

West Nile Virus Climate-Health Awareness Emoji Activity

Background

According to the Centers for Disease Control and Prevention (CDC), since the arrival of West Nile virus (WNV) in 1999, it has become the continental United States leading human mosquito-borne disease (West, 2018).

West Nile Virus Activity by State – United States,
2018 (as of January 8, 2019)



(<https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2018/activitybystate2018.html>)

WNV is transmitted by the bite of infected mosquitoes (Transmission, 2018). While most people infected with WNV experience no symptoms (8 out of 10), the ones who do may experience fever, headache, body aches, joint pains, vomiting, diarrhea, or skin rash (1 out of 5) (Symptoms, 2018). A few infected people (1 out of 150) experience severe and potentially fatal inflammation of the brain (encephalitis) or tissues surrounding the brain and spinal cord (meningitis) (Symptoms, 2018). Currently, no vaccine or medication for the treatment of WNV exists (Symptoms, 2018).

WNV is transmitted primarily during mosquito season, the summer and fall months (Transmission, 2018). The spread of West Nile virus is being impacted by climate change, particularly increasing temperatures and fluctuating rainfall (Gorris et al., 2018; Harrigan, Thomassen, Buermann, & Smith, 2014). Mosquitoes reproduce and feed more vigorously during warmer wetter weather conditions while WNV replicates faster inside the mosquitoes during warmer weather conditions (Paz, 2015). Additionally, milder winters, hotter summers, and extreme weather events associated with climate changes in the continental United States are extending the normal mosquito season in many areas (Harrigan, Thomassen, Buermann, & Smith, 2014). The result is more infectious mosquitoes who bite more frequently are active for longer amount of time throughout the year.

Goal

To provide informal climate change education by providing opportunities for learners to engage in climate-health discussions.

Discussion Resources

West Nile Virus Transmission Cycle - CDC handout available at https://www.cdc.gov/westnile/resources/pdfs/13_240124_west_nile_lifecycle_birds_plainlanguage_508.pdf

- The Changing Climate and the Mosquito Life Cycle
- The Changing Climate and Bird Migration Flyways

West Nile Virus Prevention - CDC handout available at https://www.cdc.gov/chikungunya/pdfs/fs_mosquito_bite_prevention_us.pdf

- The Changing Climate and Preventing Mosquito Bites.
- The Changing Climate and Environmental Mosquito Control.

West Nile Virus Statistics - Maps and Data by State available at <https://www.cdc.gov/westnile/statsmaps/index.html>

Climate Change Facts and Predictions – Resources available at <https://climate.nasa.gov/effects/>

Additional Resources

Centers for Disease Control and Prevention - Division of Vector-Borne Diseases (DVBD) <https://www.cdc.gov/ncezid/dvbd/index.html>

Activity Formats

The activities can be modified for differing age groups by simplifying the terminology and art supplies (Pre-made emoji puzzle-pieces work best with younger audiences).

Workshop

Materials

Presentation Material (Power Point, Display Board or Banner, Handout, etc.)
- Modify material to include local WNV news articles and/or statistics

Mosquito-borne disease Scenario Cards

Paper and markers (any art supplies available for creating emoji's)

Survey Material (paper and pencil)

Camera or phone with a camera

Procedure

1. Introduce WNV transmission facts and local issues through visual material, such as news articles, maps, epidemiology and transmission diagrams, and statistical charts and graphs.
2. Give each participant a Mosquito-borne disease Scenario Card and allow each participant to describe the scenario in which they "contracted" WNV. Discuss the connection with climate change and prevention recommendations.
3. Allow participants to create an emoji (an image or icon used to express an idea or emotion) to represent climate-health WNV awareness. Encourage further climate-health discussions by allowing participants time to describe their emoji.
4. Digitally catalog the Emoji's by taking pictures.

Drop-In

Materials

Table

Dry Erase Boards (and/or LED Dry Erase Boards)

Dry Erase Markers

Discussion Topics Banner (Vector-Borne Disease Statistics, Vector Life-Cycle, Climate Change Statistics on warmer winters and precipitation) (Emoji Examples)

Survey Material (Clip Boards, Paper, and Pencil)

Camera or phone with a camera

Procedures

Invite participants to help create a climate-health awareness emoji. This could be approached as a regional or national contest where the top emoji's are submitted to UniCode for acceptance into the official emoji catalog. Allow participants to ask questions and encourage discussions about WNV and climate change. Digitally catalog the emoji's using a camera. Anonymous survey data and images can be linked by assigning a unique identification number.

References

Gorris, M. E., Zender, C. S., Randerson, J. T., Goodson, D. W., Xu, C., & Manore, C. (2018). Expanding a seasonal forecast of US West Nile virus for 21st century disease projections. In *AGU Fall Meeting Abstracts*.

Harrigan, R. J., Thomassen, H. A., Buermann, W., & Smith, T. B. (2014). A continental risk assessment of West Nile virus under climate change. *Global Change Biology*, 20(8), 2417-2425.

Transmission. (2018, December). Centers for Disease Control and Prevention. Retrieved from <https://www.cdc.gov/westnile/transmission/index.html>

Symptoms, Diagnosis, & Treatment. (2018, December). Centers for Disease Control and Prevention. Retrieved from <https://www.cdc.gov/westnile/symptoms/index.html>

West Nile virus. (2018, December). Centers for Disease Control and Prevention. Retrieved from <https://www.cdc.gov/westnile/index.html>

Paz S. (2015). Climate change impacts on West Nile virus transmission in a global context. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, 370(1665), 20130561. doi:10.1098/rstb.2013.0561