

ARTHROPOD-BORNE VIRUSES



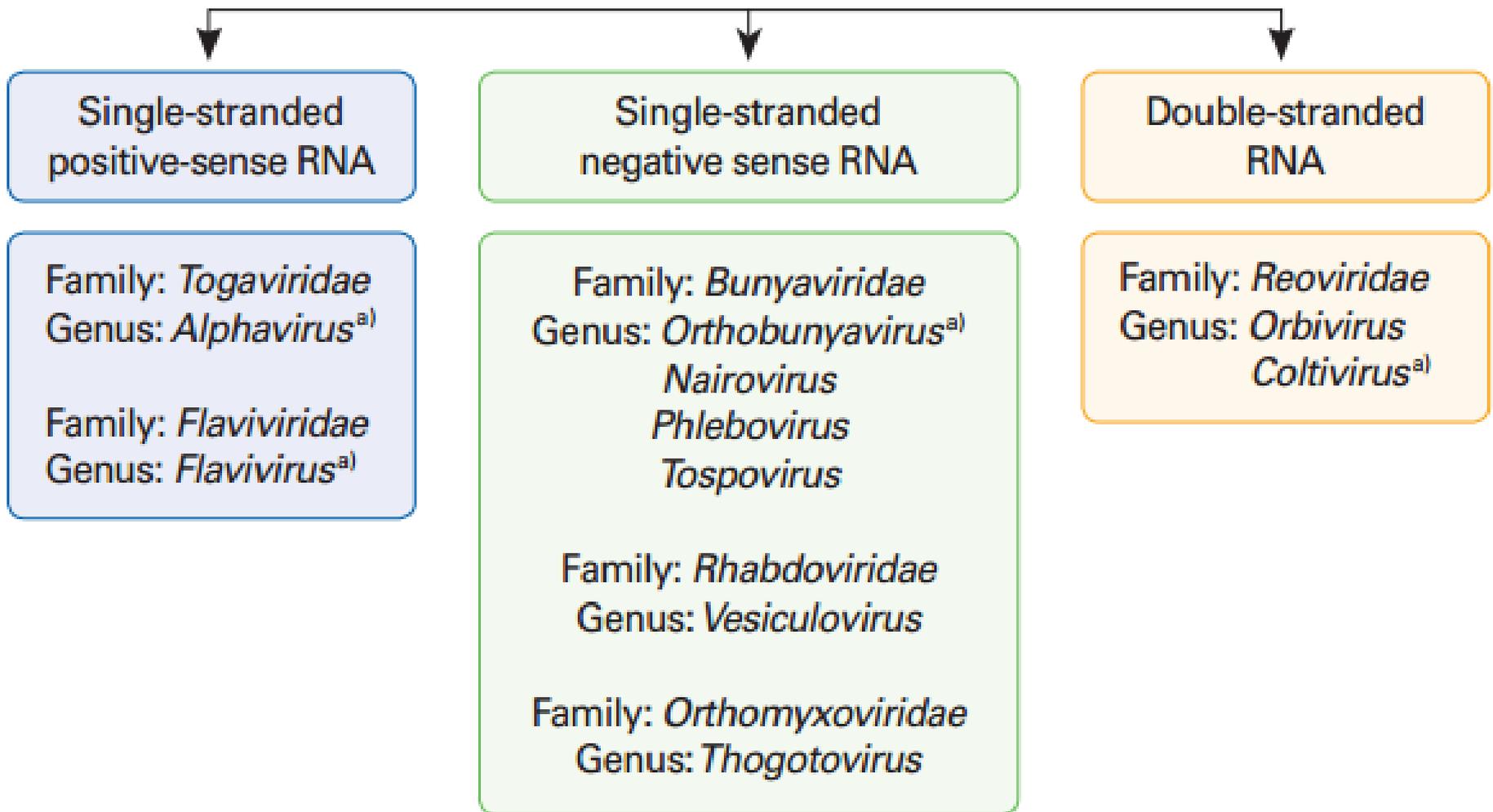
