

Dengue

Disease Category: Arbovirus/Vector-Borne

Timeframe to follow-up: Within 1 working day

Signs and Symptoms	Common symptoms can include fever, myalgia, arthralgia, pain behind the eyes, rash, nausea/vomiting, leukopenia, positive tourniquet test. Warning signs for severe illness include vomiting (three times in the past 24 hours), bleeding from the nose or gums, and vomiting blood. Severe dengue can be life threatening and can include severe plasma leakage leading to shock or fluid accumulation with respiratory distress, severe bleeding as evaluated by a clinician, or severe organ involvement (e.g., aspartate aminotransferase (AST) or alanine aminotransferase (ALT) ≥ 1000 IU/L, impaired consciousness, failure of heart or other organs).
Incubation	Usually 3 to 14 days.
Case Classification	Confirmatory: A clinically compatible case of dengue-like illness, dengue, or severe dengue with confirmatory laboratory results. Probable: A clinically compatible case of dengue-like illness, dengue, or severe dengue with laboratory results indicative of probable infection. Suspected: A clinically compatible case of dengue-like illness, dengue, or severe dengue with an epidemiologic linkage. Epidemiologic Linkage • Travel to a dengue endemic country or presence at location with ongoing outbreak within previous two weeks of onset of an acute febrile illness or dengue, or • Association in time and place (e.g., household member, family member, classmate, or neighbor) with a confirmed or probable dengue case.
Differential Diagnosis	Other arboviruses (Zika, Chikungunya, West Nile), influenza, malaria, leptospirosis, typhoid fever, and rickettsial diseases.
Treatment	Supportive treatment [stay hydrated, avoid certain use of aspirin (acetylsalicylic acid), salicylate-containing drugs, and other nonsteroidal anti-inflammatory drugs (e.g., ibuprofen) to minimize potential for bleeding].
Duration	Symptoms usually persist for 2 to 7 days.
Exposure	Typically spread to people from a bite from infected Aedes mosquitoes.
Laboratory Testing	Dengue can be confirmed using nucleic acid amplification tests (NAATs) or dengue virus nonstructural protein 1 (NS-1) antigen by immunoassay. The Nevada State Public Health Lab (NSPHL) provides Real Time PCR (q-PCR)

Dengue

May 2026

1



	testing for dengue virus RNA as part of its arbovirus panel (Dengue, Chikungunya, Zika): https://med.unr.edu/public-health-lab/disease-characteristics/clinical-analysis/arbovirus-detection-by-real-time-pcr-(dengue-chikungunya-zika)-x347624
<u>Control of Contacts</u>	Disease does not have person-to-person contact and does not require any control measures of contacts.
Key areas of focus during investigation	Travel history, blood donation or transfusion, organ donation, and pregnancy.
Public Health Actions	Reports of Dengue 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 (dpbhepi@health.nv.gov) or call 775-684-5911/775-400-0333 (after hours) 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 Office of State Epidemiology, Local Health Authority

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	5
D. Disease Burden in Nevada	5
E. Reservoirs	5
F. Modes of Transmission	5
G. Incubation Period	6
H. Period of Communicability	6
I. Testing	6
J. Treatment	6
III. EPIDEMIOLOGIC CASE INVESTIGATION	7
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 Dengue most recent case definition (2015)	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 IX below)	7
IV. CONTROL OF CASE	7
V. CONTROL OF CONTACTS	8
VI. CONTROL OF CARRIERS	8
VII. MANAGEMENT OF SPECIAL SITUATIONS/OUTBREAK CONTROL	8
VIII. PREVENTION	8
IX. REFERENCES	9
X. ACKNOWLEDGEMENTS	10
XI. UPDATE LOG	10

DENGUE

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) (2) (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

Dengue is a mosquito-borne viral infection that has grown dramatically in incidence worldwide in recent decades, with 100-400 million cases reported annually (6). Its geographic distribution is vast, occurring primarily in tropical and subtropical regions across the Americas, Africa, the Middle East, Asia, and the Pacific Islands, putting almost half of the world's population at risk (6). The disease is often a leading cause of febrile illness in these endemic areas, with outbreaks having a seasonal pattern, corresponding to warmer, rainy months. Risk factors for developing severe dengue include secondary infection with a different viral serotype, as well as host factors like underlying medical conditions (e.g., diabetes mellitus, renal disease), older age groups, and obesity. While the majority of cases are asymptomatic or mild, the disease can be fatal, with an estimated 21,000 to over 29,000 deaths attributed to dengue globally each year (6).

