe Acute Respiratory Illness (SARI) case definition
An acute respiratory infection with fever of ≥ 38 C° and cough with the onset of symptoms within the last 10 days requiring hospitalization (25).

### Probable Case
Not applicable.

### Confirmed Case
To confirm as a case of Influenza, samples taken from throat, nasal and nasopharyngeal secretions or tracheal aspirate or washings are used for direct antigen detection, virus isolation, or detection of influenza-specific RNA by reverse transcriptase-polymerase chain reaction (RT-

PCR) (26).

**Causes of ILI and SARI**
ILI or SARI can be caused by Influenza virus, Adenovirus, Enterovirus, Respiratory syncytial virus, Human rhinovirus, Parainfluenza virus, Human coronavirus, Human metapneumovirus and many others.

Form: Influenza Surveillance form

Lab Tests: Influenza PCR

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## Leprosy


Leprosy also known as Hansen's disease is a chronic infection of the skin, peripheral nerves and respiratory system. The causative organism is Mycobacterium leprae, an intracellular acid-fast bacillus from mycobacteriaceae family. Most of the persons coming in close contact with M. leprae develop immunity without an evident disease. It presents with a large skin lesion (>10 cm) which has a well-demarcated erythematous rim with atrophic, hypopigmented, anesthetic area. There can be more than one lesion sometimes. The peripheral nerve closest to the area involved is usually thickened. The lesion can continue to enlarge and there is irreversible loss of skin appendages, i.e hair follicle, sweat glands as well as cutaneous receptors (6).

### Suspected Case
Not applicable.

### Probable Case
Not applicable.

### Confirmed Case
Confirmed cases are used for surveillance purposes. Anesthetic skin lesions are pathognomonic of leprosy. A skin biopsy from an active lesion provides confirmation slit and smear preparations are made. The disease is classified as Paucibacillary if there are <5 skin lesions and no bacilli on smear; if >6 skin lesions with bacilli on smear. No other investigations are required (6).

Form: Communicable Disease Notifying Form

Lab Tests: AFB smear

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## Leptospirosis

Leptospira are aerobic spirochetes occurring worldwide. It is the most widespread zoonotic disease. There are more than 200 pathogenic sero-varieties of Leptospira with clinically overlapping presentations. Most of the cases occur in tropical and subtropical areas where the Leptospira infects many species of animals which can then transmit the infection to humans through soil and water. The portal of entry for Leptospira is usually a break in skin like abrasions or mucous membranes. Leptospiral infection can be asymptomatic or a mild illness or a typical biphasic illness with severe organ dysfunction and death. The incubation period is 7–12 days.
The initial phase of blood stream invasion is called septicemic phase and lasts 2–7 days. During this time the child has fever with chills, headache, vomiting and myalgia. Lymphadenopathy and hepatosplenomegaly may also occur.
The septicemic phase may be followed by a brief asymptomatic period and followed the immune phase. The immune phase is characterized by appearance of antibodies to Leptospira while the organism itself disappears from circulation and is present in the organ systems. This phase can last for several weeks. There is a recrudescence of fever and depending on the extent of the organ involvement; the clinical presentation can be variable (6).

### Suspected Case
Not applicable.

### Probable Case
Not applicable.

### Confirmed Case
Confirmed cases are used for surveillance. During first week, Leptospira can be cultured but requires
prolonged period for same. Dark field microscopy of blood (1st week) and fresh urine (2nd week) may show Leptospira. Serological tests.
(a) Microscopic agglutination test is the specific test but difficult to do as involves live cultures of Leptospira.
(b) ELISA test – tests IgM antibodies and is positive early in disease.
(c) Slide agglutination test (6).

Form: Communicable Disease Notifying Form

Lab Tests: WHO collaborating center

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## Lymphogranuloma Venereum


It is a sexually transmitted disease caused by Chlamydia trachomatis bacteria. The incubation period of 3-30 days. It presents as a small, transient, painless ulcer, vesicle, papule and often goes unnoticed. The inguinal and femoral lymph nodes are usually unilaterally tender, matted, suppurative.

### Suspected Case
Not applicable.

### Probable Case
Not applicable.

### Confirmed Case

Confirmed cases are used for surveillance. Confirmation is by testing swab from ulcer or bubo pus for serological tests for Chlamydia serotypes.

Form: Communicable Disease Notifying Form

Lab Tests: STI panel PCR

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## Malaria


Malaria is a vector borne disease and is caused by the protozoan, Plasmodium falciparum, P. vivax, P. ovale, P. malariae and the predominantly simian parasite, P. knowlesi. It is transmitted by the bite of female anopheline mosquitoes and occurs throughout the tropics and subtropics. The clinical features of malaria are non-specific and the diagnosis must be suspected in anyone returning from an endemic area who has features of infection. The fever has no particular pattern. The other symptoms include, malaise, headache and vomiting, cough and mild diarrhoea are also common. Jaundice is common due to hemolysis and hepatic dysfunction. The liver and spleen enlarge and may become tender. Anemia develops rapidly, as does thrombocytopenia (6). Malaria is an eliminated disease in Maldives. The Incubation period for malaria, following the bite of an infected Anopheles mosquito is 7 to 30 days (27)

### Suspected Case

If a patient with travel history to a malaria endemic country within the last 30 days, presents with a combination of the following symptoms:

1. Fever
2. Chills
3. Sweats
4. Headaches
5. Nausea and vomiting
6. Body aches
7. General malaise (27)

### Probable Case

Not applicable.

### Confirmed Case

A case is confirmed when the Malaria parasites is identified by examining under the microscope, a drop of the patient's blood, spread out as a “blood smear” on a microscope slide. Prior to examination, the specimen is stained (most often with the Giemsa stain) to give the parasites a distinctive appearance.

### Severe Malaria

### Confirmed Case

If a malaria confirmed case develops the following clinical manifestations:

1. Cerebral malaria, with abnormal behavior, impairment of consciousness, seizures, coma, or other neurologic abnormalities
2. Severe anemia due to hemolysis (destruction of the red blood cells)
3. Hemoglobinuria (hemoglobin in the urine) due to hemolysis
4. Acute respiratory distress syndrome (ARDS), an inflammatory reaction in the lungs that inhibits oxygen exchange, which may occur even after the parasite counts have

decreased in response to treatment
5. Abnormalities in blood coagulation
6. Low blood pressure caused by cardiovascular collapse
7. Acute kidney injury
8. Hyper-parasitemia, where more than 5% of the red blood cells are infected by malaria parasites
9. Metabolic acidosis (excessive acidity in the blood and tissue fluids), often in association with hypoglycemia

Severe malaria is a medical emergency and should be treated urgently and aggressively (27).

Form: Communicable Disease Notifying Form

Lab Tests: Stained blood smear

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## Measles and Rubella


Measles is a dangerous, highly contagious illness brought on by a virus belonging to the paramyxovirus family. It can be passed from person to person through coughing and sneezing, close physical contact, or direct contact with contaminated nose or throat secretions. The incubation period is 10 to 12 days. For up to two hours, the virus is infectious and active in the air or on infected surfaces. Between 4 days before and 4 days after the rash appears, it can be spread by an infected individual. Complications from the disease account for the majority of measles-related fatalities. Children less than 5 or adults older than 30 are more likely to experience serious consequences (76). Measles has been eliminated in Maldives (77).

### Suspected Case

Case of Measles or Rubella is suspected when:

- A patient with acute fever (>39 C) and maculopapular (non-vesicular) rash

OR

- A patient whom a health-care worker suspects of having measles or rubella, irrespective of his/her age (28).

### Probable Case

Not applicable

### Confirmed case

There are several pathways by which a case may be considered as confirmed.

1. A Laboratory-confirmed measles case:
   A suspected case of measles that has been confirmed positive by testing in a proficient laboratory, and vaccine-associated illness has been ruled out.

   Laboratory Confirmation may be obtained by:
   a. Detection of anti-measles IgM antibody by enzyme immunoassay (ELISA). This is the gold standard. Results of IgM should be reported within four days of the specimen's arrival at the laboratory.
   b. Diagnostically significant titer changes in anti-measles IgG antibody level in acute or convalescent sera, or documented seroconversion (IgG negative to IgG positive).
   c. Positive reverse transcription-polymerase chain reaction (RT-PCR) or viral isolation in cell culture.

2. Epidemiologically linked measles case: A clinical case of measles that has not been

confirmed by a laboratory, but was geographically and temporally related, with dates of rash onset occurring 7–21 days apart from a laboratory-confirmed case or another epidemiologically linked measles case.

3. Clinically compatible measles case: A clinical case of measles, but no adequate clinical specimen was taken and the case has not been linked epidemiologically to a laboratory-confirmed or epidemiologically linked case of measles or other communicable disease (29).

**Note: Also look under Congenital Rubella Syndrome (CRS)**

## Discarded case

A suspected measles case may be considered as a discarded case if:

1. A negative laboratory testing in a proficient laboratory on an adequate specimen collected during the proper time after rash onset.
2. An epidemiological linkage to a laboratory-confirmed disease other than measles.
3. If another etiology has been confirmation.
4. If it fails to meet the clinically compatible measles case definition (29).

Form: Form: Fever with Rash Investigation Form

Lab Tests: Measles ELISA IgM, IgG, PCR

## Congenital Rubella Syndrome (CRS)

Rubella surveillance cannot capture every case of rubella since the disease is frequently mild or asymptomatic. Congenital rubella syndrome (CRS) is the most severe outcome of rubella (30)

12 hrs. CB

## Suspected Case

A health worker should suspect CRS in the case of an infant <12 months of age with:

- Congenital heart disease (most commonly, patent ductus arteriosus or peripheral pulmonary artery stenosis)

AND/OR

- Suspicion of hearing impairment

AND/OR

- One or more of the listed eye signs:
  - White pupil (cataract);
  - Larger eyeball (congenital glaucoma)
  - Loss of night vision and/or side vision
- A health worker may suspect CRS in any infant <12 months of age even without apparent signs of CRS, in case of maternal history of suspected or confirmed rubella infection during pregnancy.
- The mother may complain that her child does not react to loud sounds; does not seek out or detect the direction from which sound is coming; does not react to voices; has stopped babbling and trying to make sounds; or still babbles but is not progressing towards more understandable speech. The lens of the eye may be clouded at birth. There may be excessive tearing, or the child may not open his/her eyes in bright light, or may have a large, cloudy cornea (the normally clear front surface of the eye). The child's vision at night or in low light may be decreased and there may be loss of side vision (tunnel vision). The mother may complain that her child is not growing at the normal pace. Besides, the child may suffer from heavy and fast breathing (30).

### Probable Case
Not applicable.

### Confirmed case
A laboratory-confirmed case of congenital rubella infection (CRI) or syndrome in an infant meets one of the following criteria:

- For infants < 6 months of age: rubella IgM antibody is detected; and
- For infants between 6 and 12 months of age: rubella IgM and IgG antibody are detected, OR there is a sustained rubella IgG antibody level (determined on a minimum of two occasions at least one month apart in the absence of the receipt of rubella vaccine or exposure to wild-type rubella).
- For infants of any age < 12 months, rubella virus is detected by viral culture OR polymer chain reaction (PCR) in an appropriate clinical sample (throat or nasal swabs, or blood, urine or cerebrospinal fluid specimens).