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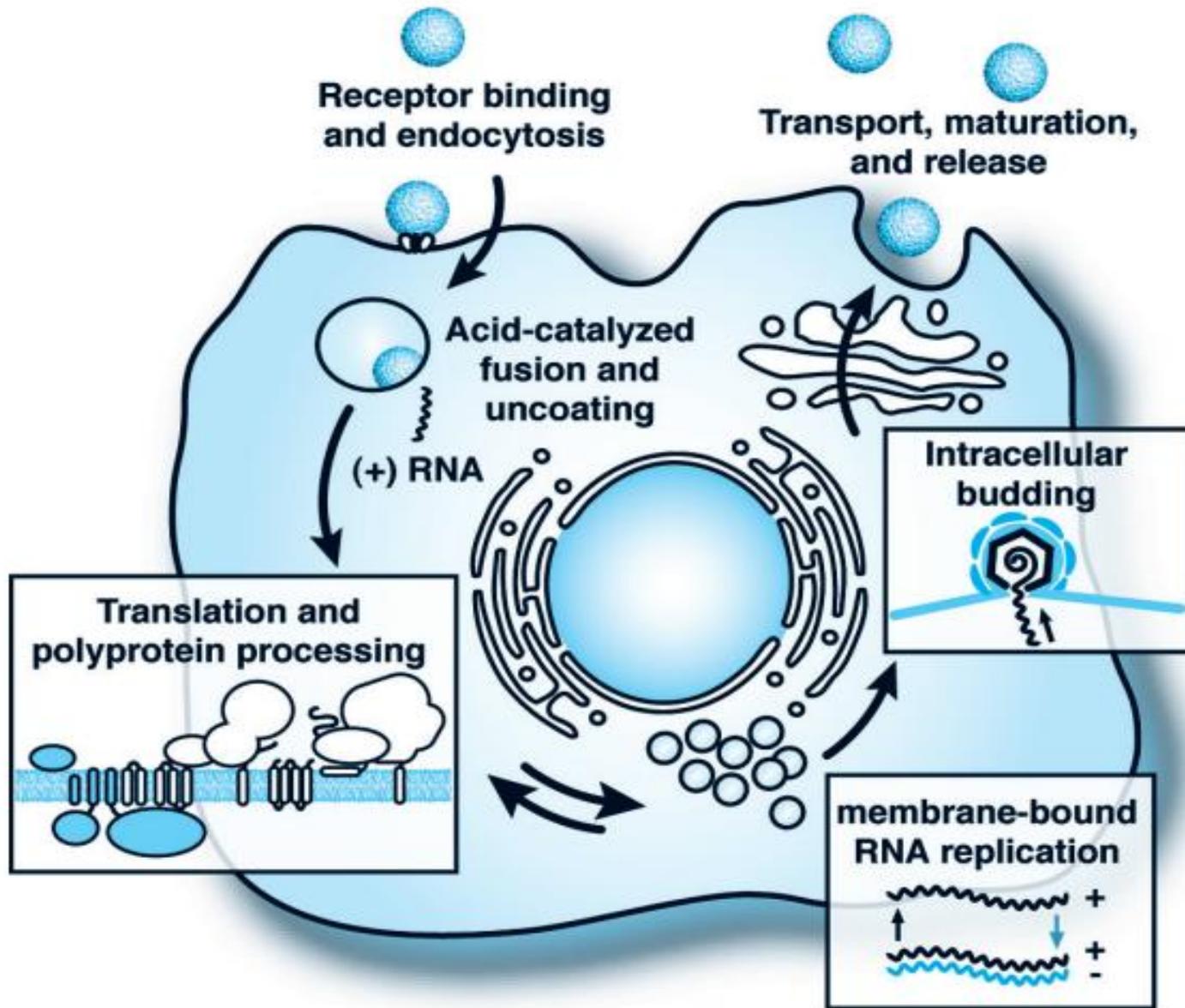


