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June 28, 2016

Training Agenda

- Prevention of Vector-Borne Diseases in City Workers
- Heat-Related Illness

NYC
Bill de Blasio
Mayor
Citywide Administrative Services
Lisette Camilo
Commissioner
Citywide Office of Occupational Safety and Health
Office of the General Counsel

Prevention of Vector-Borne Diseases in Workers

Department of Health and Mental Hygiene
Occupational Safety and Health Office
June 2016

Overview

- Objectives and Target Audience
- Understanding vector-borne diseases
- Prevention of exposure to vectors
  - Safe practices - clothing, insect repellant, tick removal kits
- DOHMH Comprehensive Mosquito Surveillance and Control Plan 2016
- Training and Recordkeeping

Objectives

- Provide information on vector-borne diseases including new and emerging
  - Mosquito-borne viruses such as West Nile, Zika, Chikungunya, and Dengue
  - Tick-borne diseases such as Lyme disease, Rocky Mountain Spotted Fever, Babesiosis, and Anaplasmosis
- Prevent and/or minimize exposure to vector-borne diseases through control measures.

Target Audience for Training

City workers that work in **areas** that may cause them to have increased potential for contact with vectors such as mosquitoes and ticks, for example:

- wooded and marshy areas

Target Audience for Training

City workers that perform **tasks** such as:

- performing mosquito control activities such as inspecting sites that may be mosquito breeding habitats, responding to standing water complaints
- working where vector control pesticides have been applied
- grounds maintenance
- clearing lots
- gardening

Vector

The term *vector* refers to an organism (an insect or a tick in most cases) capable of carrying and transmitting a disease-causing agent from one host to another. The most important vectors with respect to disease transmission are mosquitoes and ticks.

Vector-Borne Diseases
West Nile Virus (WNV)

At this time, West Nile virus is the only locally transmitted mosquito-borne disease in New York City.

Vector-Borne Diseases
West Nile Virus

West Nile virus is

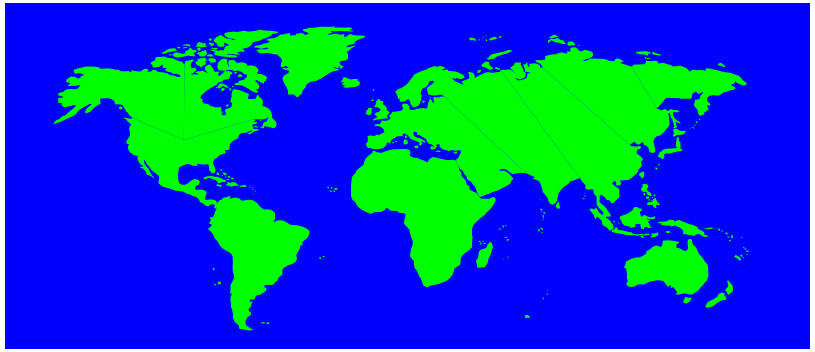
- A mosquito-borne virus that can cause encephalitis (inflammation of the brain) or meningitis (inflammation of the lining of the brain and spinal cord)
- A mosquito becomes infected by biting a bird that carries the virus.
- Is spread to humans by the bite of an infected mosquito.

Vector-Borne Diseases WNV

- The virus was most likely introduced by an infected bird or mosquito that was imported illegally from a country where the virus was common.

Vector-Borne Diseases WNV

- Outbreaks had occurred before in Egypt, Israel, Romania, and Russia.
- Before 1999, WNV had never been found in the Americas.