The following points should be noted in relation to laboratory testing.

- Serology results cannot be used to confirm CRS after a child with suspected CRS has received rubella-containing vaccine.
- Although IgM antibodies may persist for up to one year, about 50% of CRS cases are IgM-negative at 6 months of age, depending on the sensitivity of the test. Since IgM may not be detectable in some infants tested shortly after birth, IgM negative infants with suspected CRS should be retested at the age of 1 month or shortly thereafter.
- Laboratory confirmation of CRS in an infant older than 6 months of age should not rely on the IgM test alone if the IgM result is negative. In such cases, serial IgG testing should be conducted after at least one month to check if the level of IgG antibody is sustained over several months.
- Virus isolation techniques should be used to test if infants with congenital rubella are shedding rubella virus. Congenitally infected infants may shed and transmit rubella virus for up to 1 year of age and thus become a source of rubella outbreaks. Therefore, it is important to continue testing the infant for the virus throughout the first year of life so that infection control measures can continue until virus shedding stops. Whether viral shedding has ceased may be confirmed by two negative results of viral testing of specimens obtained 1 month apart from infants of at least 3 months of age.

Genotyping may provide information on the source of the virus. In an endemic setting, genotype testing should be conducted at least once for every chain of rubella transmission (30).

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## Meningitis

Meningitis is the inflammation of the meninges (which are the protective membranes covering the brain and spinal cord). It may be caused by a bacterial or viral infection of the cerebrospinal fluid surrounding the brain and spinal cord usually causing swelling. However, other causes such as injuries, cancer, certain drugs, and other types of infections can also cause meningitis (32).


### Suspected Case
A case of meningitis may be suspected if the patient exhibits all or most of the following symptoms:

1. Fever (40°C/104°F)
2. Cold hands and feet
3. Vomiting
4. Confusion

5. Tachypnea (breathing rapidly)
6. Muscle and joint pain
7. Pale, mottled or blotchy skin (this may be harder to see on brown or black skin)
8. Spots or a rash (this may be harder to see on brown or black skin)
9. Headache
10. Stiff neck
11. Photophobia (a dislike of bright lights)
12. Sleepy or difficult to wake
13. Fits (seizures)

**Babies may also:**

1. Refuse feeds
2. Be irritable
3. Have a high-pitched cry
4. Have a stiff body or be floppy or unresponsive
5. Have a bulging soft spot on the top of their head

Note: Meningitis is a dangerous disease and should be treated promptly (31).

## Probable Case

Not applicable.

## Confirmed Case

If a laboratory confirmation of a bacterial or viral agent is confirmed.

## Discarded Case

If the etiology is confirmed by a laboratory test to be non-bacterial or non-viral.

### Meningitis etiology

Bacterial Meningitis is mostly caused by

- Streptococcus pneumoniae
- Group B Streptococcus
- Neisseria meningitidis
- Haemophilus influenzae
- Listeria monocytogenes
- Escherichia coli
- Mycobacterium tuberculosis (less commonly)

Antibiotic prophylaxis is recommended for:

- Close contacts of someone with meningitis caused by N. meningitidis
- Household members of someone with a serious Hib infection when the household includes one or more people at increased risk of Hib based on age, vaccination status, and/or immunocompromising conditions

Vaccination against bacterial meningitis

- Meningococcal vaccines help protect against N. meningitidis
- Pneumococcal vaccines help protect against S. pneumoniae
- Haemophilus influenzae serotype b (Hib) vaccines help protect against Hib

Other causes of meningitis include viral, fungal, parasitic, amebic and non-infectious causes like cancers, systemic lupus erythematosus (lupus), certain medicines, head injury and brain surgery (32). Only bacterial and viral meningitis can cause contagious meningitis.

# Meningitis (Children under 5 years)

## Suspected Case

Any child of the age of 0–59 months admitted to hospital with sudden onset fever (> 38.5°C rectal or 38°C axillary) and one of the following signs: neck stiffness, altered consciousness with no

other alternative diagnosis, or other meningeal signs; or hospitalized with a clinical diagnosis of meningitis.

### Probable Case

A suspected meningitis case with CSF examination showing at least one of the following: turbid appearance:

- Leukocytosis (> 100 cells/mm3)
- Leukocytosis (10–100 cells/mm3), with
- Elevated protein (> 100 mg/dL)
- Decreased glucose (< 40 mg/dL) (33)

### Confirmed Case

If a laboratory confirmation of a bacterial or viral agent is confirmed.

**H. influenzae meningitis**

A suspected or probable meningitis case that is laboratory-confirmed by culture or identification of H. influenzae (by antigen detection, immunochromatography, RT-PCR or other methods) in the CSF or blood.

**Pneumococcal meningitis**

A suspected or probable meningitis case that is laboratory-confirmed by culture or identification of pneumococcus (by antigen detection, immunochromatography, RT-PCR or other methods) in the CSF or blood.

Form: Communicable Disease Notifying Form

Lab Tests: Bio fire CSF Panel PCR

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## Middle East Respiratory Syndrome

Middle East Respiratory Syndrome (MERS) is an emerging Corona virus causing respiratory illness. It is also known as MERS-CoV. Incubation period is 5 to 6 days. People with pre-existing conditions like diabetes, cancer, chronic lung disease, chronic heart disease and chronic kidney disease are at higher risk of getting infected (34). MERS is a non-endemic disease in Maldives.


### Suspected Case

Any patients with the travel history to the Mediterranean region (especially travelers returning from Hajj or Umrah) within the last 6 days, and presenting with:

1. Fever (40°C/104°F)
2. Cough
3. Shortness of breath

Note: Sometimes the cases are asymptomatic (34).

### Probable Case

Not applicable.

### Confirmed Case

Laboratory confirmed cases.

1. Real-time reverse-transcription polymerase chain reaction (rRT-PCR) assays to detect active infection.
2. ELISA, or enzyme-linked immunosorbent assay, is a screening test used to detect the

presence and concentration of specific antibodies that bind to a viral protein (34).

Form: Form: Communicable Disease Notifying Form

Lab Tests: PCR, Bio fire Respiratory panel PCR

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## Mpox (Monkeypox)


Mpox (monkeypox) is a viral illness caused by the monkeypox virus, a species of the genus Orthopoxvirus. Two different clades exist: clade I and clade II. Mpox can be transmitted to humans through physical contact with someone who is infectious, with contaminated materials, or with infected animals. Mpox can be prevented by avoiding physical contact with someone who has Mpox. Vaccination can help prevent infection for people at risk. Anyone can get Mpox. It spreads from contact with infected:

- Persons, through touch, kissing, or sex
- Animals, when hunting, skinning, or cooking them
- Materials, such as contaminated sheets, clothes or needles
- Pregnant persons, who may pass the virus on to their unborn baby

If you have Mpox:

- Tell anyone you have been close to recently
- Stay at home until all scabs fall off and a new layer of skin forms
- Cover lesions and wear a well-fitting mask when around other people

### Suspected Case

Any symptomatic patient returning from a country or region with an outbreak of Mpox exhibiting the following symptoms should be suspected:

- Skin rash or mucosal lesions which can last 2–4 weeks
- Fever
- Headache
- Muscle aches
- Back pain
- Low energy
- Swollen lymph nodes

### Probable Case

Not applicable.

### Confirmed Case

Laboratory confirmation of Mpox is done by testing skin lesion material PCR (35).

Form: Communicable Disease Notifying Form

Lab Tests: Monkeypox PCR

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## Mumps

Mumps is a viral illness caused by a paramyxovirus, a member of the Rubula virus family. The average incubation period for mumps is 16 to 18 days, with a range of 12 to 25 days. Mumps is a vaccine preventable disease (37). Mumps is sporadic in Maldives and only a few cases are seen annually.


### Suspected Case

A case is suspected if they present with acute onset of unilateral or bilateral tender, swelling of the parotid or other salivary gland that lasts two or more days and without other apparent cause (parainfluenza virus, EBV, influenza A virus, HIV and non-infectious causes)

OR

Clinical suspicion of mumps because of other mumps-associated symptoms (aseptic meningitis, encephalitis, hearing loss, orchitis, oophoritis, mastitis, pancreatitis) unexplained by another more likely diagnosis (36).

### Probable Case

A case which meets the suspected case definition AND has a positive test for serum anti-mumps IgM antibody OR meets the suspected case definition AND has epidemiologic linkage to another probable or confirmed case or linkage to a group/community during an outbreak of mumps (36).

### Confirmed Case

Laboratory confirmed cases.

1. Real time reverse transcription PCR (rRT-PCR) to detect mumps viral RNA.
2. seroconversion from IgG negative to IgG positive in those unvaccinated. A significant (four or more fold) rise in serum mumps IgG titer (36).
3. IgM can aid in diagnosis but is not confirmatory. The availability of assays to detect IgM to aid in the diagnosis of acute mumps infection and to measure IgG antibodies to document previous exposure to mumps vary among laboratories (37).

Form: Communicable Disease Notifying Form

Lab Tests: Lab Tests: WHO collaborating center, Out sourced to Referral Laboratory

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## Ophthalmia Neonatorum

Ophthalmia Neonatorum (conjunctivitis of the newborn) is an eye infection that occurs within the first 30 days of life. It is caught during birth by contact with the mother's birth canal that is infected with a sexually-transmitted disease. The infection may be bacterial, chlamydial or viral (38).


### Suspected Case

If a baby presents with the following symptoms of mucopurulent conjunctivitis with 30 days of

birth.

1. Redness
2. Discharge (may be profuse)
3. Swelling of lids (may be severe)
4. symptoms usually bilateral (38)

### Probable Case

Not applicable

### Confirmed Case

Laboratory confirmed cases.

Form: Communicable Disease Notifying Form

Lab Tests: Gram's stain, Bacterial culture

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## Plague

Plague is a zoonotic disease that affects humans and other mammals. It is caused by the bacterium, Yersinia pestis. Humans usually get plague after being bitten by a rodent flea that is carrying the plague bacterium or by handling an animal infected with plague. The incubation period varies depending on the clinical presentation and the longest is 8 days. It is effectively treatable with antibiotics (39) (78).


**Bubonic plague:**
The incubation period of bubonic plague is usually 2 to 8 days.
Symptoms include, fever, headache, chills, and weakness and one or more swollen, painful lymph nodes (called buboes). This form results from bites of infected fleas.

**Septicemic plague:**
The incubation period of septicemic plague is poorly defined but likely occurs within days of exposure. Symptoms include, fever, chills, extreme weakness, abdominal pain, shock, and possibly bleeding into the skin and other organs. Skin and other tissues may turn black and die, especially on fingers, toes, and the nose. Septicemic plague can occur as the first symptom of plague or may develop from untreated bubonic plague. This form results from bites of infected fleas or from handling an infected animal.