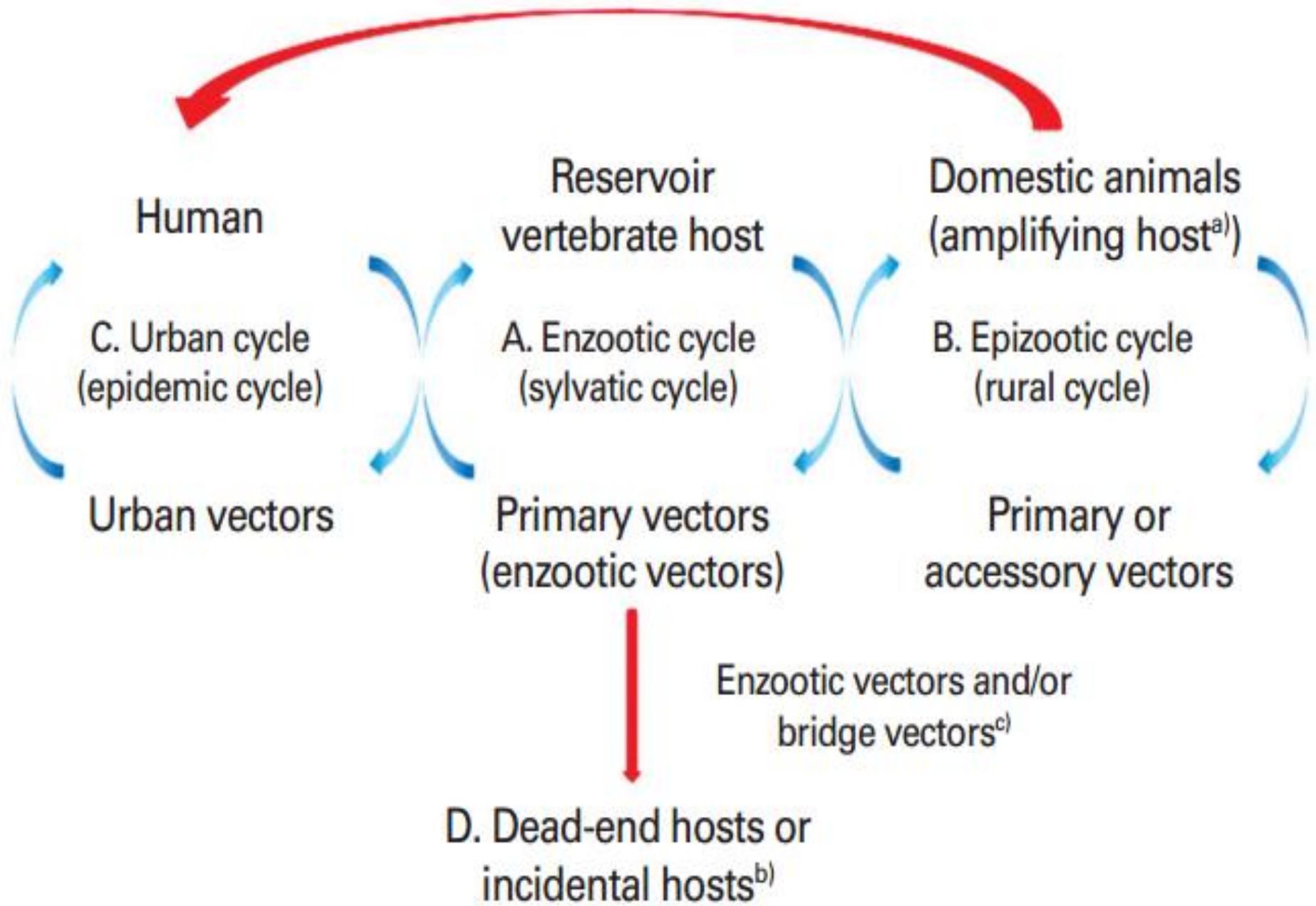
COLORADO
Department of Public
Health & Environment