B. Etiologic Agent

The infectious agent is the Dengue virus (DENV), an enveloped, positive-sense, single-stranded RNA virus belonging to the *Flaviviridae* family. There are four distinct, but antigenically related, serotypes of the virus: DENV-1, DENV-2, DENV-3, and DENV-4. The virus is primarily transmitted to humans through the bite of infected female mosquitoes, mainly *Aedes aegypti* and to a lesser extent, *Aedes albopictus*. Infection with one serotype

provides lifelong immunity against that specific serotype, but only temporary and partial immunity against the other three. A subsequent infection with a different serotype is a significant risk factor for developing severe disease (6).

C. Description of Illness

Dengue infection may be asymptomatic or present with a wide spectrum of clinical manifestations. The illness typically begins abruptly with a nonspecific, acute febrile illness (febrile phase) lasting 2 to 7 days. Common symptoms include muscle, joint, or bone pain ("breakbone fever"), headache, retro-orbital pain, facial erythema, and a rash (macular or maculopapular). During defervescence (usually days 3-7), the critical phase may begin, which is characterized by an increase in vascular permeability resulting in potential plasma leakage and hemoconcentration (increasing hematocrit). This period of clinically significant plasma leakage typically lasts 24 to 48 hours. Severe dengue, which can follow the critical phase, involves criteria such as severe plasma leakage leading to shock, severe bleeding, or severe organ involvement (e.g., liver failure, impaired consciousness) (6).

D. Disease Burden in Nevada

Dengue is not endemic to Nevada, but is a nationally notifiable disease, and cases reported in the state are overwhelmingly travel-associated (imported from endemic areas) (6) (7). However, there is a growing concern for local transmission due to the establishment and rapid expansion of the primary mosquito vector, *Aedes aegypti*, in the Las Vegas metropolitan area since its initial detection in 2017 (8). The presence of this aggressive, urban-dwelling mosquito, combined with high international tourist traffic and a changing climate, creates the potential for sporadic, locally acquired cases if an infected traveler is bitten by a local mosquito (9). While the risk of widespread epidemic waves remains low compared to endemic regions, the increasing mosquito population and activity in Southern Nevada warrant continuous surveillance and control efforts. Cases of Dengue are low in Nevada, with 0.1-0.2 cases per 100,000 reported annually since 2022 (10).

See the [Nevada Office of State Epidemiology Communicable Disease Dashboard](https://nvose.org/data-statistics/) for Nevada specific data on Dengue ([<https://nvose.org/data-statistics/>] under the Zoonotic and Vector-Borne diseases).

E. Reservoirs

The primary reservoirs for Dengue are humans and *Aedes* mosquitoes (6).

F. Modes of Transmission

Dengue virus is primarily transmitted to humans through the bite of infected female *Aedes aegypti* mosquitoes, and less commonly by *Aedes albopictus* or *Aedes polynesiensis* (6). Rare, non-vector modes of transmission have been documented, including vertical transmission (mother-to-child during pregnancy), sexual transmission, and transmission via blood products or organ donation (6). Health care-associated transmission through needlestick or mucocutaneous exposure has also been reported (6).

G. Incubation Period

The incubation period for dengue virus replication in mosquitoes is 8 to 12 days, and mosquitoes remain infectious for the remainder of their life cycle. In humans, the incubation period is 3 to 14 days before symptom onset (6).

H. Period of Communicability

Infected humans, whether symptomatic or asymptomatic, are able to transmit the dengue virus to mosquitoes 1 to 2 days before the onset of symptoms and throughout the viremic period, which generally lasts for approximately 7 days (6).

I. Testing

Laboratory confirmation can be made using nucleic acid amplification tests (NAATs) or dengue virus nonstructural protein 1 (NS-1) antigen by immunoassay on serum, plasma, or whole blood obtained within the first 7 days after symptom onset. Anti-dengue virus (DENV) immunoglobulin M (IgM) may also suggest recent infection but does have cross-reactivity with other flaviviruses. Anti-DENV IgM are usually detectable beginning days 3 to 5 after illness onset. Most patients develop IgM antibodies by day 10. Plaque reduction neutralization tests (PRNT) are only recommended in patients from areas with ongoing transmission of other flaviviruses such as Zika (6).

The Nevada State Public Health Lab (NSPHL) provides Real Time PCR (q-PCR) testing for dengue virus RNA as part of its arbovirus panel (Dengue, Chikungunya, Zika) (11). Preferred specimens for the test are serum or cerebral spinal fluid (CSF), and clinical/medical laboratories in Nevada are required to submit certain specimens or isolates to the State or Local Public Health Laboratory for confirmation or further testing (12).