**Pneumonic plague:**
The incubation period of pneumonic plague is usually just 1 to 3 days.
Symptoms include, fever, headache, weakness, and a rapidly developing pneumonia with shortness of breath, chest pain, cough, and sometimes bloody or watery mucous. Pneumonic plague may develop from inhaling infectious droplets or may develop from untreated bubonic or septicemic plague after the bacteria spread to the lungs. The pneumonia may cause respiratory failure and shock. Pneumonic plague is the most serious form of the disease and is the only form of plague that can be spread from person to person (by infectious droplets) (39).

### Suspected Case

Clinical presentation suggestive of plague including sudden onset of fever, chills, headache, severe malaise, prostration, painful swelling of lymph nodes or cough with blood-stained sputum,

chest pain, difficulty in breathing.

AND

Epidemiological context suggesting possible exposure to plague including exposure to infected humans or animals or residence in or travel to a known endemic focus within 10 days prior to the onset of the disease (40).

**ANY SUSPECTED CASE MUST BE ISOLATED AND CONTACTS TRACED AND QUARANTINED.**

### Probable Case

A suspected case AND ONE of the following: F1 antigen positive in bubo aspirate, sputum, blood or post-mortem tissues by F1RDT or DFA; single anti-F1 serology positive without evidence of previous Y. pestis infection or vaccination; direct microscopy in a clinical sample, positive for gram-negative coccobacilli that display bipolar staining with Wayson or Giemsa stain (40).

### Confirmed Case

A suspected case and at least ONE of the following criteria:

- Isolation of Y. pestis from a clinical sample.
- Seroconversion or a 4-fold difference in anti-F1 antibody titer in paired serum samples drawn at least 2 weeks apart.
- Y. pestis DNA positive by species-specific PCR on either clinical sample or culture according to standard practice (40).

Form: Communicable Disease Notifying Form

Lab Tests: Gram's stain, Bacterial culture

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## Pertussis (Whooping Cough)


Pertussis (known as whooping cough), is a highly contagious respiratory infection caused by the bacterium Bordetella pertussis. Pertussis is a droplets infection transmitted by coughing or sneezing. The disease is most dangerous in infants, and is a significant cause of disease and death in this age group. Incubation period is 7 to 10 days. People with pertussis are most contagious up to about 3 weeks after the cough begins. It is a vaccine preventable disease (41).

### Suspected Case

Any case which a clinician suspects of being whooping cough must be reported. Contact tracing is essential.

Clinical criteria

In the absence of a more likely diagnosis a cough illness lasting ≥2 weeks, with at least one of the following signs or symptoms.

1. Paroxysms of coughing, OR
2. Inspiratory whoop, OR
3. Post-tussive vomiting, OR
4. Apnea (with or without cyanosis)

**Early Stage:**

1. Early symptoms can last for 1 to 2 weeks and usually include:
2. Runny or stuffed-up nose
3. Low-grade fever (less than 100.4°F)
4. Mild, occasional cough (babies do not do this)
5. Apnea (life-threatening pauses in breathing) and cyanosis (turning blue or purple) in

babies and young children.

**Late Stage (One to 2 weeks after the first symptoms start):**

1. Coughing fits can cause people to
2. Make a high-pitched “whoop” sound when they are finally able to inhale at the end of a coughing fit
3. Vomit during or after coughing fits
4. Feel very tired after the fit, but usually seem well in-between fits
5. Struggle to breathe (41).

### Probable Case

A suspected case with epidemiological ties to a confirmed case.

### Confirmed Case

Case confirmation is by laboratory tests.

1. Isolation of Bordetella pertussis from a clinical specimen
2. Positive polymerase chain reaction (PCR) for B. pertussis (41)

Form: Communicable Disease Notifying Form

Lab Tests: WHO collaborating center, Bacterial culture, Respiratory Panel PCR

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## Pneumonia

Pneumonia is inflammation of the lungs, and most individuals recover in 2 to 4 weeks, but babies, elderly, and those with heart or lung issues are more likely to become critically unwell and may require hospitalization (31).


### Suspected Case

Any patients presenting with:

1. Cough – may cough up yellow or green mucus (phlegm)
2. Shortness of breath
3. High temperature
4. Chest pain
5. Body ache
6. Fatigue
7. Loss of appetite
8. Wheezing noises when you breathe – babies may also make grunting noises
9. Confusion – common in the elderly (42)

### Probable Case

Not applicable.

### Confirmed Case

Laboratory confirmed cases.
Chest X-ray showing findings of pneumonia. A complete blood count (CBC) suggesting an infection. Pulse oximetry measures showing low oxygen percentage (<94%) (43).

### Pneumonia (Children under 5 years)

### Suspected case

Any child of the age of 0–59 months demonstrating cough or difficulty in breathing and displaying fast breathing when calm, as defined by age:

- 0 to < 2 months: 60 breaths/minute or more.
- 2 to < 12 months: 50 breaths/minute or more.
- 12 to ≤ 59 months: 40 breaths/minute or (33).

### Probable case
Not applicable

### Confirmed case
Laboratory confirmation is carried out by culture, PCR or antigen detection for case confirmation (33).

## Severe pneumonia (children under 5 years)

### Suspected case
Any child of the age of 0–59 months with a cough or difficulty in breathing and displaying one or more of the following:

- Inability to drink or breastfeed
- Vomiting everything
- Convulsions
- Prostration/lethargy
- Chest indrawing
- Stridor when calm (33)

### Probable case
Not applicable

### Confirmed case
Laboratory confirmation is carried out by culture, PCR or antigen detection for case confirmation (33).
A person meeting the definition of pneumonia or severe pneumonia with a positive culture of H. influenzae from blood or pleural fluid.
A person meeting the definition of pneumonia or severe pneumonia with a positive culture of S. pneumoniae from blood or pleural fluid (33).

Form: Communicable Disease Notifying Form

Lab Tests: Bio fire Pneumonia panel PCR, Bio fire Respiratory Panel PCR, Bacterial culture

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# Poliomyelitis


Poliomyelitis (polio) is a very infectious disease caused by polio virus, that mostly affects young children. It attacks the nervous system and can lead to spinal and respiratory paralysis, and in some cases death. It invades the nervous system and can cause total paralysis in a matter of hours. The virus is transmitted by person-to-person spread mainly through the fecal-oral route or, less frequently, or contaminated water or food. The virus multiplies in the intestine (79). It is a vaccine preventable disease and the disease is non-endemic in Maldives since its elimination. The surveillance of acute flaccid paralysis cases is part of the polio surveillance in Maldives.

P

### Suspected Case
Any case of acute flaccid paralysis (AFP).

### Probable Case

Poliomyelitis (paralytic):
An acute onset of flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause, and without sensory or cognitive loss.

### Confirmed Case

Confirmed case is a case with isolation of wild-type poliovirus or vaccine-derived poliovirus in stool specimens collected from the suspected case or from a close contact (44).

**Compatible case:** a suspected case with no adequate specimens; no isolation of WPV or VDPV from the case or close contacts, and residual paralysis after 60 days follow up that is deemed by the national expert review committee to be clinically and epidemiologically compatible with poliomyelitis (44).

A probable case with laboratory confirmation of polio is a confirmed case. Two stool samples should be collected within 14 days of the paralysis.

Poliovirus can be detected in specimens from the throat, feces (stool), and occasionally cerebrospinal fluid (CSF) by isolating the virus in cell culture or by detecting the virus by polymerase chain reaction (PCR) (45).

The specimens of all AFP cases must be processed in a WHO-accredited laboratory within the GPLN. The GPLN member laboratories follow standardized protocols to: 1) isolate poliovirus; 2) conduct intratypic differentiation; and 3) conduct genomic sequencing (done in specialized laboratories).

1. Laboratory confirmation is based on the isolation of poliovirus on monolayers of tissue culture cells (RD and L20B). The isolation of non-polio enterovirus (NPEV) may be done as part of testing for poliovirus and the result must be reported separately.
2. Intratypic differentiation is conducted by reverse transcriptase polymerase chain reaction (RT-PCR) to identify whether the virus is a WPV, a VDPV or a Sabin-like virus, as well as the serotype (1, 2, 3).
3. Genetic sequencing helps to monitor the pathways of poliovirus transmission by comparing the nucleotide sequence of the VP1-coding region of poliovirus isolates (46).

Form: Acute Flaccid Paralysis (AFP) Notification Form

Lab Tests: WHO collaborating center

P

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## Pyrexia of unknown Origin (PUO)

It is a fever of unknown etiology, although it has been attributed to Infections, malignancy, connective tissue disorder, cardiovascular, respiratory, gastrointestinal, endocrine, metabolic, hematological, inherited (Familial Mediterranean fever and periodic fever syndromes), drug reactions and idiopathic (6).


### Suspected Case

For surveillance purposes, the suspected case definition is sufficient.
Pyrexia of unknown origin (PUO) is defined as a fever persistently above 38.0°C for more than 3 weeks, without diagnosis, despite initial investigation during 3 days of inpatient care or after more than two outpatient visits (6).

### Probable Case
Not applicable.

### Confirmed Case
Not applicable.

Forms to send to HPA: Daily Surveillance Form

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## Rabies


Rabies is a preventable viral disease caused by rabies virus. Rabies virus is transmitted through direct contact (such as through broken skin or mucous membranes in the eyes, nose, or mouth) with saliva or brain/nervous system tissue from an infected animal. It is most often transmitted through the bite of a rabid animal. The rabies virus infects the central nervous system of mammals, ultimately causing disease in the brain and death. Rabies affects only mammals. The incubation may be weeks to months.
The first symptoms of rabies may be similar to the flu, including weakness or discomfort, fever, or headache. There also may be discomfort, prickling, or an itching sensation at the site of the bite. These symptoms may last for days.
Symptoms then progress to cerebral dysfunction, anxiety, confusion, and agitation. As the disease progresses, the person may experience delirium, abnormal behavior, hallucinations, hydrophobia (fear of water), and insomnia. The acute period of disease typically ends after 2 to 10 days. Once clinical signs of rabies appear, the disease is nearly always fatal, and treatment is typically supportive (47).
Rabies is non-endemic in Maldives.

Any person with a history of bite from a wild mammal or stray dog should be suspected of having rabies. They should be given postexposure prophylaxis (PEP) which consists of a dose of human rabies immune globulin (HRIG) and rabies vaccine given on the day of the rabies exposure, and then a dose of vaccine given again on days 3, 7, and 14 (47).

### Suspected Case
A case compatible with the clinical case definition – a person presenting with an acute neurologic syndrome (encephalitis) dominated by forms of hyperactivity (furious rabies) or paralytic syndromes (paralytic rabies) progressing towards coma and death, usually by cardiac or respiratory failure, typically within 7-10 days after the first symptom if no intensive care is instituted. Symptoms include any of the following: aerophobia, dysphagia, hydrophobia, nausea or vomiting, paresthesia or localized pain, localized weakness (48).

### Probable Case
suspected case plus a reliable history of contact with a suspected, probable or confirmed rabid animal (48).