Arboviruses

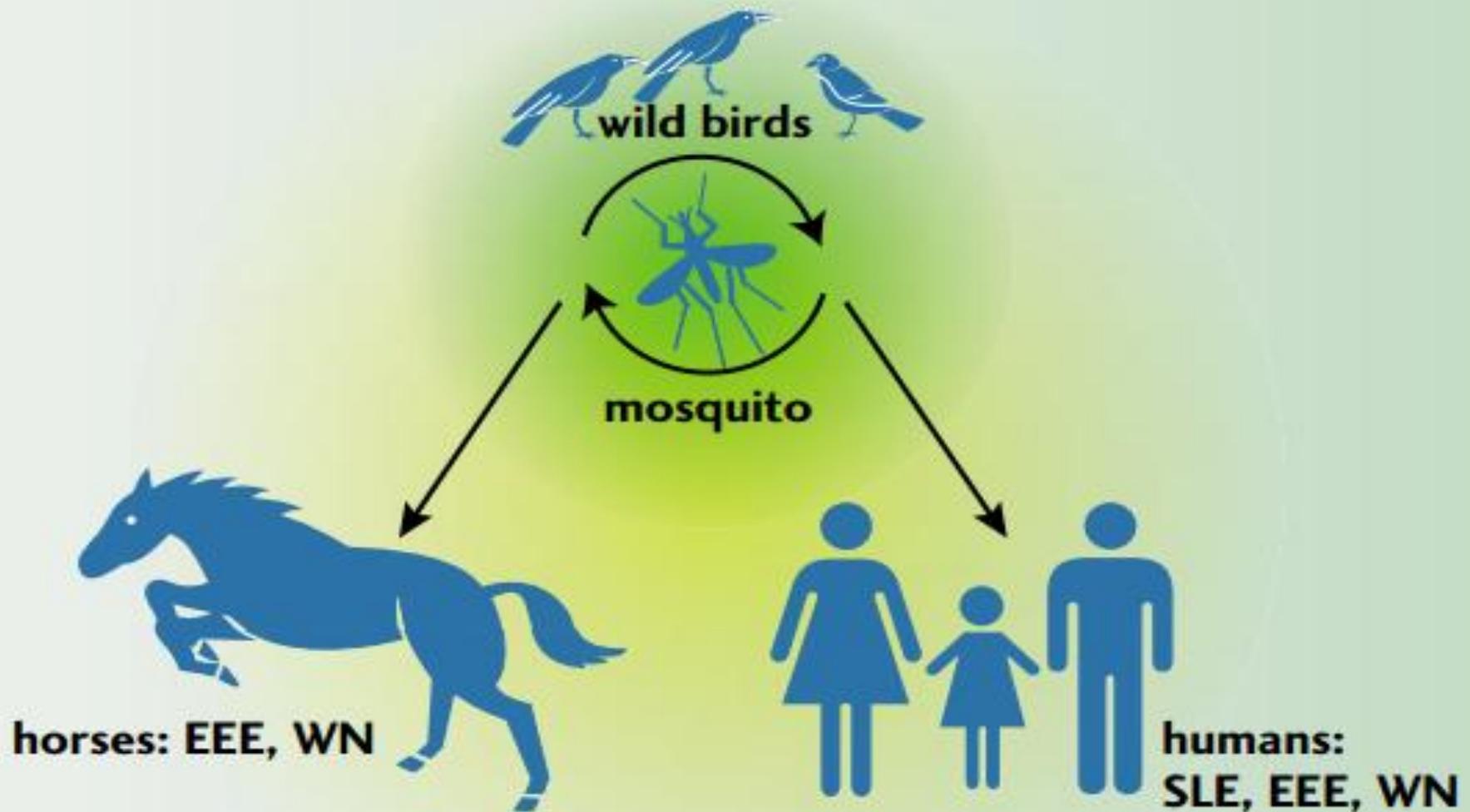


Arboviruses

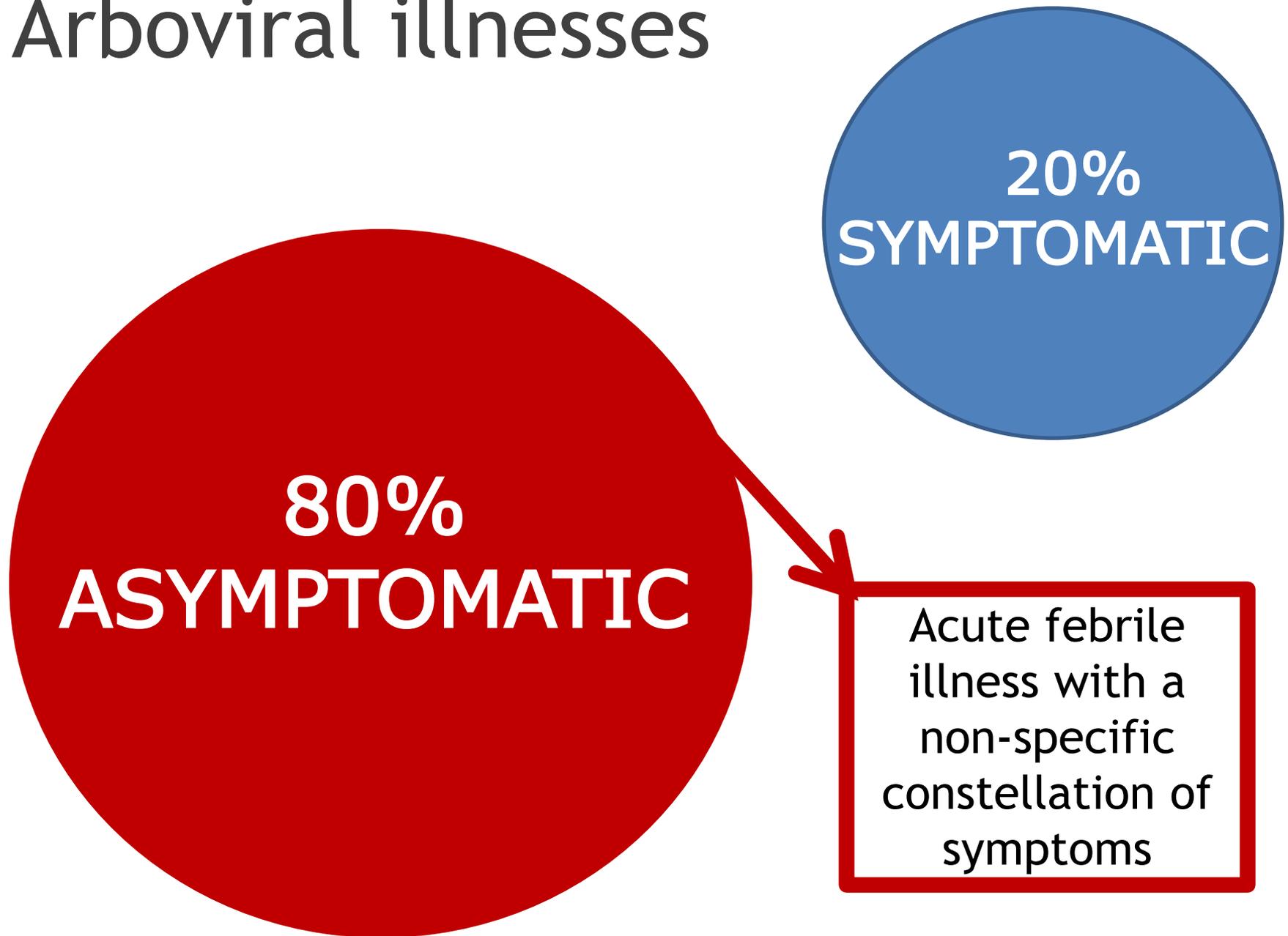




SLE, EEE, WN Virus Transmission Cycle



Arboviral illnesses



Arboviral illnesses

20%
Fever

<1%
Neuro-invasive

Spectrum:
Mild illness to
more severe
illness requiring
hospitalization

Arboviral illness detection

Relies on clinical suspicion
and laboratory testing to
detect cases

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graph TD; A[Relies on clinical suspicion and laboratory testing to detect cases] --> B[Positive lab tests for both humans and animals are reportable to public health]
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Positive lab tests for both
humans and animals are
reportable to public health



MOSQUITO-BORNE VIRUSES

WNV

Primary mosquito-borne disease threat in Colorado is WNV



Mosquitoes that transmit WNV in Colorado:

