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# Mosquito-borne Diseases and Prevention in Lake County



# Mission Statement:

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The Lake County Health Department and Community Health Center will promote physical and emotional health; prevent disease, injury and disability; and protect the environment, through the assessment of needs, the development of policy and the provision of accessible, quality services.



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- ❑ In our interconnected world, mosquitoes can quickly take viruses such as Zika, dengue, chikungunya and a host of lesser-known ills, into new countries.
- ❑ In the U.S., some mosquitoes are also transmitters of other viruses that can cause severe disease and even death, including West Nile Virus, and several forms of encephalitis.
- ❑ Ironically, humans have rolled out the red carpet for the invaders by accidentally transporting them around the world and providing an urban landscape that suits many of them to perfection.
- ❑ Therefore, mosquito surveillance and control, and personal protection from mosquito bites are very important to community health and our department's specialists are going to talk about mosquitoes in Lake County in more detail.



# Mosquito borne Diseases

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- Mosquito-borne diseases are those that are transmitted to people through the bite of an infected mosquito.

These diseases include:

- Malaria
- Chikungunya
- Dog Heartworm
- Dengue
- Yellow Fever
- Eastern Equine Encephalitis, St. Louis Encephalitis, LaCrosse Encephalitis, and Western Equine Encephalitis
- West Nile Virus (WNV)
- Zika Virus.



# Impact of Mosquitoes

- Mosquitoes cause more human suffering than any other organism.
  - Infect over 300 million people a year.
  - 800,000 malaria deaths
  - Another 20,000 deaths from Dengue.
  
- The cost of WNV related health care in the US was estimated at \$200 million dollars in 2002.
  
- Mosquitoes also transmit several diseases and parasites to other animals such as dogs and horses which can suffer from heartworm, West Nile Virus (WNV) and Eastern equine encephalitis (EEE)



# Impact of Mosquitoes (Cont)

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- Apart from disease, mosquitoes also cause nuisance problems for people by ruining outdoor recreational activities such as picnics, parties, or sporting events.
- High levels of nuisance mosquitoes can pose a threat to both livestock and wild animals. The economic impact of the problems that mosquitoes cause can be huge for such a tiny little insect.





# Selected Mosquito Borne Diseases

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## □ United States

- West Nile Virus - 2,205 cases (2014)
- Chikungunya - 4,710 cases (2014)
- Dengue - N/A
- Zika - 1,658 Confirmed cases (2015-2016)

## □ Illinois

- West Nile Virus - 72 cases (2015)
- Chikungunya - 19 cases (2015)
- Dengue - 24 cases (2015)
- Zika - 35 Confirmed cases (2015)

## □ Lake County

- West Nile Virus - 5 cases (2015)
- Chikungunya - 3 cases (2015)
- Dengue - 3 cases (2015)
- Zika - 4 cases, 105 suspect cases (2015-2016)

Reference: CDC, IDPH and CHC /LCHD



# Zika Virus vs West Nile Virus

## □ Zika Virus:

- **Pain areas:** in the back of the eyes, joints, or muscles
- **Whole body:** fatigue, fever, chills, loss of appetite, or sweating
- **Also common:** eye redness, headache, skin rash or vomiting

## □ West Nile Virus

- **WNV:** fever, headache, tiredness, body aches, nausea, vomiting, occasionally with a skin rash (on the trunk of the body) and swollen lymph glands





# Prevention (Human)



- Prophylactic medications (yellow fever vaccine, various antimalarial medications)
- Use EPA approved insect repellents (DEET, picardin, IR3535)
- Wear long pants and long sleeved shirts while outdoors
- Wear permethrin-treated clothing
- Protect from getting mosquito bites the first week of illness (viremic period)
- Avoid being outside when mosquitoes are biting the most
  - Culex species - evenings at dusk and dawn
  - Aedes species - day and night biters





# ***Aedes aegypti* & *Aedes albopictus***



 *Aedes aegypti*



 *Aedes albopictus*



# Mosquito Species

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- ~25-30 species in Lake County
- Most common:
  - *Aedes vexans* – Floodwater mosquito



- *Culex pipiens* – House mosquito
  - West Nile Virus





Mosquito	<i>Culex pipiens</i>	<i>Aedes aegypti</i> & <i>A. albopictus</i>
<b>Disease</b>	West Nile Virus	Dengue, Chickungunya, Zika, Yellow Fever
<b>Human Transmission</b>	Mosquito bite, <b>dead end host</b> , vertical transmission	Mosquito bite, vertical and local transmission
<b>Target species</b>	Birds	Mammals
<b>Time of Day</b>	Night	Day/night
<b>Habitat</b>	Artificial containers, some natural sites	Artificial containers
<b>Control</b>	Surveillance, Larvicides	Surveillance, Larvicides







# Priorities

- 1. Surveillance**
- 2. Source Reduction**
- 3. Larvicides**
- 4. Adult control (if necessary)**



**Light Trap**



**Gravid Trap**



Mosquito → West Nile Virus



Deer Tick → Lyme Disease

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