### Confirmed Case
Suspected or probable case confirmed in the lab.
Laboratory test can confirm rabies.
Direct fluorescent antibody test.

Form: Communicable Disease Notifying Form

Lab Tests: WHO collaborating center, if needed further investigation

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# Rotavirus Infection

It is a diarrheal disease caused by rotavirus. The primary mode of transmission is the fecal-oral route, usually through direct contact between people (80). It is a vaccine preventable disease, which is endemic in Maldives.


## Suspected Case

This refers to a child who is below 5 years of age and is admitted (to a hospital ward or emergency unit at a participating surveillance facility) for the treatment of acute (< 14 days) watery diarrhoea, defined as 3 or more loose or watery stools in a 24-hour period. Children with bloody diarrhoea and nosocomial infections are excluded (49).

## Probable Case

Not applicable.

## Confirmed Case

This is a suspected case in whose stool the presence of rotavirus is demonstrated by means of an EIA or PCR-based methods.

## Laboratory Tests

An etiological diagnosis of rotavirus gastroenteritis requires laboratory confirmation. A range of diagnostic tests are commercially available.

1. Enzyme immunoassays (EIA): EIA for the detection of rotavirus antigen directly in stool specimens are in wide use. Some EIA kits are: Premier™ Rotaclone®, ProSpecT™ and RIDASCREEN®. The sensitivity of EIAs has been found to be 75–82% and their specificity, 100%. Thus, occasional false negatives are possible, particularly at lower viral loads, though the clinical significance of rotavirus at concentrations below the threshold of EIA detection is unclear.
2. Latex agglutination assay: Rapid tests such as latex agglutination assays are simple-to-use immunochromatographic test strips but are less sensitive and often less specific than EIAs.
3. Reverse transcription-polymerase chain reaction (RT-PCR): RT-PCR is used to characterize rotavirus strains and can identify both the G and P types. A subset of rotavirus-positive stools obtained from routine surveillance should be chosen for the characterization of strains. It is recommended that a minimum of 50–60 randomly selected specimens be genotyped from each country per year. The randomly selected samples should be proportional to the age and seasonal distribution of the cases. If resources permit, the strains of all EIA-positive samples should be characterized. Only specimens >3 mL should be chosen to avoid running out of material. All non-typeable isolates should be sent to an appropriate reference laboratory for sequencing (49).


Form: Rota Virus Lab Surveillance Form


Lab Tests: PCR, ELISA

## Scabies


Scabies is an infestation of the skin by the human itch mite (Sarcoptes scabiei var. hominis). The mite burrows into the upper layer of the skin and it lives there and lays its eggs. The most common symptoms of scabies are intense itching and a pimple-like skin rash. The scabies mite usually is spread by direct, prolonged; skin-to-skin contact with a person who has scabies (50).

### Suspected Case

A case presenting with:
An intense itching (pruritus) rash that is, especially itchy at night. It may affect wrist, elbow, armpit, webbing between the fingers, nipple, penis, waist, belt-line, and buttocks. There may be scaling and blisters (50).

### Probable Case

Not applicable.

### Confirmed Case

A suspected case may be confirmed if there is the appearance and distribution of the rash and the presence of burrows. Whenever possible, the diagnosis of scabies should be confirmed by identifying the mite, mite eggs, or mite fecal matter (scybala). This can be done by carefully removing a mite from the end of its burrow using the tip of a needle or by obtaining skin scraping to examine under a microscope for mites, eggs, or mite fecal matter (50).

Form: Communicable Disease Notifying Form

Lab Tests: Lab Tests: WHO collaborating center, if needed further investigation

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## Scrub Typhus


Scrub typhus is a disease caused by a bacteria called Orientia tsutsugamushi. Scrub typhus is spread to people through bites of infected chiggers (larval mites) (51). Scrub typhus is a sporadic disease in Maldives.

### Suspected Case

For surveillance purposes a suspected case is sufficient.
A case presenting with:

1. Fever and chills
2. Headache
3. Body aches and muscle pain
4. A dark, scab-like region at the site of the chigger bite (also known as eschar)
5. Mental changes, ranging from confusion to coma
6. Enlarged lymph nodes
7. Rash (51)

### Probable Case

Not applicable.

### Confirmed Case

Not applicable.

Form: Communicable Disease Notifying Form

Lab Tests: Scrub Typhus IgM, Elisa, Scrub IgG ELISA

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## Sepsis (Children under 5 years)


### Suspected Case

Any child of the age of 0–59 months admitted to hospital with at least two of the following signs and without meningitis or pneumonia clinical syndrome:

- Inability to drink or breastfeed
- Vomiting everything
- Convulsions (except in malaria endemic areas)
- Prostration/lethargy
- Severe malnutrition
- Hypothermia (≤ 36°C) (33).

### Probable case

Not applicable

### Confirmed Case

Laboratory confirmation is carried out by culture, PCR or antigen detection for case confirmation (33).

Form: Communicable Disease Notifying Form

Lab Tests:

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## Shigella – Shigellosis

Shigellosis is a bacterial diarrhea caused by Shigella bacteria. The genus Shigella has 4 species or subgroups (A, B, C, and D) and 43 serotypes  It is usually transmitted via:

- Unclean hands
    - Getting Shigella on your hands and touching your mouth. Shigella can get on your hands by:
    - Touching surfaces, such as toys, bathroom fixtures, changing tables, and diaper pails, contaminated with Shigella bacteria from someone with an infection.
    - Changing the diaper of a child with a Shigella infection.
    - Taking care of a person with an infection, including cleaning up after the person uses the toilet.
- Eating food prepared by someone with a Shigella infection.
- Swallowing water you swim or play in, such as lake water or improperly treated swimming pool water.
- Swallowing contaminated drinking water, such as water from a well that's been contaminated with sewage or flood water.
- Exposure to fecal matter during sexual contact with someone with a Shigella infection or who has recently recovered from a Shigella infection.

Anyone can get infected with Shigella but children under 5 years, men who are gay or bisexual and those with compromised immune systems are at more risk (52).

## Suspected Case

People with Shigella infection (shigellosis) usually start experiencing symptoms 1 to 2 days after contact with the germ. These symptoms include:

- Diarrhea that can be bloody or prolonged (lasting more than 3 days)
- Fever
- Stomach pain
- Feeling the need to pass stool (poop) even when the bowels are empty
- Some people will not have any symptoms (52).

## Probable case

Not applicable

## Confirmed Case

For surveillance purposes, only laboratory confirmed cases are used. Laboratory confirmation is by a culture that isolates the bacteria or a rapid test that identifies the genetic material of the bacteria (52).

Forms to send to HPA: Communicable Disease Notifying Form

Lab Tests: (to be added)

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# Small Pox

12 hrs. CB

Smallpox is an acute contagious disease caused by the variola virus, a member of the orthopoxvirus family. It was one of the most devastating diseases known to humanity and caused millions of deaths before it was eradicated. Early symptoms of smallpox include high fever, fatigue and severe back pain, and less often, abdominal pain and vomiting. Two to 3 days later the virus produces a characteristic rash with bumps full of a clear liquid, which later fill with pus and finally develop a crust that dries and falls off. The rash begins on the face and hands, then spreads to the rest of the body. Lesions develop in the mucous membranes of the nose and mouth and ulcerate soon after formation. It has an incubation period of 7–17 days after exposure and only becomes infectious once a fever develops. People remain infectious until the last scabs fall off.

### Suspected Case

An individual of any age presenting with acute onset of fever (38.3C or higher), malaise and severe prostration with headache and backache occurring 2 to 4 days before rash onset AND subsequent development of a maculopapular rash starting on the face and forearms then spreading to the trunk and legs and evolving within 48 hours to deep-seated firm/hard and round well-circumscribed vesicles and later pustules, which may become umbilicated or confluent AND lesions that appear in the same stage of development on any given part of the body AND no alternative diagnosis explaining the illness AND lab confirmation.

Form: Communicable Disease Notifying Form

Lab Tests: WHO collaborating center

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## Syphilis


Syphilis is a sexually transmitted infection (STI) caused by a Treponema pallidum (a bacteria) that can cause serious health problems without treatment. Infection develops in stages (primary, secondary, latent, and tertiary). Each stage can have different signs and symptoms. Syphilis can be transmitted by direct contact with a syphilis sore during vaginal, anal, or oral sex. (53).

### Suspected Case

There are different signs and symptoms for the different stages of syphilis.

### Primary Stage

Patient may develop a single sore or multiple firm, round, and painless sores lasting 3 to 6 weeks. The sore is the location where syphilis entered your body. These sores usually occur in, on, or around the penis, vagina, anus, rectum and lips or in the mouth.

### Secondary Stage

Patient may develop skin rashes and/or sores in your mouth, vagina, or anus. This stage usually starts with a rash on one or more areas of your body. Other symptoms may include, fever; swollen lymph glands; sore throat, patchy hair loss, headaches, weight loss, muscle aches, and fatigue (feeling very tired).

### Latent Stage

The latent stage of syphilis is a period when there are no visible signs or symptoms. Without treatment, you can continue to have syphilis in your body for years.

## Tertiary Stage

Most people with untreated syphilis do not develop tertiary syphilis. However, when it does happen, it can affect many different organ systems. These include the heart and blood vessels, and the brain and nervous system. Tertiary syphilis is very serious and would occur 10–30 years after your infection began. In tertiary syphilis, the disease damages your internal organs and can result in death.

Other forms of syphilis include, Neurosyphilis, Ocular Syphilis, and Otosyphilis (53).

## Probable Case

Not applicable.

## Confirmed Case

For surveillance purposes, only laboratory confirmed cases will be used where a VDRL tests positive for syphilis.

Form: Communicable Disease Notifying Form

Lab Tests: Syphilis CMIA IgM/IgG combined, RPR, TPHA, STI PCR Lab Tests: ELISA, RPR, TPHA, STI PCR (done in IGMH)

## Congenital Syphilis


Congenital syphilis occurs when a mother with syphilis passes the infection on to her baby during pregnancy.
Congenital Syphilis can cause:

- Miscarriage (losing the baby during pregnancy)
- Stillbirth (a baby born dead)
- Prematurity (a baby born early)
- Low birth weight
- Death shortly after birth

Babies born with this disease may be symptomatic or asymptomatic (85).

## Suspected Case:

Any baby born to a woman who was diagnosed with syphilis during pregnancy.

## Probable case:

Any baby born to a woman who was diagnosed with syphilis during pregnancy who exhibits any of the following symptoms:

- Deformed bones
- Severe anemia (low blood count)
- Enlarged liver and spleen
- Jaundice (yellowing of the skin or eyes)
- Brain and nerve problems, like blindness or deafness
- Meningitis
- Skin rashes

## Confirmed Case;

A suspected or probable case which has been confirmed with laboratory confirmed tests such as a VDRL tests positive for syphilis.