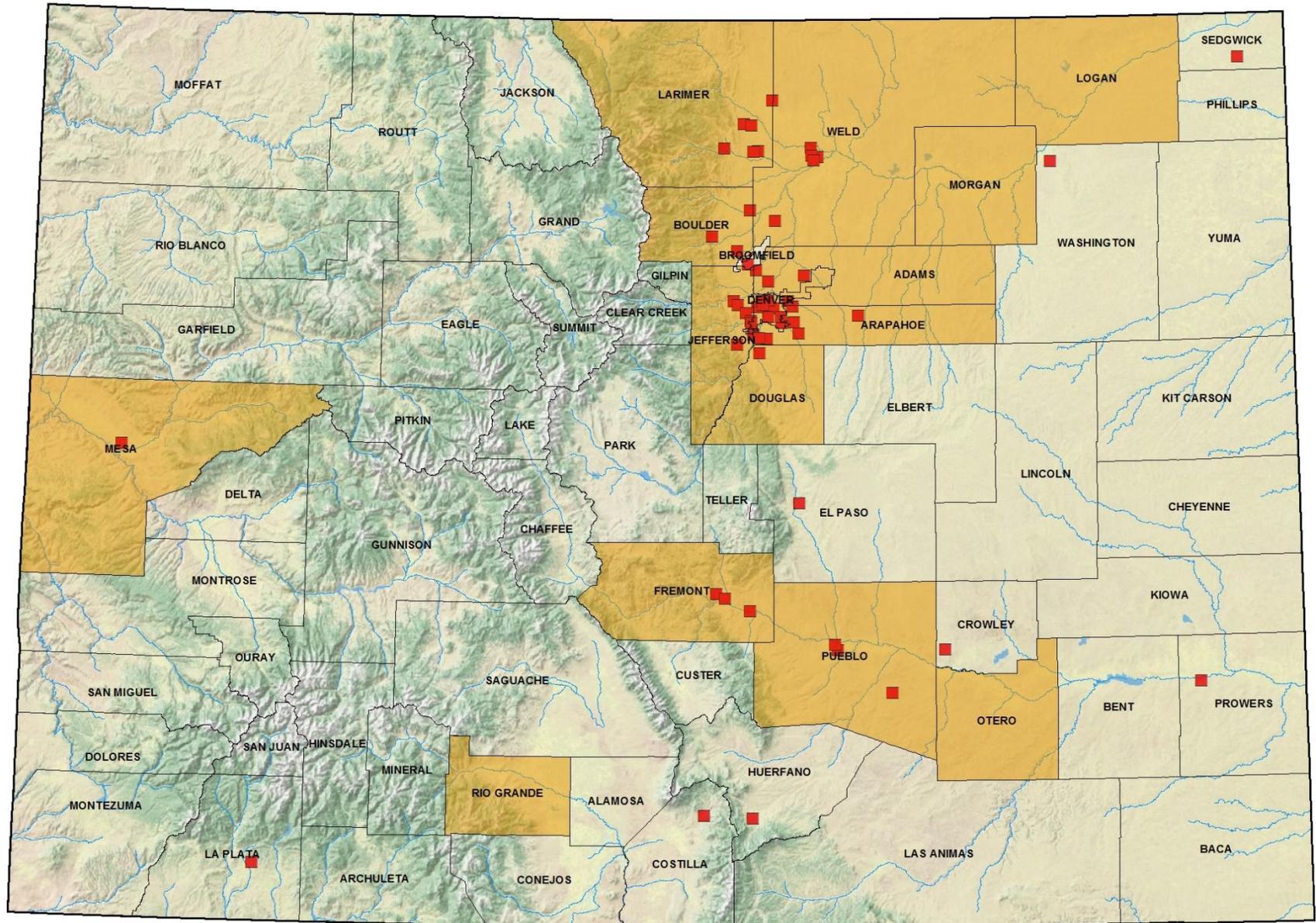
Culex tarsalis

Culex pipiens

- Also transmit SLEV and WEEV

West Nile Virus Human Surveillance in Colorado

January 1, 2015 through December 4, 2015 [108 Total Cases]



■ WNV Meningitis or Encephalitis (57 Cases)