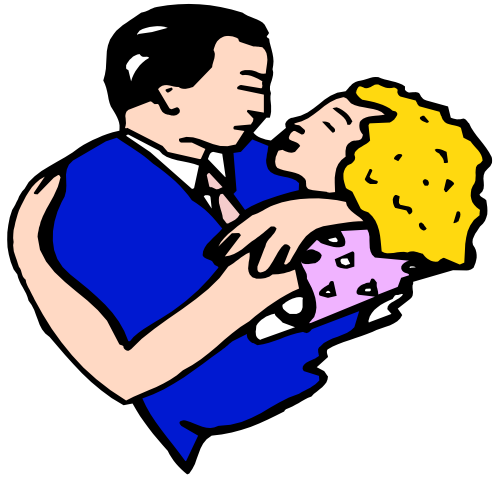
Vector-Borne Diseases WNV

WNV - Human Transmission

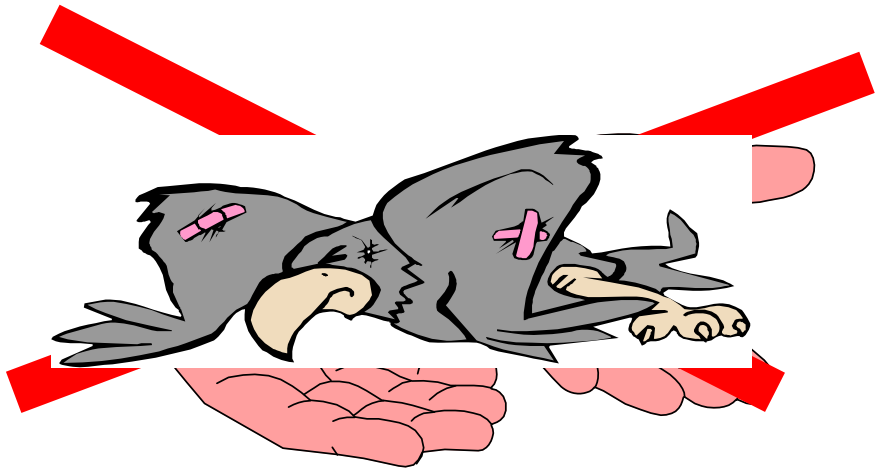
- Organ transplantation
- Blood and blood product transfusion,
- Infants via breast milk
- A mother's fetus via intrauterine infection

WNV - Human Transmission

- West Nile virus is **not** spread by person to person contact such as kissing, touching, or caring for someone who is infected.



Can you get WNV directly from birds?



- West Nile virus cannot spread directly from birds to people.
- However, dead birds should not be handled with bare hands.
- Use gloves to carefully place dead birds in a double plastic bag and then place the dead birds in the outdoor trash

Can you get WNV directly from other organisms?

- Infected mosquitoes are the primary source for West Nile virus and may cause an outbreak in the affected areas.
- There is no information to suggest that other insects or ticks transmitted West Nile virus to humans and other hosts e.g. horses, dogs, and birds

2015 Updates

- Since its introduction to New York City in 1999, WNV has caused successive outbreaks in the United States each summer and fall, and has moved steadily westward.
- From 2000-2015, the number of neuroinvasive cases due to WNV among New York City residents has ranged from 2 to 45 (median 17) per year.
- In 2015, 38 cases of WNV disease were detected among New York City residents, almost all of which were possibly or probably acquired in New York City.

Symptoms of WNV

- Most people who were infected with West Nile virus had no symptoms.
- Others experienced:
  - mild illness
  - fever
  - headache
  - body aches
  - mild rash
  - swollen lymph nodes

Serious Symptoms

- Permanent neurological damage
- Encephalitis (inflammation of the brain)
- Severe headaches
- High fever
- Stiff neck
- Confusion
- Loss of consciousness (coma)
- Muscle weakness

West Nile Encephalitis Management

- There is no specific treatment for WNV however there is management for severe cases:
  - Hospitalization
  - Intravenous (IV) fluids and nutrition
  - Airway Management
  - Ventilatory Support (ventilator)
  - Prevention of Secondary Infection
    - (pneumonia, urinary tract, etc)

West Nile Virus Information

- There is no vaccine to prevent West Nile virus, but several companies are working towards developing one.
- If an employee reports symptoms associated with encephalitis, with fever, muscle weakness, and confusion, seek medical care as soon as possible.

Who is at risk for getting WNV after being bitten by an infected mosquito?

- Persons older than 50 years of age have the highest risk of disease.
- Only a small percentage of the mosquitoes are infected with West Nile virus.
- The chances that anyone will be bitten from an infected mosquito are small.

West Nile Virus Prevention

- If possible, limit outdoor activity especially at dawn and dusk
- If possible, avoid shaded, bushy areas
- Wear protective light-colored clothing – long pants, long-sleeved shirts, and a hat
- Use insect repellent containing DEET, picaridin, IR3535 or oil of lemon eucalyptus (follow all safe use instructions)
- Be alert for symptoms and seek medical attention

Zika Virus

Updated June 13, 2016

NYC Health

Key Facts

- People usually get Zika through a mosquito bite—but not a bite from the same mosquito that spreads West Nile virus.
- Most people (80%) who get infected with Zika do *not* get sick. For those who do get sick, the sickness is usually mild. Most people recover on their own.
- However, **Zika may cause birth defects.**
- It is rare but possible for Zika to spread from one person to another through sexual contact and blood. Zika is *not* spread from person to person by casual contact.
- There is no Zika vaccine.

