

Yellow Fever

Disease Category: Arboviral and vector-borne

Timeframe to follow-up: Within 1 working day

See the link to the [Disease Investigation Process document](#)

Signs and Symptoms ^{9,10}	- Sudden onset of high fever, severe headache, lumbosacral myalgia, chills, anorexia, nausea, and vomiting (acute phase). - Relative bradycardia in relation to elevated body temperature (Faget's sign). - Remission period lasting up to 24–48 hours, followed by toxic phase in ~15% of symptomatic cases. - Severe jaundice (hepatocellular necrosis), acute kidney injury (oliguria/anuria), multi-organ failure, and spontaneous bleeding (epistaxis, hematemesis, melena, petechiae).
Incubation ¹⁰	Usually 3 to 6 days following mosquito bite.
Case Classification	Clinical criteria: An acute illness characterized by acute onset with at least one of the following: fever, jaundice, or elevated total bilirubin ≥ 3 mg/dl and absence of more likely clinical explanation. Confirmed: A clinically compatible case and meets one or more of the following: - Isolation of yellow fever virus (YFV) from or detection of YFV antigen or nucleic acid in tissue, blood, CSF or other body fluid and no history of yellow fever vaccination within 30 days before illness onset unless evidence of wild-type YFV. - Fourfold or greater rise or fall in YFV-specific neutralizing antibody titers in paired sera and no history of yellow fever vaccination within 30 days before illness onset. - YFV specific IgM antibodies in CSF or serum with confirmatory virus-specific neutralizing antibodies in the same or a later specimen and no history of yellow fever vaccination. Probable: A clinically compatible case with epidemiologic linkage criteria and meets the following: - YFV-specific IgM antibodies in CSF or serum and negative IgM results for other arboviruses endemic to region where exposure occurred and no history of yellow fever vaccination.
Differential Diagnosis ⁶	Viral Hemorrhagic Fevers (Ebola, Marburg, Lassa), Dengue, Leptospirosis, Malaria, Viral Hepatitis (A, B, C, D and E), Q Fever, and Influenza.
Treatment ⁸	No specific antiviral treatment exists. Supportive clinical management focusing on hemodynamic support, fluid management, blood product transfusion for severe coagulopathy, and renal replacement therapy for acute renal failure.

	Avoid aspirin and nonsteroidal anti-inflammatory drugs (NSAIDs) due to increased risk of hemorrhage.
Duration ^{6,9}	Acute phase lasts 3 to 4 days. Toxic phase occurs within 7 to 10 days of onset with high mortality (30%–50%). Convalescence in survivors may be prolonged, lasting weeks to months.
<u>Exposure^{6,10}</u>	Bite of an infected daytime-biting mosquito (<i>Aedes</i> species in Africa/Americas, <i>Haemagogus</i> or <i>Sabethes</i> species in South America) in endemic tropical regions of Africa and South America. History of international travel to endemic zones without prior Yellow Fever vaccination.
<u>Laboratory Testing</u>	Local Health Authority can arrange testing if an outbreak is suspected OR for contacts: CDC sample collection instructions: https://www.cdc.gov/vector-borne-diseases/php/laboratories/submitting-arboviral-specimens.html. Test directory-look at Arbovirus testing options: https://www.cdc.gov/laboratory/specimen-submission/list.html .
<u>Control of Contacts¹¹</u>	Disease does not spread directly person-to-person through casual contact such as coughing, sneezing, or touching. Unvaccinated travel companions sharing the same exposure window/area should be monitored for febrile symptoms for 6 days following departure from the endemic region.
Key areas of focus during investigation	International travel history within 14 days prior to symptom onset (specifically tropical South America or Sub-Saharan Africa), Yellow Fever vaccination history (YF-VAX status), outdoor/forest/jungle exposures, mosquito bite history, and lodging vector controls, medical history, pregnancy status.
Public Health Actions	Reports of Yellow Fever cases must be made to the Local Health Authority during the regular business hours of the health authority on the first working day following the identification of the case. Local Health Authority to notify Office of State Epidemiology (dpbhhepi@health.nv.gov) or call 775-400-0333 for individual cases or if outbreak suspected. For individual confirmed or probable cases: - Confirm diagnosis, if possible - Identify potential exposures - Prepare a case report and submit to the Chief Medical Officer (through OSE) within 7 days after completing the case investigation - Identify potential outbreaks from common sources - Provide education about how to prevent transmission To the best of the local health authority's ability, each step of the investigation should be completed within one working day or in alignment with NAC 441A .
<u>Key Partner Agencies</u>	Nevada Department of Health and Human Services (DPBH/OSE), Local Health Authorities, Nevada Division of Environmental Protection (NDEP), Local Vector Control Agencies, Laboratories including Nevada State Public Health Laboratory, Centers for Disease Control and Prevention (CDC), and World Health Organization (WHO).