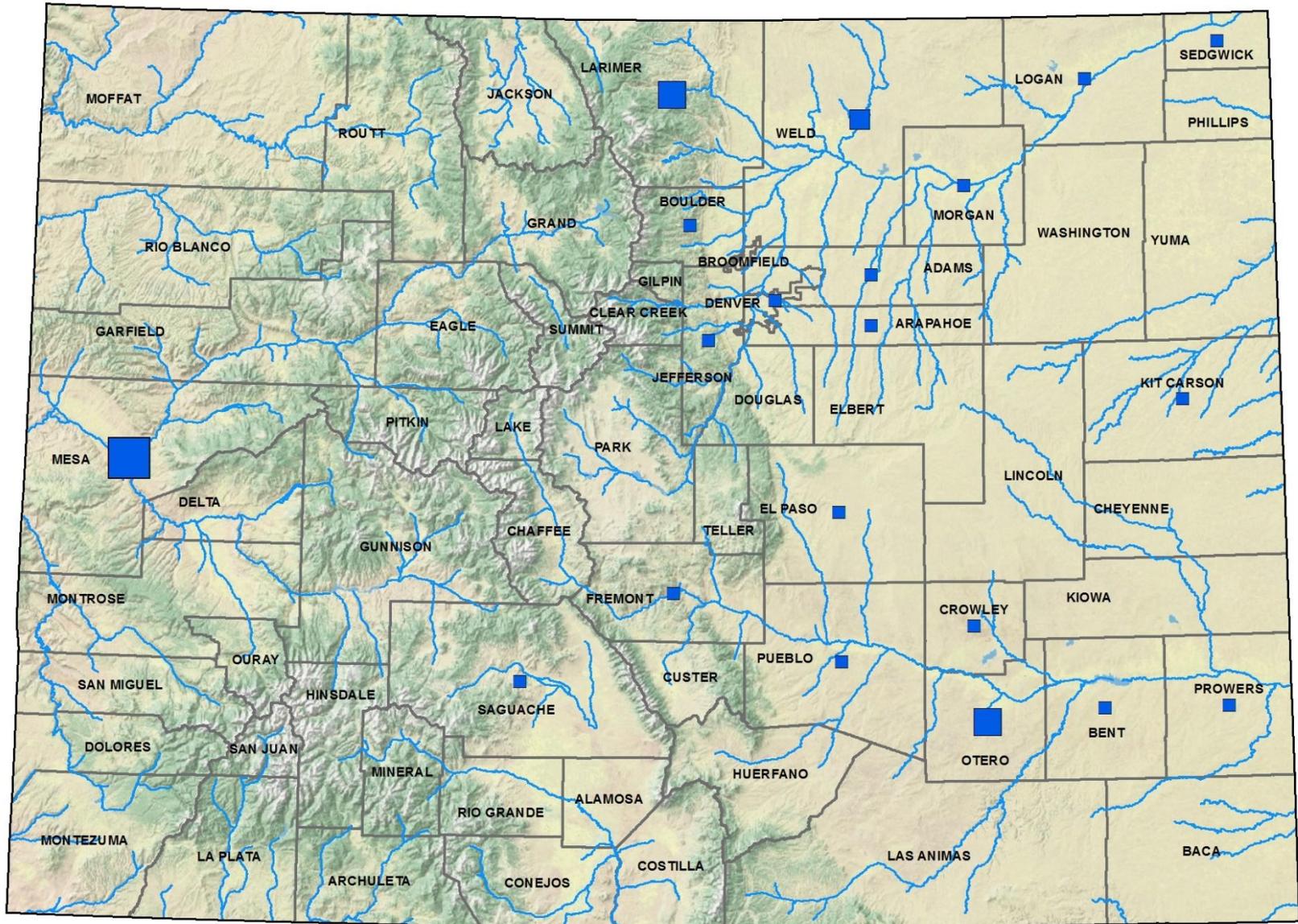
■ WNV Fever Cases



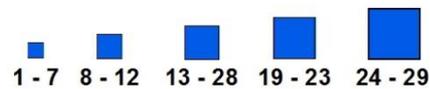
Historically circulating:

St. Louis encephalitis virus

Human Cases of Saint Louis Encephalitis in Colorado, 1964-1993



91 Human Cases Total



Historically circulating:

