Mosquitoes and Mosquitoborne Diseases of Minnesota

Vectorborne Diseases Unit

Last Updated July 25, 2019
What is a mosquitoborne disease and why should you care about it?

• People can get a mosquitoborne disease when they are bitten by a mosquito that is infected with a disease agent

• Mosquitoborne diseases are a large threat to human health around the world and right here in Minnesota

• Personal protection methods can help keep you and your family safe from mosquito bites and the diseases they carry
Goals of Presentation

• Understand how mosquitoes live
• Be aware of the diseases spread by mosquitoes in Minnesota
• Recognize basic signs and symptoms
• Seek early diagnosis and treatment
• Know when and where mosquitoborne disease risk is highest
• Practice mosquito bite prevention methods
• Know who to contact for more information
Mosquitoes in Minnesota

- MN is home to about 51 species of mosquitoes
  - Approximately half will feed on people
  - Only a few of these species are able to spread disease
Mosquito Life Cycle

Diagram courtesy of the American Mosquito Control Association [https://www.mosquito.org/page/lifecycle](https://www.mosquito.org/page/lifecycle)
Mosquito Life Stages

Larva → Pupa → Adult
What are the symptoms of a mosquitoborne disease?

• Most people have no symptoms at all

• For people who do become sick, mosquitoborne diseases have similar symptoms

• Symptoms usually show up within 1-2 weeks of being bitten by an infected mosquito

• Watch for symptoms like:
  • Fever
  • Headache
  • Stiff neck
  • Rash
  • Disorientation
  • Seizures
How are mosquitoborne diseases diagnosed?

• If you think that you may have a mosquitoborne disease, contact your health care provider as soon as possible

• Your health care provider can determine if you have a mosquitoborne disease based on your:
  • History of being around mosquitoes or mosquito habitat
  • Physical examination
  • Laboratory tests
Are mosquito-borne diseases treatable?

• Not exactly
  • Most illnesses go away on their own
  • Viruses are not treated with antibiotics so treatment involves supportive care
  • Some patients with more serious symptoms may require hospitalization
Top 3 Mosquitoborne Diseases in Minnesota

- West Nile Virus Disease
- La Crosse Encephalitis
- Jamestown Canyon Virus Disease
Reported Mosquitoborne Disease Cases in Minnesota, 2002-2018

Number of Cases

Year

- West Nile Virus
- La Crosse Virus
- Jamestown Canyon Virus
West Nile Virus Disease

- First case identified in Minnesota in 2002
- *Culex tarsalis* is the main mosquito of concern
  - Its habitat includes open agricultural land and prairie
- Disease is most severe in elderly patients or those with weakened immune systems
- Most cases occur later in the summer
West Nile Virus Disease Risk in Minnesota

Photo courtesy of MN Department of Natural Resources (accessed 7/23/2019)
http://www.dnr.state.mn.us/biomes/index.html
La Crosse Encephalitis

- Identified for the first time in 1964
- *Aedes triseriatus* is main mosquito species of concern in Minnesota
  - Its habitat includes treeholes and other water-holding containers in wooded or shaded areas
- The disease primarily affects children 16 years of age or younger
- Most cases occur later in the summer
La Crosse Encephalitis Risk in Minnesota

Photo courtesy of MN Department of Natural Resources (accessed 7/23/2019)

http://www.dnr.state.mn.us/biomes/index.html

Minnesota La Crosse Encephalitis Cases, 1985-2018

Case Counts
- 0
- 1 - 2
- 3 - 8
- 9 - 14
- 15 - 23
Jamestown Canyon Virus Disease

- The virus was first identified in Colorado in 1961
- Snowmelt *Aedes* mosquitoes are likely the main species of concern in Minnesota
  - Wooded and shaded areas provide the best habitat for these mosquitoes
- Persons of any age may become sick
  - More severe disease may occur in older patients or those with weakened immune systems
- Cases occur during warmer months of the year, from May through September
Jamestown Canyon Virus Disease Risk in Minnesota

Minnesota Jamestown Canyon virus disease cases, 2013-2017

Photo courtesy of MN Department of Natural Resources (accessed 7/23/2019)
http://www.dnr.state.mn.us/biomes/index.html
Other Potential Mosquitoborne Diseases in Minnesota

• Eastern Equine Encephalitis Virus
• St. Louis Encephalitis Virus
• Western Equine Encephalitis Virus
Travel-Associated Mosquitoborne Diseases Affecting Minnesotans

- Chikungunya
- Dengue
- Malaria
- Yellow Fever
- Zika
Protect Yourself from Mosquitoborne Diseases

1) **Know when and where you’re at risk**
   - Primarily July through September
   - Open, agricultural areas – West Nile virus
   - Wooded areas – La Crosse & Jamestown Canyon viruses

2) **Wear EPA-registered bug spray**
   - DEET 20-30% on skin or clothing
   - Permethrin 0.5% on clothing

3) **Dress in appropriate clothing**
   - Wear loose-fitting, long-sleeved shirts and pants
Protect Your Family from Mosquitoborne Diseases

Remove mosquito breeding habitat

• Frequently empty or remove water holding containers like:
  • Flower pots
  • Bird baths
  • Fountains and kiddie pools
  • Tires
• Remove debris from gutters to prevent stagnant water
• Make sure tarps are tight to prevent pooling water
Thank You!

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