TABLE OF CONTENTS

TABLE OF CONTENTS	3
I. DISEASE REPORTING	4
A. Legal Reporting Requirements	4
1. Health Care Providers and Health Care Facilities	4
2. Laboratories	4
3. Local Health Authority (LHA)	4
II. THE DISEASE AND ITS EPIDEMIOLOGY	4
A. Background	4
B. Etiologic Agent	4
C. Description of Illness	4
D. Disease Burden in Nevada	5
E. Reservoirs	5
F. Modes of Transmission	5
G. Incubation Period	5
H. Period of Communicability	6
I. Testing	6
J. Treatment	6
III. EPIDEMIOLOGIC CASE INVESTIGATION	6
A. Step 1: Review relevant information about the disease	7
1. Review scientific information in Control of Communicable Diseases Manual, most recent edition	7
2. Review Yellow Fever most recent case definition (Yellow Fever 2019 Case Definition CDC)	7
B. Step 2: Begin investigating the case	7
1. Contact Reporting Source and/or Reported Case	7
C. Step 3: Identify potential sources of infection	7
D. Step 4: Initiate control measures for case and/or for contacts (see Section IV – Section VI below)	7
E. Step 5: Provide Education and Prevention messaging to the case and/or contacts (see Section VII below)	7
IV. CONTROL OF CASE	7
1. Management/Exclusions for Specific Groups or Settings	7
Asymptomatic cases:	8
2. Exclusion Notifications	8
V. CONTROL OF CONTACTS	8
VI. CONTROL OF CARRIERS	8
VII. MANAGEMENT OF SPECIAL SITUATIONS/OUTBREAK CONTROL	8
VIII. PREVENTION	9
IX. REFERENCES	10
X. ACKNOWLEDGEMENTS	11
XI. UPDATE LOG	11

YELLOW FEVER

I. DISEASE REPORTING

A. Legal Reporting Requirements

A report to the health authority may be made by telephone; telecopy (in the form prescribed by the health authority); or any form of electronic communication identified by the health authority, following the specified format and procedure.¹

1. *Health Care Providers and Health Care Facilities*

Health providers and facilities must notify the health authority where provider is located within the first working day after identifying the case.¹⁻³

2. *Laboratories*

Laboratories must notify the health authority within the first working day after identifying the case. (1) If the lab is located outside of Nevada, notify the Nevada Chief Medical Officer through the Office of State Epidemiology (OSE) within the same timeframe.^{1,4}

3. *Local Health Authority (LHA)*

LHA's must notify the Office of State Epidemiology (OSE) within 7 days after completing the case investigation.⁵

II. THE DISEASE AND ITS EPIDEMIOLOGY

A. Background

Yellow fever is an acute, mosquito-borne viral hemorrhagic disease endemic to tropical areas of Africa and Central/South America. The virus causes a spectrum of illness ranging from mild, non-specific febrile illness to severe hepatorenal failure and fatal systemic hemorrhage. Due to its high fatality rate in the toxic phase and potential for rapid urban transmission via *Aedes aegypti* vectors, yellow fever is a re-emerging disease of global public health significance regulated under International Health Regulations (IHR).⁶

B. Etiologic Agent

Yellow fever is caused by the yellow fever virus (YFV), an enveloped, single-stranded RNA virus belonging to the genus *Flavivirus* (family *Flaviviridae*).⁶

C. Description of Illness

The clinical course typically presents in two phases separated by a brief remission:

- Acute Phase: Characterized by abrupt fever, rigors, intense headache, generalized myalgia (predominantly back pain), anorexia, nausea, and vomiting. Relative bradycardia relative to elevated temperature (Faget's sign) may be present.
- Remission Phase: Symptoms temporarily abate for several hours up to 24–48 hours.
- Toxic Phase: Approximately 15% of infected individuals progress to severe disease characterized by jaundice, oliguria/anuria, epistaxis, petechiae, gastrointestinal hemorrhage (black vomit), shock, and multi-organ failure. Case fatality rates for patients entering the toxic phase range from 30% to 50%.⁶

D. Disease Burden in Nevada

Yellow fever is non-endemic in Nevada and the continental United States. Cases occurring in Nevada are travel-associated, imported by international travelers returning from or visiting endemic areas in Sub-Saharan Africa or tropical South America. While sustained local transmission in Nevada is unlikely due to environmental and vector constraints, vigilance is necessary to detect imported cases and manage secondary transmission risks where competent Aedes vector populations exist.⁷

See the [Nevada Office of State Epidemiology Communicable Disease Dashboard](#) for Nevada specific data on Yellow Fever (Monitoring Zoonotic Diseases section).