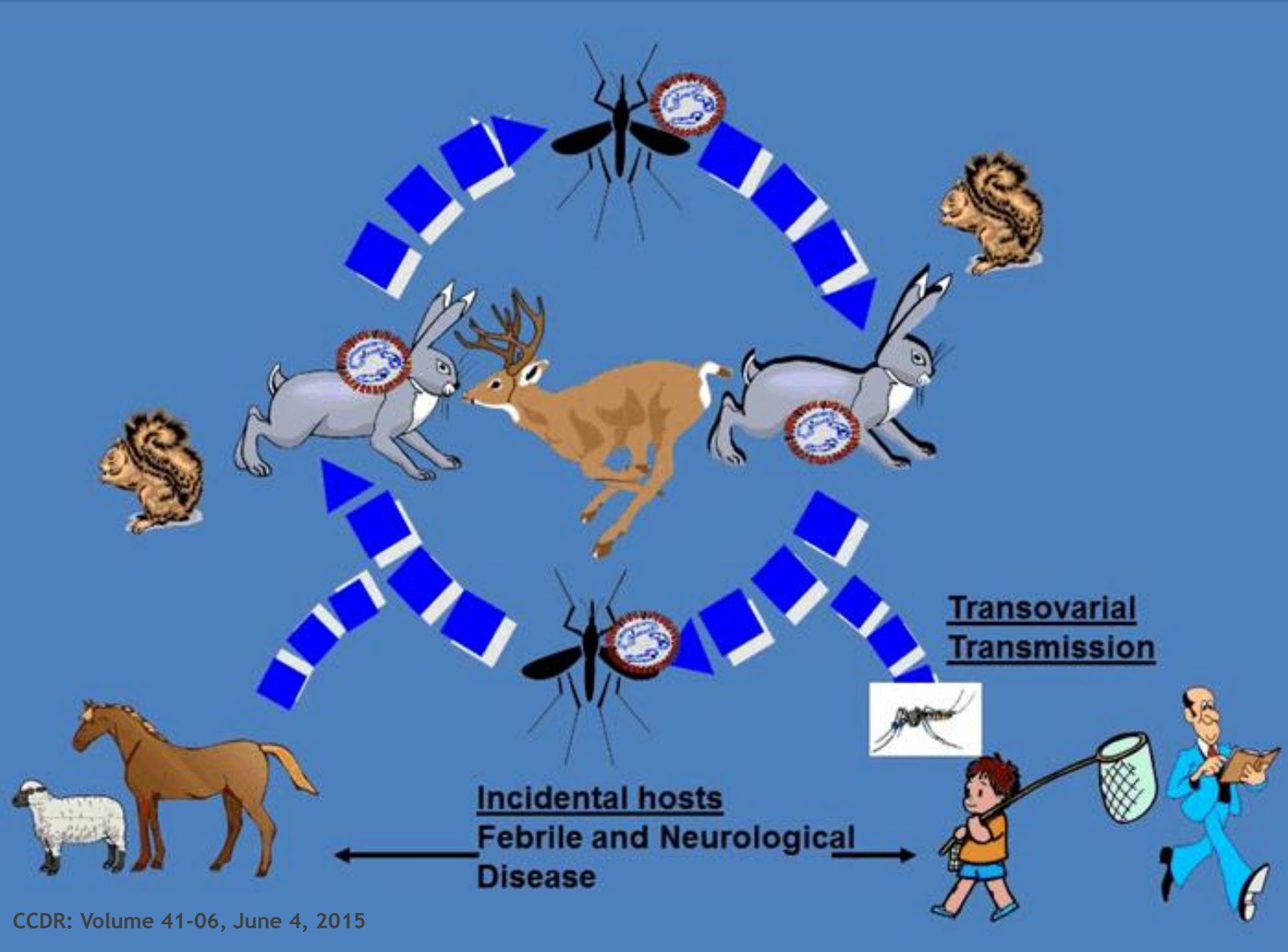
**Western equine
encephalitis virus**

**Currently circulating:
California serogroup
viruses**

Snow pool *Aedes* mosquitoes



- found at greater than 1,500 feet elevation
- usually inhabit dense forests at high elevations
- larvae may be found a few feet from the edge in snow melt pools



A vertical decorative bar in a light orange color runs down the center of the slide, extending from the top to the bottom.

The Colorado Tick-borne Arbovirus

Tick vectors



ROCKY MOUNTAIN WOOD TICK
Dermacentor andersoni

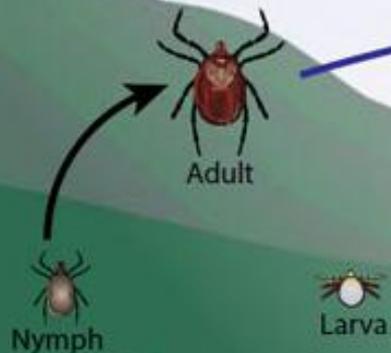
Colorado tick fever
Tularemia

Rocky Mountain spotted fever
(can also cause tick paralysis)

Ecology of Colorado Tick Fever Virus

Colorado tick fever (CTF) virus is spread by Rocky Mountain wood ticks (*Dermacentor andersoni*). Rocky mountain wood ticks are found in the western United States and Canada at 4,000–10,000 feet above sea level. Here are the steps in how the virus is spread:

2. CTF virus is also passed from one stage of the tick life cycle to the next – from larvae to nymph to adult.



1. Small rodents such as squirrels, chipmunks, and mice are infected with CTF virus through tick bites. These animals usually do not become ill but they can pass the virus to other ticks that feed on them.



3. People are infected with CTF virus through the bite of infected ticks. People who work or play outdoors are most likely to be exposed to ticks.



4. Other animals such as elk, marmots, and deer also can be infected with CTF virus through tick bites. However, these animals probably do not play an important role in passing the virus to other ticks.



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

Endemic Arboviruses: Preparedness & Response

- Monitor arthropod populations
- Conduct animal surveillance
- Look for seasonally occurring compatible illnesses

- Estimate risk and push out public health messaging
- Control vector populations
- Reduce exposures

Zika virus: Preparedness & Response

- No established vector populations
- Work with existing surveillance to identify introductions
- Re-assess the situation if local mosquito species are found to be vectors of Zika virus

- Investigate cases to limit potential transmission of Zika virus to others
- Enroll infected pregnant women in the Zika pregnancy registry

Zika virus: Preparedness & Response

- Bring Zika virus human diagnostic testing online at the state health laboratory
- If needed, bring mosquito pool testing online

- Investigate cases to limit potential transmission of Zika virus to others
- Enroll infected pregnant women in the Zika pregnancy registry

Zika virus: Preparedness & Response

- Reach out to blood donation centers to ensure adequate screening of blood donors

- CDPHE is assembling a Zika Task Force
 - experts in emergency operations and response, birth defects, maternal and child health and communicable disease epidemiology

Zika virus: Preparedness & Response

- Focus on community outreach and communication
- Disseminate the most up-to-date guidance and information on Zika virus to all our stakeholders using a various of communication venues

- CDPHE takes Zika virus calls from the public, healthcare providers, and other stakeholders

Questions?