The Mosquito That Spreads Zika

- **Scientific name**: *Aedes* ***aegypti***
- Bites aggressively during the day and early evening
- Only found in certain parts of the world
  - Tropical climates
  - Parts of southern United States

Left: Aedes aegypti *Right: Aedes albopictus*

The Mosquito That Spreads Zika

- A *different* mosquito that can carry Zika is sometimes found in New York City during the summer: *Aedes* ***albopictus*** (Asian Tiger Mosquito)
- Aedes albopictus is able to spread Zika to people, but health experts are still learning whether it is *likely* to spread Zika to people.
- Just because a mosquito can carry the virus does not mean that it will cause an outbreak.
- Health experts are planning for the possibility that Aedes albopictus could get infected with Zika locally and are taking aggressive steps to monitor this and take action if needed

Mosquitoes and Standing Water

- The mosquito *Aedes* ***albopictus*** can breed in a tiny amount of standing water (water that does not flow).

- Help reduce *Aedes albopictus* mosquitoes in New York City by removing standing water that collects in:
  - Tires
  - Buckets/open containers (*Turn them over, dump them out regularly or fill them with sand.*)
  - Clogged gutters (*Clean gutters every spring.*)
  - Neglected pools

- Report standing water complaints to 311.

  Homeowners can get a **notice of violation** from the City if standing water is found on their property between April 1 and October 31 each year.

Areas Affected by Zika

Americas

Argentina
Aruba
Barbados
Belize
Bolivia
Bonaire
Brazil
Colombia
Puerto Rico
Costa Rica
Cuba
Curacao
Dominica
Dominican Republic
Ecuador
El Salvador
French Guiana
Guadeloupe
Guatemala
Guyana
Haiti
Honduras
Jamaica
Martinique
Mexico
Nicaragua
Panama
Paraguay
Peru
Saint Barthélemy
Saint Lucia
Saint Martin
Saint Vincent and the Grenadines
Sint Maarten
Suriname
Trinidad and Tobago
U.S. Virgin Islands
Venezuela

Oceania/Pacific Islands

American Samoa
Fiji
Kosrae
Federated States of Micronesia
New Caledonia
Marshall Islands
Samoa
Tonga
Papua
New Guinea

Africa

Cape Verde

Source: cdc.gov/zika | *Updated: 5-26-16*

Prevent Mosquito Bites While Traveling

- Use **insect repellent** containing DEET, picaridin, IR3535, or oil of lemon eucalyptus (not for children under 3 years old). Use repellents approved by the EPA. Insect repellent is safe for pregnant women. Do not use insect repellent on infants less than 2 months old. Do not allow young children to apply insect repellent themselves.
- Wear **long sleeves and pants**. Wear clothing treated with **permethrin** (a chemical that repels insects).
- Stay in places with **air conditioning** or window and door **screens**.
- Use a **mosquito bed-net** if you cannot keep mosquitoes out of your residence.
- Get rid of **standing water** that collects in and around your residence, since standing water attracts mosquitoes.

Symptoms

- Most people (80%) who get infected with Zika do *not* get sick.

- Most common symptoms: fever, rash, joint pain and conjunctivitis (red eyes)
  - Symptoms are usually mild (*neurological issues very rare*)
  - Usually start two to 12 days after bite by infected mosquito
  - May last up to a week
  - Zika may be mistaken for dengue virus or chikungunya virus (also caused by mosquitoes)
  - Most people recover on their own

Guillain-Barré Syndrome and Zika

- Guillain-Barré syndrome (GBS) is an uncommon sickness of the nervous system in which a person's own immune system damages the nerve cells, causing muscle weakness, and sometimes, paralysis.
- The Brazil Ministry of Health has reported an increased number of people who have been infected with Zika virus who also have GBS.
- GBS is very likely triggered by Zika in a small proportion of infections, much as it is after a variety of other infections.

Zika May Cause Birth Defects

- While 80% of people will not get sick from Zika, it can cause birth defects in developing fetuses
- Microcephaly is one birth defect linked to Zika
  - Causes a smaller than normal head compared to infants of the same age
  - Is associated with developmental and functional delays
- In general, microcephaly can be caused by
  - Genetic abnormality
  - Infections
  - Problem with blood flow to the developing fetus
- Other problems have been detected among fetuses and infants infected with Zika virus before birth, such as eye defects, hearing loss, and impaired growth.
- Researchers are collecting data to better understand the extent Zika virus' impact on mothers and their children.

Microcephaly and Zika

Health experts are still learning about the link between microcephaly and Zika.

What We Know:

- A small number of infants with microcephaly in Brazil tested positive for Zika.
- Reported cases of microcephaly in Brazil dramatically increased in 2015 (the year Zika spread to Brazil).
- Patterns of microcephaly in Brazil match patterns in other areas affected by Zika.

What We *Don't* Know:

- If a pregnant woman is exposed, how likely she is to get Zika.
- If a pregnant woman is infected, how the virus will affect her or her pregnancy or how likely it is that Zika will pass to her fetus.
- If the fetus is infected, will the fetus develop birth defects.
- If sexual transmission of Zika virus poses a different risk of birth defects than mosquito-borne transmission.