E. Reservoirs

Sylvatic/Intermediate Cycle: Non-human primates (monkeys) in tropical rainforests and savannah zones.

Urban Cycle: Humans serve as the primary host and reservoir during periods of high viremia.⁶

F. Modes of Transmission

Transmitted to humans through the bite of infected female mosquitoes:

Sylvatic (Jungle) Cycle: Haemagogus and Sabethes species in South America or forest Aedes species in Africa transmit the virus between non-human primates and humans in forest canopy areas.

Intermediate (Savannah) Cycle: Semi-domestic Aedes species transmit virus between primates and humans residing in fringe forest zones (Africa only).

Urban Cycle: Domesticated Aedes aegypti mosquitoes transmit the virus directly between humans in high-density urban environments. Direct person-to-person transmission does not occur through casual contact; transmission via blood transfusion or organ transplantation is theoretically possible.⁶

G. Incubation Period

The incubation period ranges from 3 to 6 days following the bite of an infected mosquito.⁶

H. Period of Communicability

No person-to-person transmission through casual contact. However, there have been case reports of Yellow Fever transmission via blood transfusion and organ donation.¹²

I. Testing

The Acute Phase (Days 1–10): Reverse Transcription-Polymerase Chain Reaction (RT-PCR) performed on serum or whole blood to detect YFV RNA. Virus isolation may be performed in specialized biosafety level 3 (BSL-3) facilities.⁶

Convalescent Phase / Serology: Enzyme-linked immunosorbent assay (ELISA) to detect YFV-specific IgM. Confirmatory Plaque Reduction Neutralization Tests (PRNT) are required to differentiate YFV antibodies from cross-reactive flaviviruses (e.g., Dengue, West Nile, Zika) or prior flavivirus vaccination.⁶

Histopathological diagnosis (IHC) can be performed post-mortem on liver tissue. Coordinate all reference testing through the Nevada State Public Health Laboratory (NSPHL) and CDC Division of Vector-Borne Diseases.⁶

J. Treatment

No specific antiviral medication is approved for yellow fever treatment. Clinical care is supportive:

- Inpatient monitoring, hemodialysis for renal failure, and administration of fresh frozen plasma or platelets for severe bleeding/coagulopathy.
- Aspirin, NSAIDs, and other antiplatelet agents are strictly contraindicated due to increased risk of bleeding and hepatotoxicity.
- Acetaminophen should be used with extreme caution given liver involvement.⁸

Provide most current treatment guidelines from [Red Book](#) to the healthcare provider or refer case to physician for proper treatment for Yellow Fever.

III. EPIDEMIOLOGIC CASE INVESTIGATION

The public health authority should begin investigating the case of Yellow Fever, step by step, within one working day of notification or in alignment with [NAC 441A](#).

A. Step 1: Review relevant information about the disease.

1. Review scientific information in [Control of Communicable Diseases Manual](#), most recent edition.
2. Review Yellow Fever most recent case definition ([Yellow Fever 2019 Case Definition | CDC](#))

B. Step 2: Begin investigating the case.

1. Contact Reporting Source and/or Reported Case

Upon receiving an initial case report, review lab test results and available clinical details and epidemiologic factors. Please make three attempts to contact the case (text and phone calls) on separate days, at different times of the day (morning, afternoon, late afternoon). Document all attempts to contact a reporting source and/or reported case, preferably in the “Encounters” tab of EpiTrax. Please use case report forms (CRF) to gather accurate information about the case. Focus on the key data elements listed above. Filling out an electronic version of the CRF in EpiTrax (called a Confidential Morbidity Report (CMR) in EpiTrax) is preferred. If used, the completed PDF version should be attached to the CMR in EpiTrax. The CRF should be completed within 7 days of completing the investigation of the case.⁵

C. Step 3: Identify potential sources of infection

The investigation focuses on exposures during the 3 to 6 days (up to 14 days) prior to symptom onset. Interview the patient regarding international travel to endemic zones (South America, Africa), specific activities (jungle excursions, urban stays), mosquito exposure, and documented yellow fever vaccination status (International Certificate of Vaccination or Prophylaxis - ICVP).⁹

D. Step 4: Initiate control measures for case and/or for contacts (see Section IV – Section VI below).

E. Step 5: Provide Education and Prevention messaging to the case and/or contacts (see Section VII below).

IV. CONTROL OF CASE

1. Management/Exclusions for Specific Groups or Settings

All cases	
Sensitive Occupation (Outdoor workers)	No work exclusion. Restrict from outdoor work in areas with active <i>Aedes</i> mosquito populations during the viremic window (first 5 days after illness onset).