J. Treatment

Treatment for dengue infection is primarily supportive as no specific antiviral therapy is currently available (6). Management focuses on preventing and treating complications:

- Patients with dengue should be advised to stay well hydrated and to avoid aspirin, salicylates, and nonsteroidal anti-inflammatory drugs (NSAIDs) (e.g., ibuprofen) to reduce the potential for severe bleeding (6).
- Early recognition of shock and the implementation of intensive supportive therapy, primarily maintenance of fluid volume and hemodynamic status, are crucial for reducing mortality risk (6).
- Healthcare providers must diligently monitor for early signs of shock, occult bleeding, and plasma leakage, which characterizes the critical phase (6). Patients with severe disease or warning signs require hospitalization for strict fluid management and hemodynamic monitoring (6).

Provide most current treatment guidelines from Red Book to the healthcare provider or refer case to physician for proper treatment for Dengue.

III. EPIDEMIOLOGIC CASE INVESTIGATION

The public health authority should begin investigating the case of Dengue, 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 Dengue most recent case definition ([2015](#))*

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

Based on the incubation period for dengue, the public health investigation focuses on exposures in the 2 weeks before the onset of illness, as the incubation period typically ranges from 3 to 14 days (6). The primary line of questioning will center on travel history to any area with a risk of dengue, particularly within this 2-week window, to identify potential sources of imported infection (7). Investigators will also inquire about risk factors for local transmission, such as any potential mosquito exposure in Nevada, and any contact with blood products, as these represent non-vector transmission risks (6).

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 IX below).

IV. CONTROL OF CASE

Disease does not have person-to-person contact and does not require any control measures of cases. Please provide education and prevention measures.

V. CONTROL OF CONTACTS

Disease 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

Disease does not have person-to-person contact and does not require any control measures of carriers. Please provide education and prevention measures.

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.

VIII. PREVENTION

The [Nevada OSE website](#) also provides information about Dengue, as does the [One Health Nevada website](#) (14).

- Use insect repellents while hiking, camping, hunting, or being outside. Ask an adult to help you with insect repellent.
- Wear long pants, long sleeves, and long socks when outside.
- Treat your clothes, gear (boots, tents, backpacks or camping gear), or any outdoor equipment with insect repellent.
- Use screens on windows and doors to keep mosquitos outside.
- Remove anything that will bring mosquitoes into your home. For example, emptying standing water from pots, buckets, barrels, and other containers.
- When traveling internationally, choose a hotel or place to stay that has air conditioning or windows and doors with screens to keep mosquitos outside.
- Use mosquito nets when sleeping outside or if you are staying in a room with no screens on windows or doors.

<https://www.onehealthnevada.com/diseases/dengue/>

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. Kimberlin, D. W., et al. Dengue. In: Red Book: 2024 Report of the Committee on Infectious Diseases. s.l. : Academy of Pediatrics, 2024.
7. Prevention, Centers for Disease Control and. Dengue: Data & Statistics. Centers for Disease Control and Prevention. [Online] 2025. [Cited: 10 02, 2025.] <https://www.cdc.gov/dengue/data-research/facts-stats/index.html>.
8. 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. Lozano, S., Raman, V., Connelly, C. R. s.l. : J Med Entomol. , 2025. doi:10.1093/jme/tjaf115.
9. Organization, World Health. Dengue and severe dengue. World Health Organization. [Online] July 17, 2024. [Cited: October 02, 2025.] <https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue>.
10. Epidemiology, Nevada Office of State. Data & Statistics. The Office of State Epidemiology. [Online] 2025. [Cited: October 02, 2025.] <https://nvose.org/data-statistics/>.
11. University of Nevada, Reno School of Medicine. Arbovirus Detection by Real Time PCR (Dengue, Chikungunya, Zika). University of Nevada, Reno School of Medicine. [Online] 2025. [Cited: October 02, 2025.] [https://med.unr.edu/public-health-lab/disease-characteristics/clinical-analysis/arbovirus-detection-by-real-time-pcr-\(dengue-chikungunya-zika\)-x347520](https://med.unr.edu/public-health-lab/disease-characteristics/clinical-analysis/arbovirus-detection-by-real-time-pcr-(dengue-chikungunya-zika)-x347520).
12. Services, Nevada Department of Health and Human. Clinical Laboratory Submissions to State and Local Public Health Laboratories. . Nevada Department of Health and Human Services. [Online] 2025. [Cited: October 02, 2025.]

<https://www.dpbh.nv.gov/globalassets/dpbh/programs/ophie/docs/Specimen-Submission-to-Public-Health-Laboratories.pdf>.

13. Prevention., Centers for Disease Control and. Dengue Virus Infections Case Definition. Centers for Disease Control and Prevention. [Online] 2015. [Cited: October 02, 2025.] <https://ndc.services.cdc.gov/case-definitions/dengue-virus-infections-2015/>.
14. Epidemiology., Nevada Office of State. Dengue. One Health Nevada. [Online] [Cited: October 02, 2025.] <https://www.onehealthnevada.com/diseases/dengue/>.

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

7/31/26

Chief Medical Officer Approval Date