Form: Communicable Disease Notifying Form

Lab Tests: Syphilis CMIA IgM/IgG combined, RPR, TPHA, STI PCR

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## Tetanus

12 hrs. CB

Tetanus is an acute infectious disease caused by the spores of the bacterium Clostridium tetani. The spores are found everywhere in the environment, particularly in soil, ash, intestinal tracts/feces of animals and humans, and on the surfaces of skin and rusty tools like nails, needles, barbed wire, etc. Being very resistant to heat and most antiseptics, the spores can survive for years. Tetanus can be prevented through immunization with tetanus-toxoid-containing vaccines (TTCV). Anyone can get tetanus, but the disease is particularly common and serious in newborn babies and pregnant women who have not been sufficiently immunized.

### Suspected Case

For surveillance purposes, a clinical presentation is sufficient.
A patient with the following symptoms.

1. Trismus (lockjaw)
2. Risus sardonicus (sustained spasm of the facial muscles)
3. Muscle spasms often in the back, abdomen and extremities
4. Sudden painful muscle spasms often triggered by sudden noises
5. Trouble swallowing
6. Seizures
7. Headache
8. Fever and sweating
9. Changes in blood pressure
10. Increased heart rate

Tetanus is diagnosed on the basis of clinical features and does not require laboratory confirmation (54) (55).

### Probable Case

Not applicable.

### Confirmed Case

Confirmation is by a clinician based on the clinical presentation (55).

Forms to send to HPA: Communicable Disease Notifying Form

Lab Tests: Anaerobic culture

### Neonatal Tetanus

12 hrs. CB

Tetanus within the first 28 days of life is called neonatal tetanus. The incubation period of tetanus varies between 3 and 21 days after infection. Most cases occur within 14 days (54). Neonatal tetanus in neonates is an important cause of neonatal mortality. Unvaccinated mothers undergoing unclean delivery is the cause, and the portal of entry being the umbilicus. Neonatal tetanus occurs when nonsterile instruments are used to cut the umbilical cord or when contaminated material is used to cover the umbilical stump (54). Maternal and neonatal tetanus is a vaccine preventable disease and it has been eliminated in Maldives.

### Suspected Case

A suspected case should meet either of the following criteria:

- Could suckle and cry normally during the first two days of life but lost the ability and developed tetanus-like illness or died between 3 and 28 days after birth: or
- Died of an unknown cause during the first month of life.

Description of case definition

- Suckling well and crying normally for the first few days after birth and subsequently developing progressive difficulty and then inability to feed;
- Excessive crying;
- Spasms of facial muscles (trismus or lockjaw);
- Stiffness of back muscles, leading to backward arching of the back
- Generalized convulsions (56)

### Probable Case

Not applicable.

### Confirmed Case

There is no diagnostic test.

A confirmed case is any suspected case found to have all three of the following:

1. Normal ability to suckle and cry during the first two days of life.

AND

2. Progressively lost ability to suckle between 3 and 28 days after birth.

AND

3. Developed stiffness of muscles and/or spasms leading to jerking movement (56).

Forms to send to HPA: Communicable Disease Notifying Form

Lab Tests: Anaerobic culture

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## Toxoplasmosis

Toxoplasmosis is an infection caused by a single-celled parasite called Toxoplasma gondii. Transmission of Toxoplasma infection occurs by:

- Eating undercooked, contaminated meat (especially pork, lamb, and venison) or shellfish (for example, oysters, clams or mussels).
- Accidental ingestion of undercooked, contaminated meat or shellfish after handling them and not washing hands thoroughly (Toxoplasma cannot be absorbed through intact skin).
- Eating food that was contaminated by knives, utensils, cutting boards and other foods that have had contact with raw, contaminated meat or shellfish.
- Drinking water contaminated with Toxoplasma gondii.
- Accidentally swallowing the parasite through contact with cat feces that contain Toxoplasma. This might happen by
- Cleaning a cat's litter box when the cat has shed Toxoplasma in its feces;
- Touching or ingesting anything that has come into contact with cat feces that contain Toxoplasma; or
- Accidentally ingesting contaminated soil (e.g., not washing hands after gardening or eating unwashed fruits or vegetables from a garden)
- Mother-to-child (congenital) transmission.
- Receiving an infected organ transplant or infected blood via transfusion, though this is rare

Severe toxoplasmosis can cause damage to the brain, eyes, or other organs. Hish risk people for toxoplasmosis include, Infants born to mothers who are newly infected with Toxoplasma gondii during or just before pregnancy, people with severely weakened immune systems (AIDS, those on chemotherapy, and those who have recently received an organ transplant) (57).

## Suspected Case

Not applicable.

## Probable Case

Not applicable.

## Confirmed Case

For surveillance purposes, only confirmed cases of Toxoplasmosis will be used. Toxoplasmosis is difficult to diagnose, If a case is suspected by a clinician, communicate with HPA on how to proceed.

Diagnosis of toxoplasmosis is usually made by detection of Toxoplasma-specific IgG, IgM, IgA, or IgE antibodies. There are several tests available that detect these immunoglobulin antibodies within several weeks of infection:

- Dye test (DT)
- Indirect fluorescent antibody test (IFA)
- Enzyme immunoassays (ELISA, immunoblots)
- Agglutination test
- Avidity test

If acute infection is suspected, the patient's serum should be tested for IgG and IgM Toxoplasma-specific antibodies (57).

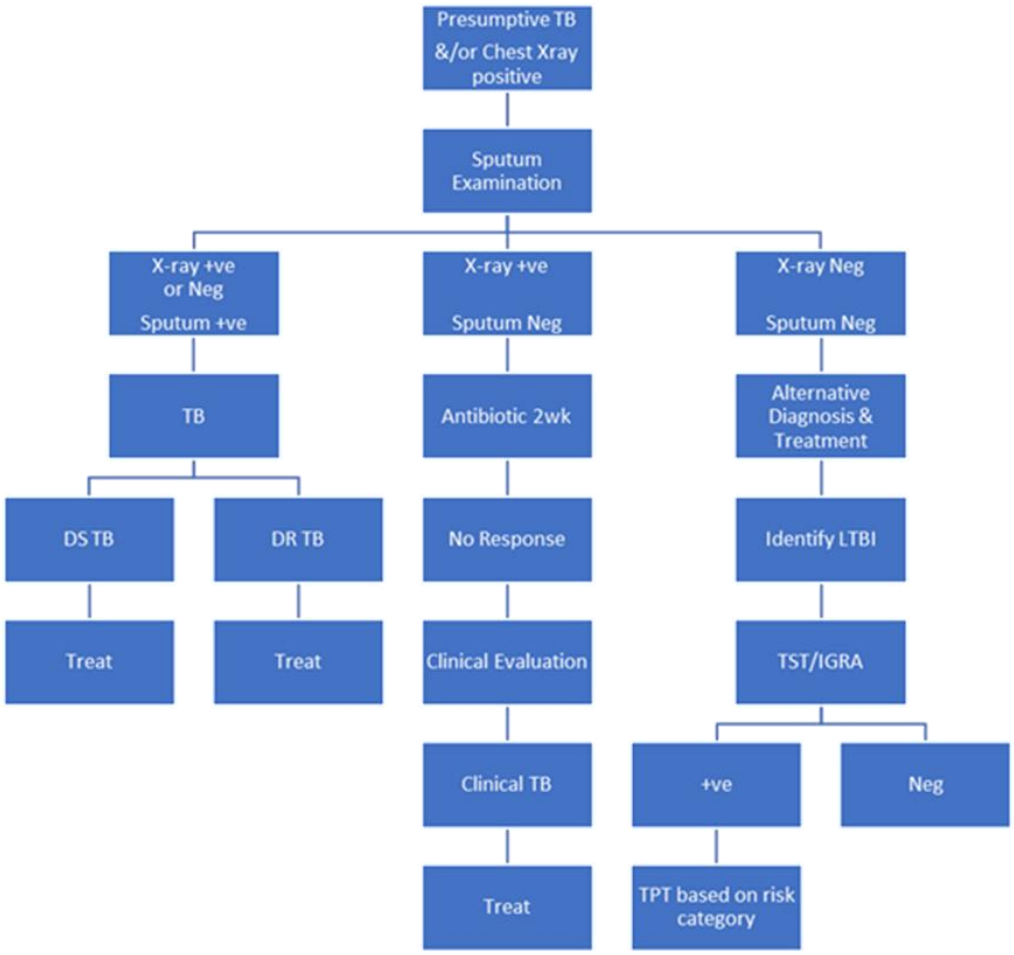
Form: Communicable Disease Notifying Form

Lab Tests: Toxoplasma IgM, IgG ELISA

# Tuberculosis

Tuberculosis (TB) is an infectious disease caused by a bacterium called Mycobacterium tuberculosis, that most often affects the lungs and is caused by a type of bacteria. It spreads through the air when infected people cough, sneeze or spit. Tuberculosis is preventable and curable. People with latent TB infection don't feel sick and aren't contagious. Only a small proportion of people who get infected with TB will get TB disease and symptoms. Risk factors for TB include, diabetes, weakened immune system (for example, HIV or AIDS), being malnourished, tobacco use. Multidrug-resistant tuberculosis (MDR-TB) is a form of TB caused by bacteria that do not respond to isoniazid and rifampicin, the 2 most effective first-line TB drugs. MDR-TB is treatable and curable by using second-line drugs. However, second-line treatment options require extensive medicines that are expensive and toxic (59).

Figure 3: Algorithm for detecting TB cases




*TB: Tuberculosis, DS: Drug sensitive, DR: Drug resistant, LTBI: Latent TB infection, TST: Mantoux tuberculin skin test, IGRA: Interferon Gamma Release Assay, TPT: Tuberculosis preventive treatment*

## Suspected Case

A clinically diagnosed TB case is a suspected case and it is one which does not fulfil the criteria for bacteriological confirmation but has been diagnosed with active TB by a clinician or other medical practitioner who has decided to give the patient a full course of TB treatment. This definition includes cases diagnosed on the basis of X-ray abnormalities or suggestive histology and extrapulmonary cases without laboratory confirmation (58).

Clinically diagnosed cases subsequently found to be bacteriologically positive (before or after starting treatment) should be reclassified as bacteriologically confirmed.

Common symptoms of TB disease (58):

1. Prolonged cough (sometimes with blood)
2. Chest pain
3. Weakness
4. Fatigue
5. Weight loss
6. Fever
7. Night sweats.

The symptoms people get depend on where in the body TB becomes active. While TB usually affects the lungs, it also affects the kidneys, brain, spine and skin.

### Probable Case

Not applicable.

### Confirmed Case

Laboratory confirmation is needed for case confirmation.
A bacteriologically confirmed TB case is one from whom a biological specimen is positive by smear microscopy, culture or WRD (such as Xpert MTB/RIF). All such cases should be notified, regardless of whether TB treatment has started (58).

Bacteriologically confirmed or clinically diagnosed cases of TB are also classified according to:

- Anatomical site of disease;
- History of previous treatment;
- Drug resistance;
- HIV status (58).