Childcare/School Attendee	No exclusion. Ensure indoor setting is screened/protected from mosquitoes and avoid mosquito bites during the first 5 days after illness onset.
Case in a Medical Facility	Apply Standard Precautions. ¹³ Vector protection: Place patient in a screened or air-conditioned room, or under bed nets, use EPA registered insect repellent or cover extremities with clothing during the first 5 days of illness (viremic phase) to prevent local mosquito infection.
General Population	Restrict outdoor activities during the viremic phase (first 5 days of fever). Protect against mosquito bites (screens, repellents, bed nets). Refrain from blood donation for at least 2 weeks after receipt of Yellow Fever Vaccine.

Asymptomatic cases:

Viremia is thought to be lower in asymptomatic cases, but individuals can still pass on the yellow fever virus if an uninfected mosquito bites them and proceeds to bite other people. Therefore using the same timeline to avoid mosquito bites for a symptomatic case would prevent transmission from asymptomatic cases.

2. Exclusion Notifications

Disease does not require any control measures of cases. Please provide education and prevention measures.

V. CONTROL OF CONTACTS

Yellow Fever does not have person-to-person contact and does not require any control measures of contacts. Please provide education and prevention measures.

VI. CONTROL OF CARRIERS

A carrier state has not been documented for Yellow Fever and thus no carrier-specific control measures are needed.

VII. MANAGEMENT OF SPECIAL SITUATIONS/OUTBREAK CONTROL

Coordinate with senior epidemiology staff to determine if an outbreak is occurring. If so, notify DPBH Environmental Health, local health authorities, or infection control, as appropriate.

Local Vector Surveillance and Containment Around an Imported Case

If a viremic yellow fever patient is present in a region with established vector populations:

- Vector Assessment: Notify local vector control agencies to conduct targeted mosquito trapping and larva/adult abatement within a 150-meter radius around the patient's residence and work location.¹⁴
- Indoor Residual Spraying/Space Spraying: Deploy targeted adulticide spraying around patient dwellings if competent vectors are detected.
- Enhance Community Case Finding: Conduct active surveillance across local healthcare facilities for unexplained acute febrile illness with jaundice or bleeding signs.
- Mass Vaccination Protocols: If local urban transmission is verified, coordinate emergency mass vaccination deployment via CDC and WHO international stockpiles.⁸

Yellow Fever transmission through blood or organ donation

- Notification of federal partners including CDC, WHO, and working with local donation centers to identify recipients and monitor for yellow fever virus infection.

VIII. PREVENTION

The investigator should reference the most recent disease-specific public educational materials from the CDC and WHO. The [Nevada OSE website](#) also provides information about Yellow Fever, as does the [One Health Nevada](#) website.

Vaccination (YF-VAX):

- Single dose of live-attenuated 17D vaccine provides long-lasting immunity for most travelers.
- Administer at least 10 days prior to travel to endemic areas in Africa and South America.
- Entry requirements: Ensure international travelers carry an official International Certificate of Vaccination or Prophylaxis (ICVP) where mandated by destination countries.
- Vaccine contraindications: Infants <6 months, severe immunodeficiency, thymus disorders, severe egg hypersensitivity. Exercise caution in adults aged ≥60 years.

Personal Protection Against Mosquito Bites:

- Apply EPA-registered insect repellents containing DEET, Picaridin, IR3535, or Oil of Lemon Eucalyptus (OLE) on exposed skin and clothing following instructions.
- Wear long-sleeved shirts and long pants treated with Permethrin when outdoors in endemic areas.
- Stay in accommodations with air conditioning or intact window/door screens, or sleep under permethrin-treated bed nets.