**Laboratory Tests**

1. WHO recommends the use of rapid molecular diagnostic tests as the initial diagnostic test in all persons with signs and symptoms of TB.
2. Rapid tests recommended by WHO include the Xpert MTB/RIF Ultra and Truenat assays. These tests have high diagnostic accuracy and will lead to major improvements in the early detection of TB and drug-resistant TB.
3. A tuberculin skin test (TST) or interferon gamma release assay (IGRA) can be used to identity people with infection.
4. Diagnosing multidrug-resistant and other resistant forms of TB (see multidrug-resistant TB section below) as well as HIV-associated TB can be complex and expensive.

Tuberculosis is particularly difficult to diagnose in children (59).

Form: Communicable Disease Notifying Form
Lab Tests: Mantoux test (TST), AFP Microscopy and GeneXpert, Culture (samples sent to abroad), IGRA and DST

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## Typhoid Fever/Paratyphoid Fever

12 hrs. CB

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Typhoid fever is a dangerous infection caused by the bacterium Salmonella enterica serotype Typhi and paratyphoid fever is caused by Salmonella enterica serotypes Para typhi A, B and C. Incubation period is 6 -30 days (86). The mode of transmission is by contaminated food and water. Once ingested, the bacteria multiply and spread into the bloodstream (81).

### Suspected Case

Any case with the clinical presentation for typhoid fever must be reported.
Clinical presentation includes, fever for at least three out of seven consecutive days in an endemic area or following travel from an endemic area OR fever for at least three out of seven consecutive

days within 28 days of being in household contact with a confirmed case of typhoid or paratyphoid fever. Severe cases may lead to serious complications or even death (60).

### Probable Case
Not applicable.

### Confirmed Case
Laboratory confirmation is by culture or molecular methods of S. typhi or detection of S. typhi DNA from a normally sterile site (60).

## Non-typhoidal Salmonellosis


A pathotype, Para typhi B var. L(+) tartrate(+), ferments tartrate and is associated with gastroenteritis typical of nontyphoidal salmonellosis (86). Non-typhoidal Salmonella infection usually presents with an acute diarrheal illness. The incubation period of salmonellosis is typically 12–96 hours, but it can be ≥7 days. Approximately 5% of people develop bacteremia or focal invasive infection (e.g., osteomyelitis, meningitis, endovascular infection, septic arthritis). Rates of invasive disease are generally higher among infants, older adults, and people who are immunocompromised, including those with HIV. People with atherosclerosis, hemoglobinopathies, or malignant neoplasms also have increased risk for extraintestinal infection. Infection with antibiotic-resistant organisms has been associated with a greater risk for bloodstream infection and hospitalization (61).

### Suspected Case
Any case with the clinical presentation for non-typhoidal salmonellosis must be reported.
Symptoms include:

- Acute diarrhea
- Abdominal cramps
- Fever

It usually resolves without treatment after 1–7 days.

### Probable Case
Not applicable.

### Confirmed Case
Laboratory confirmation is needed for case confirmation.
Culture provides confirmation of nontyphoidal Salmonella infection. Approximately 90% of isolates are obtained from routine stool culture; isolates also can be obtained from other sites of infection (e.g., abscesses, blood, cerebrospinal fluid, urine) (61).

Form: Communicable Disease Notifying Form

Lab Tests: Blood culture, Widal test, stool culture

## Urethral Discharge Syndrome

Urethral discharge syndrome (UDS) is a sexually transmitted infection, characterized by the presence of purulent urethral discharge or mucopurulent urethral discharge. The main etiological agents of this syndrome are Neisseria gonorrhoeae and Chlamydia trachomatis (82).


### Suspected Case

Any case with the clinical presentation must be reported. For surveillance purposes, a suspected case is sufficient.
Symptoms include:

1. Purulent urethral discharge or mucopurulent urethral discharge
2. Dysuria (pain when urinating)
3. Itching
4. Foul odor

### Probable Case

Not applicable.

### Confirmed Case

Confirmation is through laboratory tests to detect the bacteria.

Forms: Communicable Disease Notifying Form

Lab Tests: STI PCR, Gram's smear, bacterial culture

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## Vaginal Discharge Syndrome

Any vaginal discharge perceived by the woman to be abnormal may be termed as vaginal discharge syndrome. The most common causes of vaginal discharge include, bacterial vaginosis and infection with T. vaginalis and C. albicans, N. gonorrhoeae and C. trachomatis (62).


### Suspected Case

Any case with the clinical presentation must be reported. For surveillance purposes, a suspected case is sufficient.
Patient may present with abnormal vaginal discharge (may be purulent) as perceived by the woman and vulval itching (62).

### Probable Case

Not applicable.

### Confirmed Case

Confirmation is through laboratory tests to detect the bacteria.

Forms: Communicable Disease Notifying Form

Lab Tests: STI PCR, Gram's smear, bacterial culture

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## Warts (Anogenital Warts)


Human papillomavirus (HPV-6 ) cause anogenital warts. Anogenital warts caused by HPV may be single or multiple, exophytic, papular or flat. Perianal warts commonly found in MSM, are also found in heterosexual men and in women (6). Anogenital warts occur commonly around the vaginal introitus, under the foreskin of the uncircumcised penis, and on the shaft of the circumcised penis. Warts can also occur at multiple sites in the anogenital epithelium or within the anogenital tract (e.g., cervix, vagina, urethra, perineum, perianal skin, anus, or scrotum). Intra-anal warts are observed predominantly in persons who have had receptive anal intercourse; however, they also can occur among men and women who have not had a history of anal sexual contact (63).

### Suspected Case

Diagnosis of anogenital warts is usually made by visual inspection but can be confirmed by biopsy, which is indicated if lesions are atypical. They are usually flat, papular, or pedunculated growths on the genital mucosa (63).

### Probable Case

Not applicable.

### Confirmed Case

Not applicable.

Form: Communicable Disease Notifying Form

Lab Tests: STI panel PCR, Herpes Simplex Virus I & II IgM & IgG

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## Yellow Fever


Yellow fever is an acute viral haemorrhagic disease caused by a virus of the Flavivirus genus of the Flaviviridae family which is transmitted by the infected Aedes aegypti mosquitoes. The incubation of yellow fever is 3 to 6 days. The virus is found in certain endemic regions (65).

List of countries endemic for yellow fever can be accessed from WHO website.
https://www.who.int/publications/m/item/countries-with-risk-of-yellow-fever-transmission-and-countries-requiring-yellow-fever-vaccination-(november-2022)

### Suspected Case

Any person with acute onset of fever, with jaundice appearing within 14 days of onset of the first symptoms with the history to travel to a yellow fever endemic country within the last 6 days must be reported (64).

Clinical presentation includes:

1. Fever
2. Muscle pain with prominent backache
3. Headache
4. Loss of appetite
5. Nausea or vomiting

**Severe cases which are in the toxic phase include:**

High fever returns and several body systems are affected, usually the liver and the kidneys. In

this phase people are likely to develop jaundice (yellowing of the skin and eyes, hence the name 'yellow fever'), dark urine and abdominal pain with vomiting. Bleeding can occur from the mouth, nose, eyes or stomach.

### Probable Case

A suspected case with any one of the following

- Presence of yellow fever IgM antibody in the absence of yellow fever immunization within 30 days before onset of illness.
- Positive post-mortem liver histopathology.
- Epidemiological link to a confirmed case or an outbreak (64).

### Confirmed Case

A probable case and absence of yellow fever immunization within 30 days before onset of illness; and one of the following:
Detection of yellow fever-specific IgM or detection of fourfold increase in yellow fever IgM or IgG antibody titers between acute and convalescent serum samples, or both.
OR
Detection of yellow fever-specific neutralizing antibodies.
OR
Absence of yellow fever immunization within 14 days before onset of illness; and one of the following: detection of yellow fever virus genome in blood or other organs by PCR or detection of yellow fever antigen in blood, liver or other organs by immunoassay or isolation of yellow fever virus (64).

Yellow fever is difficult to diagnose, especially during the early stages. A more severe case can be confused with severe malaria, leptospirosis, viral hepatitis (especially fulminant forms), other haemorrhagic fevers, infection with other flaviviruses (such as dengue haemorrhagic fever), and poisoning.
Polymerase chain reaction (PCR) testing in blood and urine can sometimes detect the virus in early stages of the disease. In later stages, testing to identify antibodies is needed (ELISA and PRNT) (65).

Forms: Communicable Disease Notifying Form

Lab Tests: WHO collaborating center, if needed further investigation

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## Zika Virus Disease


Zika virus is transmitted primarily by Aedes mosquitoes. Most people with Zika virus infection do not develop symptoms. Zika virus infection during pregnancy can cause infants to be born with microcephaly and other congenital malformations as well as preterm birth and miscarriage. Zika virus infection is associated with Guillain-Barré syndrome, neuropathy and myelitis in adults and children (83) (67).

### Suspected Case

A patient presenting with rash (usually maculopapular and pruritic) and/or fever and at least one of the following signs or symptoms: conjunctivitis (non-purulent/hyperemic), arthralgia, or myalgia (66).

## Probable Case

Is a case which meets the criteria of a suspected case, and has anti-ZIKV IgM antibodies with negative lab results for other flaviviruses (66).

## Confirmed Case

A confirmed case meets the criteria for a suspected case and has lab confirmation of recent ZIKV infection, with presence of:
ZIKV RNA or ZIKV antigen in serum samples or other specimens or positive anti-ZIKV IgM antibodies and plaque reduction neutralization test for ZIKV titers 10 or greater in the absence of other flaviviruses.
In cases of deaths – molecular detection of the viral genome in autopsy tissue (66).

Laboratory confirmation tests are needed for case confirmation.
Nucleic acid amplification test, or NAAT.
Zika virus immunoglobulin (Ig) M antibody testing.
Plaque reduction neutralization tests (PRNT) are quantitative assays that measure virus-specific neutralizing antibody titers (67).

 Forms: Communicable Disease Notifying Form

 Lab Tests: Lab Tests: Trio plex PCR

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# Bibliography


1. **Dhivehisarukaaruge gazette.** Balithah Report Kurumaa Behey Gavaaidhu (Disease Reporting Regulation). *gazette.gov.mv.* [Online] December 9, 2021. [Cited: June 11, 2023.] https://gazette.gov.mv/gazette/6271.
2. **World Health Organization.** Emergencies: International health regulations and emergency committees. *who.int.* [Online] WHO, December 19, 2019. [Cited: June 17, 2023.] https://www.who.int/news-room/questions-and-answers/item/emergencies-international-health-regulations-and-emergency-committees.
3. **World Health organization.** Poliomyelitis. *cdn.who.int.* [Online] WHO, Sept 5, 2018. [Cited: June 17, 2023.] https://cdn.who.int/media/docs/default-source/immunization/vpd_surveillance/vpd-surveillance-standards-publication/who-surveillancevaccinepreventable-18-polio-r3.pdf?sfvrsn=aa96984f_28&download=true.
4. **Goel, Krishna M and Gupta, Devendra K.** *Hutchison's Paediatrics.* 2nd. London : Jaypee Brothers Medical Publishers, 2012.
5. **World Health Organization.** Diarrhoeal disease. *World Health organization.* [Online] WHO, May 2, 2017. [Cited: April 23, 2023.] https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease#:~:text=Diarrhoea%20should%20be%20treated%20with,diarrhoea%20duration%20and%20improves%20outcomes..
6. **Walker, Brian R, et al.** *Davidson's Principles and Practice of Medicine.* s.l. : Elsevier Limited, 2014.
7. **CDC.** Chancroid. *Centers for Disease Control and Prevention.* [Online] CDC, April 6, 2017. [Cited: April 23, 2023.] https://www.cdc.gov/immigrantrefugeehealth/guidelines/domestic/sexually-transmitted-diseases/chancroid.html#:~:text=Chancroid%20is%20caused%20by%20the,painful%2C%20tender%2C%20and%20nonindurated..
8. **World health Organization.** Chikungunya outbreak toolbox. *who.int.* [Online] WHO, October 2022. [Cited: June 17, 2023.] https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/chikungunya-outbreak-toolbox.
9. **Global Task Force on Cholera Control.** CHOLERA OUTBREAK RESPONSE. *https://choleraoutbreak.org/.* [Online] Cholera Outbreak Response, 2020. [Cited: June 17, 2023.] https://choleraoutbreak.org/.
10. **World Health Organization.** case Definitions. *WHO.* [Online] WHO, July 22, 2022. [Cited: April 23, 2023.] https://apps.who.int/iris/bitstream/handle/10665/360579/WHO-2019-nCoV-Surveillance-Case-Definition-2022.1-eng.pdf.
11. *Assessment of the new World Health Organization's dengue classification for predicting severity of illness and level of healthcare required.* **Balgees A. Ajlan, Maram M. Alafif, Maha M. Alawi, Naeema A. Akbar, Eman K. Aldigs, and Tariq A. Madani.** 8, s.l. : Plos Neglected Tropical Diseases, 2019, Vol. 13. PMC6716674.
12. **Centers for Disease Control and Prevention.** Dengue. *CDC.* [Online] CDC, June 13, 2019. [Cited: April 23, 2023.] https://www.cdc.gov/dengue/healthcare-providers/diagnosis.html#:~:text=For%20patients%20presenting%20during%20the,(Figure%203%2D01).
.
13. **World Health Organization.** DIPHTHERIA. *Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region.* s.l. : WHO, 2022. Vol. Module 4.
14. —. Ebola virus disease. *www.who.int.* [Online] WHO, April 20, 2023. [Cited: May 22, 2023.] https://www.who.int/news-room/fact-sheets/detail/ebola-virus-disease.
15. —. JAPANESE ENCEPHALITIS. *Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region.* s.l. : WHO, 2022. Vol. Module 10.
16. **European Center for Disease Prevention and Control.** Factsheet about Japanese encephalitis. *ECDC.* [Online] ECDC, March 26, 2022. [Cited: April 24, 2023.] https://www.ecdc.europa.eu/en/japanese-encephalitis/facts#:~:text=Japanese%20encephalitis%20virus%20is%20present,50%20000%20cases%20reported%20annually..
17. **Safety Platform for Emergency Vaccines.** Acute Encephalitis. *SPEAC.* [Online] SO2- D2.5.2.1 - AESI

Case Definition Companion, February 21, 2021. [Cited: April 24, 2023.] https://brightoncollaboration.us/wp-content/uploads/2021/03/SPEAC_D2.5.2.1_Encephalitis-Case-Definition-Companion-Guide_V1.0_format12064-1.pdf.
18. **Centers for Disease Control and Prevention.** Japanese Encephalitis Virus. *CDC.* [Online] CDC, January 26, 2023. [Cited: April 24, 2023.] https://www.cdc.gov/japaneseencephalitis/healthcareproviders/healthcareproviders-diagnostic.html#:~:text=Laboratory%20diagnosis%20of%20JE%20is,longer%20persistence%20has%20been%20documented..
19. —. Food Poisoning Symptoms. *CDC.* [Online] CDC, December 7, 2022. [Cited: April 24, 2023.] https://www.cdc.gov/foodsafety/symptoms.html.
20. **National Institute of Neurological Disorders and Stroke.** Guillain-Barré Syndrome. *NIH.* [Online] CDC. [Cited: April 24, 2023.] https://www.ninds.nih.gov/health-information/disorders/guillain-barre-syndrome#.
21. **Centers for Disease Control and Prevention.** Haemophilus influenzae Disease (Including Hib). *CDC.* [Online] CDC, March 4, 2022. [Cited: April 24, 2023.] https://www.cdc.gov/hi-disease/index.html.
22. **World Health organization.** Haemophilus influenzae type B. *emro.who.int.* [Online] WHO, 2023. [Cited: June 18, 2023.] https://www.emro.who.int/health-topics/haemophilus-influenzae-type-b/disease-surveillance.html.
23. **Centers for Disease Control and Prevention.** Hand, Foot, and Mouth Disease (HFMD). *CDC.* [Online] CDC, June 29, 2022. [Cited: 24 April, 2023.] https://www.cdc.gov/hand-foot-mouth/about/signs-symptoms.html.
24. **World Health Organization.** *Technical considerations and case definitions to improve surveillance for viral hepatitis: technical report.* s.l. : WHO, 2016. ISBN 978 92 4 154954 7.
25. —. Global Influenza Programme. *WHO.* [Online] WHO, January 2014. [Cited: April 25, 2023.] https://www.who.int/teams/global-influenza-programme/surveillance-and-monitoring/case-definitions-for-ili-and-sari#:~:text=ILI%20case%20definition,within%20the%20last%2010%20days..
26. —. Influenza (Seasonal). *WHO.* [Online] WHO, January 12, 2023. [Cited: April 25, 2023.] https://www.who.int/news-room/fact-sheets/detail/influenza-(seasonal)#:~:text=Overview,cause%20seasonal%20epidemics%20of%20disease..
27. **Centers for Disease Conatrol and Prevention.** Malaria. *CDC.* [Online] CDC, March 22, 2022. [Cited: May 12, 2023.] https://www.cdc.gov/malaria/about/disease.html#:~:text=Severe%20malaria%20occurs%20when%20infections,coma%2C%20or%20other%20neurologic%20abnormalities.
28. **World Health organization.** Measles and Rubella. *Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region.* s.l. : WHO, 2022. Vol. Module 1.
29. —. Measles Outbreak Toolbox. *WHO.* [Online] WHO, September 2022. [Cited: May 12, 2023.] https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/measles-outbreak-toolbox#:~:text=Case%20definitions%20for%20case%20finding,clinician%20suspects%20measles%20infection%3B%20or.
30. **World Health Organization.** CONGENITAL RUBELLA SYNDROME (CRS). *Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region.* s.l. : WHO, 2022. Vol. Module 2.
31. **Natiobal health services UK.** NHS. *NHS.* [Online] Symptoms Meningitis, October 25, 2022. [Cited: May 12, 2023.] https://www.nhs.uk/conditions/meningitis/symptoms/.
32. **Centers for Disease Control and Prevention.** Meningitis. *CDC.* [Online] CDC, March 30, 2022. [Cited: May 12, 2023.] https://www.cdc.gov/meningitis/index.html#:~:text=Meningitis%20is%20an%20inflammation%20(swelling,infections%20also%20can%20cause%20meningitis..
33. **World Health Organization.** Invasive bacterial vaccine-preventable diseases. *Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region.* s.l. : WHO, 2022. Vol. Module 11.
34. **Centers for Disease Control and Prevention.** Middle East Respiratory Syndrome (MERS). *CDC.* [Online] CDC, August 2, 2019. [Cited: May 12, 2023.] https://www.cdc.gov/coronavirus/mers/index.html.
35. **World Health Organization.** Mpox (Monkeypox). *who.int.* [Online] WHO, April 18, 2023. [Cited: May

30, 2023.] https://www.who.int/news-room/fact-sheets/detail/monkeypox?gclid=CjwKCAjwvdajBhBEEiwAeMh1U6qcY6jBYvugOAoJjg1C5cjPohWq3WgGPrS6HIehpSZwBcFvPb96RhoCW9gQAvD_BwE.
36. —. *Mumps.* s.l. : WHO, 2018.
37. **Centers for Disease Control and Preventaion.** Mumps. *CDC.* [Online] CDC, March 8, 2021. [Cited: May 12, 2023.] https://www.cdc.gov/mumps/about/signs-symptoms.html.
38. **College of optometrists.** Ophthalmia neonatorum. *www.college-optometrists.org.* [Online] May 29, 2022. [Cited: May 13, 2023.] https://www.college-optometrists.org/clinical-guidance/clinical-management-guidelines/ophthalmianeonatorum#:~:text=The%20definition%20of%20Ophthalmia%20Neonatorum,be%20bacterial%2C%20chlamydial%20or%20viral..
39. **Centers for Disease Control and Prevention.** Plague. *CDC.* [Online] CDC, August 6, 2021. [Cited: May 12, 2023.] https://www.cdc.gov/plague/index.html#:~:text=Plague%20is%20a%20disease%20that,an%20animal%20infected%20with%20plague..
40. **World Health Organization.** Plague Outbreak Toolbox. *who.int.* [Online] WHO, September 2022. [Cited: June 18, 2023.] https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/plague-outbreak-toolbox.
41. **Centers for Disease Control and Prevention.** Pertussis (Whooping cough). *cdc.gov.* [Online] CDC, August 4, 2022. [Cited: May 14, 2023.] https://www.cdc.gov/pertussis/php.html#case-definition.
42. **National Health SErvice UK.** Pneumonia. *NHS.* [Online] NHS, January 12, 2023. [Cited: May 12, 2023.] https://www.nhs.uk/conditions/pneumonia/.
43. **National Heart, Lung and Blood Institude USA.** Pneumonia Diagnosis. *NIH.* [Online] NIH, March 24, 2022. [Cited: May 12, 2023.] https://www.nhlbi.nih.gov/health/pneumonia/diagnosis#:~:text=A%20chest%20X%2Dray%20is,enough%20oxygen%20into%20your%20blood..
44. **World Health Organization.** Poliomyelitis. *who.int.* [Online] WHO, September 5, 2018. [Cited: June 17, 2023.] https://cdn.who.int/media/docs/default-source/immunization/vpd_surveillance/vpd-surveillance-standards-publication/who-surveillancevaccinepreventable-18-polio-r3.pdf?sfvrsn=aa96984f_28&download=true.
45. **Centers for Disease Control and Prevention.** Manual for the Surveillance of Vaccine-Preventable Diseases, Chapter 12: Poliomyelitis. *CDC.* [Online] CDC, September 23, 2020. [Cited: May 13, 2023.] https://www.cdc.gov/vaccines/pubs/surv-manual/chpt12-polio.html.
46. **World Health organization.** POLIOMYELITIS. *Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region.* s.l. : WHO, 2022. Vol. Module 3.
47. **Centers for Disease Control and Prevention.** Rabies. *CDC.* [Online] CDC, May 4, 2022. [Cited: May 13, 2023.] https://www.cdc.gov/rabies/medical_care/index.html.
48. —. cdc.gov. *Rabies.* [Online] CDC, May 1, 2023. [Cited: June 18, 2023.] https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/rabies#:~:text=Probable%20human%20rabies%3A%20A%20suspected%20case%20plus%20a,suspected%20or%20probable%20case%20confirmed%20in%20the%20laboratory..
49. **World Health Organization.** Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region. *Rota Virus.* s.l. : WHO , 2022. Vol. Module 9.
50. **Centers for Disease Control and Prevention.** Parasites - Scabies. *CDC.* [Online] CDC, September 1, 2020. [Cited: May 13, 2023.] https://www.cdc.gov/parasites/scabies/gen_info/faqs.html.
51. —. Typhus fevers. *CDC.* [Online] CDC, November 13, 2020. [Cited: May 13, 2023.] https://www.cdc.gov/typhus/scrub/index.html#:~:text=Scrub%20typhus%2C%20also%20known%20as,body%20aches%2C%20and%20sometimes%20rash..
52. —. Shigella – Shigellosis. *cdc.gov.* [Online] CDC, April 6, 2023. [Cited: June 17, 2023.] https://www.cdc.gov/shigella/diagnosistreatment.html.
53. —. Syphilis. *cdc.gov.* [Online] CDC, February 10, 2022. [Cited: May 13, 2023.] https://www.cdc.gov/std/syphilis/stdfact-syphilis.htm.
54. **World Health Organization.** Tetanus. *who.int.* [Online] WHO, May 9, 2018. [Cited: May 14, 2023.]