Vector Abatement:

- Eliminate standing water containers (tires, buckets, pots) around residential spaces to disrupt Aedes breeding cycles.⁸

IX. REFERENCES

1. REPORTING OF COMMUNICABLE DISEASES - 441A.225. *NAC CHAPTER 441A - INFECTIOUS DISEASES; TOXIC AGENTS*. [Online] November 2021. [Cited: July 23, 2025.] <https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec225>.
2. REPORTING OF COMMUNICABLE DISEASES - 441A.230. *NAC CHAPTER 441A - INFECTIOUS DISEASES; TOXIC AGENTS*. [Online] November 2021. [Cited: January 19, 2024.] <https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec230>.
3. REPORTING OF COMMUNICABLE DISEASES - 441A.240. *NAC CHAPTER 441A - INFECTIOUS DISEASES; TOXIC AGENTS*. [Online] November 2021. [Cited: July 23, 2025.] <https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec240>.
4. REPORTING OF COMMUNICABLE DISEASES - 441A.235. *NAC CHAPTER 441A - INFECTIOUS DISEASES; TOXIC AGENTS*. [Online] November 2021. [Cited: July 23, 2025.] <https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec235>.
5. DUTIES AND POWERS RELATING TO THE PRESENCE OF COMMUNICABLE DISEASES. *NAC CHAPTER 441A - INFECTIOUS DISEASES; TOXIC AGENTS*. [Online] November 2021. [Cited: July 23, 2025.] <https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec290>.
6. Wilder-Smith, Annelies. Yellow fever: Epidemiology, clinical manifestations, and diagnosis. *UpToDate*. [Online] 07 22, 2026. [Cited: 09 03, 2026.] https://www.uptodate.com/contents/yellow-fever-epidemiology-clinical-manifestations-and-diagnosis?search=yellow%20fever&source=search_result&selectedTitle=1~80&usage_type=default&display_rank=1&searchCorrelationId=7d131545-4350-4edf-b872-9938af3bb119&sear.
7. *The expansion of the yellow fever mosquito (Aedes aegypti) and evidence of its establishment in the Las Vegas metropolitan area, Nevada, United States of America*. Saul Lozano, Vivek Raman, C Roxanne Connelly. 6, s.l. : Journal of Medical Entomology, 2025, Vol. 62. doi:10.1093/jme/tjaf115.
8. Wilder-Smith, Annelies. Yellow fever: Treatment and prevention. *UpToDate*. [Online] 04 15, 2026. [Cited: 09 03, 2026.] https://www.uptodate.com/contents/yellow-fever-treatment-and-prevention?search=yellow%20fever&source=search_result&selectedTitle=2~80&usage_type=default&display_rank=2&searchCorrelationId=7d131545-4350-4edf-b872-9938af3bb119&searchCorrelationTerm=yellow%2.
9. CDC. Clinical Features and Diagnosis of Yellow Fever. *CDC*. [Online] 11 25, 2025. [Cited: 09 03, 2026.] <https://www.cdc.gov/yellow-fever/hcp/clinical-diagnosis/index.html>.
10. Heymann, D. L. (Ed.). (2022). Yellow Fever. In *Control of Communicable Diseases Manual* (21st ed., pp. 712-718). [Cited: 09 15, 2026] American Public Health Association.
11. CDC. Yellow Fever: Causes and How it Spreads. *CDC*. [Online] 07 15, 2026. [Cited: 09 16, 2026.] <https://www.cdc.gov/yellow-fever/causes-and-spread/index.html>.

12. Gould CV, Free RJ, Bhatnagar J, et al. Transmission of yellow fever vaccine virus through blood transfusion and organ transplantation in the USA in 2021: report of an investigation. *Lancet Microbe*. 2023;4(9):e711-e721. doi:10.1016/S2666-5247(23)00170-2
13. CDC. Appendix A: Type and Duration of Precautions Recommended for Selected Infections and Conditions. *CDC*. [Online] 09 11, 2026. [Cited: 09 21, 2026.] <https://www.cdc.gov/infection-control/hcp/isolation-precautions/appendix-a-type-duration.html>
14. WHO. Urban yellow fever risk management: handbook for national preparedness and response planning. *WHO*. [Online] 08 31, 2026. [Cited: 09 22, 2026.] <https://www.who.int/publications/i/item/9789240122581>

X. ACKNOWLEDGEMENTS

This document was developed based on the content and format of the disease investigation guidelines of several state and local health jurisdictions:

- Oregon Health Authority Investigative Guidelines
- Washington State Department of Health Reporting and Surveillance Guidelines
- Washoe County Health District Epidemiology and Communicable Disease Program Investigation of Communicable Disease Manual

The Nevada Office of State Epidemiology would like to acknowledge the work of these great partners.

XI. UPDATE LOG



Ihsan Azzam, Ph.D., M.D.
Chief Medical Officer

09/23/2026

Chief Medical Officer Approval Date