https://www.who.int/news-room/fact-sheets/detail/tetanus#:~:text=Neonatal%20tetanus%20occurs%20when%20nonsterile,to%20cover%20the%20umbilical%20stump..
55. —. NON-NEONATAL TETANUS. *Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region.* s.l. : WHO, 2022. Vol. Module 7.
56. —. NEONATAL TETANUS. *Surveillance Guide for Vaccine-Preventable Diseases in the WHO South-East Asia Region.* s.l. : WHO, 2022. Vol. Module 6.
57. **Centers for Disease Control and Prevention.** Toxoplasmosis: General FAQs. *cdc.gov.* [Online] CDC, December 1, 2022. [Cited: May 14, 2023.] https://www.cdc.gov/parasites/toxoplasmosis/gen_info/faqs.html#:~:text=infection%20to%20me%3F-,What%20is%20toxoplasmosis%3F,infected%20with%20the%20Toxoplasma%20parasite..
58. **World Health Organization.** Definitions and reporting framework for tuberculosis. *who.int.* [Online] January 2020. [Cited: June 23, 2023.] https://www.who.int/publications/i/item/9789241505345. ISBN 978 92 4 150534 5.
59. —. Tuberculosis. *who.int.* [Online] WHO, April 21, 2023. [Cited: May 14, 2023.] https://www.who.int/news-room/fact-sheets/detail/tuberculosis.
60. —. Typhoid and other invasive salmonellosis. *who.int.* [Online] September 5, 2018. [Cited: June 23, 2023.] https://cdn.who.int/media/docs/default-source/immunization/vpd_surveillance/vpd-surveillance-standards-publication/who-surveillancevaccinepreventable-21-typhoid-r2.pdf?sfvrsn=993904a6_10&download=true.
61. **Center for Diseases Control and Prevention.** Nontyphoidal Salmonellosis. *cdc.gov.* [Online] CDC, May 1, 2023. [Cited: May 30, 2023.] https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/salmonellosis-nontyphoidal#:~:text=Nontyphoidal%20Salmonella%20infection%20usually%20presents,treatment%20after%201%E2%80%937%20days..
62. **National Library of Medicine.** VAGINAL DISCHARGE SYNDROME. *www.ncbi.nlm.nih.gov.* [Online] NIH. [Cited: May 14, 2023.] https://www.ncbi.nlm.nih.gov/books/NBK572663/#:~:text=8.3.-,Bacterial%20vaginosis,of%20anaerobic%20flora%20(54)..
63. **Centers for Disease Control and Prevention.** Anogenital Warts. *cdc.gov.* [Online] CDC, July 22, 2021. [Cited: May 14, 2023.] https://www.cdc.gov/std/treatment-guidelines/anogenital-warts.htm.
64. **World Health Organization.** Yellow fever. *who.int.* [Online] May 1, 2020. [Cited: June 23, 2023.] https://cdn.who.int/media/docs/default-source/immunization/vpd_surveillance/vpd-surveillance-standards-publication/who-surveillancevaccinepreventable-23-yellowfever-r1.pdf?sfvrsn=a8d50bc6_10&download=true.
65. —. Yellow fever. *who.int.* [Online] WHO, May 7, 2019. [Cited: May 14, 2023.] https://www.who.int/news-room/fact-sheets/detail/yellow-fever#:~:text=Yellow%20fever%20is%20an%20acute,%2C%20nausea%2C%20vomiting%20and%20fatigue..
66. —. Zika outbreak toolbox. *who.int.* [Online] October 2022. [Cited: June 2023, 23.] https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/zika-outbreak-toolbox.
67. **Centers for Disease Control and Prevention.** Testing for Zika Virus Infections. *cdc.gov.* [Online] CDC, June 13, 2019. [Cited: May 14, 2023.] https://www.cdc.gov/zika/laboratories/types-of-tests.html.
68. —. Respiratory Infections. *CDC.* [Online] CDC, June 24, 2019. [Cited: April 23, 2023.] https://wwwnc.cdc.gov/travel/yellowbook/2020/posttravel-evaluation/respiratory-infections.
69. —. Chikungunya. *CDC.* [Online] CDC, October 11, 2022. [Cited: April 23, 2023.] https://www.cdc.gov/chikungunya/symptoms/index.html.
70. **World Health Organization.** Coronavirus disease (COVID-19). *WHO.* [Online] WHO, March 28, 2023. [Cited: April 23, 2023.] https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-covid-19.
71. —. Dengue and severe dengue. *WHO.* [Online] WHO, March 17, 2023. [Cited: April 23, 2023.] https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue#:~:text=Dengue%20is%20a%20viral%20infection,million%20infections%20occurring%20each%2

0year..
72. **World Health organization.** Lymphatic filariasis. *WHO.* [Online] WHO, March 16, 2022. [Cited: April 24, 2023.] https://www.who.int/news-room/fact-sheets/detail/lymphatic-filariasis#:~:text=Lymphatic%20filariasis%2C%20commonly%20known%20as,damage%20to%20the%20lymphatic%20system..
73. **Centers for Disease Control and Prevention.** Guillain-Barré Syndrome. *CDC.* [Online] CDC, February 6, 2023. [Cited: April 24, 2023.] https://www.cdc.gov/vaccinesafety/concerns/guillain-barre-syndrome.html#:~:text=Guillain%2DBarr%C3%A9%20syndrome%20(GBS),with%20a%20virus%20or%20bacteria..
74. —. Haemophilus influenzae Disease (Including Hib). *CDC.* [Online] CDC, March 4, 2022. [Cited: 24 April, 2023.] https://www.cdc.gov/hi-disease/about/types-infection.html.
75. —. Malaria. *CDC.* [Online] CDC, March 22, 2022. [Cited: May 12, 2023.] https://www.cdc.gov/malaria/about/disease.html#:~:text=Following%20the%20infective%20bite%20by,the%20longer%20ones%20with%20P..
76. **World Health Organization.** Measles. *WHO.* [Online] WHO, March 20, 2023. [Cited: May 12, 2023.] https://www.who.int/news-room/fact-sheets/detail/measles?gclid=CjwKCAjwx_eiBhBGEiwA15gLN2hKPmavO-yCDYYynlpovLuBCYiQmudAbt_D-q6oHLgAVaQSqj_KhRoCCtEQAvD_BwE.
77. —. Maldives, Sri Lanka eliminate measles and rubella, ahead of 2023 target. *WHO.* [Online] WHO, July 8, 2020. [Cited: May 12, 2023.] https://www.who.int/southeastasia/news/detail/08-07-2020-maldives-sri-lanka-eliminate-measles-and-rubella-ahead-of-2023-target.
78. **Centers for Disease Control and Prevention.** Traveler's Health, Plague. *CDC.* [Online] CDC, May 1, 2023. [Cited: May 12, 2023.] https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/plague#:~:text=Incubation%20period%20is%20typically%201,usually%20inguinal%2C%20axillary%2C%20or%20cervical.
79. **World Health Organization.** Poliomyelitis. *WHO.* [Online] WHO, July 4, 2022. [Cited: May 13, 2023.] https://www.who.int/news-room/fact-sheets/detail/poliomyelitis.
80. **Centers for Disease Control and Prevention.** Rotavirus. *CDC.* [Online] CDC, March 26, 2021. [Cited: May 13, 2023.] https://www.cdc.gov/rotavirus/clinical.html#:~:text=Rotavirus%20disease%20is%20characterized%20by,decreased%20urination.
81. **World Health Organization.** Typhoid. *who.int.* [Online] WHO, March 30, 2023. [Cited: May 14, 2023.] https://www.who.int/news-room/fact-sheets/detail/typhoid?gclid=CjwKCAjw6vyiBhB_EiwAQJRopnF6tRWsN3eL0lHzk9Z4VDZRmjtim773uZc4bNxoOmxfgF2QpMs8mhoCiUoQAvD_BwE.
82. *Effectiveness of syndromic management for male patients with urethral discharge symptoms in Amazonas, Brazil.* **Jonas Rodrigues de Menezes Filho, José Carlos Gomes Sardinha, Enrique Galbán, Valéria Saraceni, and Carolina Talhari.** 6, Brazil : Anais Brasileiros de Dermatologia, 2017, Vol. 92. PMC5786390.
83. **World Health Organization.** Zika virus. *who.int.* [Online] WHO, December 8, 2022. [Cited: May 14, 2023.] https://www.who.int/news-room/fact-sheets/detail/zika-virus?gclid=CjwKCAjwjYKjBhB5EiwAiFdSfqg73XK6hv8lI0sYm6qNL4K_bLavZFMlW63pkcjH0m65nnMGBCe2zRoCi8oQAvD_BwE.
84. **John Hoppin's medicine.** Encephalitis. *www.hopkinsmedicine.org.* [Online] John Hoppin's medicine. [Cited: May 15, 2023.] https:// www.hopkinsmedicine.org/health/conditions-and-diseases/encephalitis#:~:text=The%20most%20common%20causes%20of,West%20Nile%20virus.
85. **Centers for Disease Control and Prevention.** Congenital Syphilis – CDC Fact Sheet. *cdc.gov.* [Online] CDC, April 11, 2023. [Cited: May 30, 2023.] https://www.cdc.gov/std/syphilis/stdfact-congenital-syphilis.htm.
86. —. Typhoid & Paratyphoid Fever. *cdc.gov.* [Online] CDC, May 1, 2023. [Cited: July 2, 2023.] https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/typhoid-and-paratyphoid-fever.