Precautions - Pregnancy and Zika

- Because of the possibility of ***birth defects,*** pregnant women, women who might be pregnant soon, and their male sex partners should avoid the virus.

- Pregnant women and women who might be pregnant soon should postpone travel to affected areas until health experts say it's safe.

- If it is not possible to delay travel, pregnant women and women who might be pregnant soon should consult with their health care providers before traveling and should take steps to prevent mosquito bites. ***Insect repellent is safe for pregnant women.***

- Pregnant women who already traveled to an affected area should contact their health care providers ***immediately***.

- **If you're pregnant and your male sex partner visited an affected area, take extra precautions:** Plan together to abstain from sexual activity or use condoms correctly every time you have vaginal, anal and/or oral sex
  for the duration of your pregnancy.

Precautions- Sexual Contact and Zika

It is rare but possible for Zika to spread through sexual contact. To minimize Zika in the population:

- Sexually active men and women who travel to a Zika-affected area should use birth control ***during the trip***. They should also continue using birth control ***for eight weeks after arriving home***. For a complete list of birth control options, visit nyc.gov and search "birth control".

- Men who traveled to a Zika-affected area can help stop the spread of Zika by using condoms correctly every time they have vaginal, anal and/or oral sex.
  - Men who were not sick while traveling should use condoms for ***eight weeks*** after returning home.
  - Men who had symptoms of Zika while traveling, who had symptoms of Zika within two weeks of arriving home, or who tested positive for Zika virus infection—should use condoms for ***six months*** after returning home.

Precautions - Blood Donation and Zika

It is rare but possible for Zika to spread through a blood transfusion.

To help prevent this from happening, people donating blood should:

- Wait ***four weeks*** after returning home from a Zika-affected region before donating blood.
- If they already donated blood ***within four weeks*** of returning home from a Zika-affected region, tell the facility where they gave blood *if* they start having two or more of these symptoms within two weeks of giving blood: fever, joint pain, rash or conjunctivitis (red eyes). People with Zika symptoms should avoid donating more blood until symptoms are gone for *at least four weeks*.
- Wait ***four weeks*** after the last sexual contact with a man who has Zika or might have Zika before donating blood. Men who could spread Zika sexually include
  - Those diagnosed with Zika virus infection
  - Those who were in a Zika-affected area within three months of the latest sexual contact

Testing

- Zika testing is available for NYC residents who
  - Traveled to a Zika-affected area while pregnant.
  - Had Zika symptoms within **four weeks** of travel to a Zika-affected area.

- May include urine and blood tests

Chikungunya

Chikungunya is a mosquito-borne virus

- Found in Africa, Asia, Europe, Indian and Pacific islands and the Caribbean
- Asian Tiger mosquito (*Aedes albopictus*) found in NYC may spread virus – currently Asian Tiger not spreading the virus in NYC
- New Yorkers have become infected after traveling

Chikungunya

- Symptoms begin 3-7 days after being bitten by infected mosquito and include:
  - Typically fever and joint pain
  - Headache
  - Muscle pain
  - Joint swelling
  - Rash
- Symptoms can be severe but most feel better within a week

Chikungunya

- Who is at risk for more severe symptoms?
  - Babies
  - Adults over 65
  - People with medical conditions such as high blood pressure, diabetes or heart disease
- Treatment
  - No specific treatment available
  - Medications to relieve symptoms

Chikungunya

- Prevention
  - If traveling where the virus is found, minimize exposure to mosquitoes (avoid habitats, use screens or mosquito nets)
  - Wear protective clothing such as long sleeved shirts, long pants, and hats; use mosquito netting; and EPA approved insect repellent (follow all safe use instructions)
  - If you are infected, stay indoors or wear protective clothing/repellent for 8 days; this will prevent mosquitoes from transmitting to other New Yorkers

Dengue

- Dengue is a mosquito-borne virus
  - Occurs primarily in tropical Asia and the Caribbean, usually during rainy seasons
  - Outbreaks were reported in Caribbean and Central and South America
  - Cases originating in US unknown

Dengue

- Symptoms occur 3-14 days after exposure (commonly 5-7 days) and initially include:
  - High fever (lasting 5-7 days)
  - Severe headache and backache
  - Joint pains
  - Nausea and vomiting
  - Eye pain and rash

Dengue

- Fever stage followed by hemorrhagic manifestations
  - Bruising
  - Bleeding nose or gums, possibly internal bleeding
  - Circulatory failure and shock may occur and can result in death

Dengue

- Prevention
  - If traveling where the virus is found, minimize exposure to mosquitoes (avoid habitats, use screens or mosquito nets)
  - Wear protective clothing such as long sleeved shirts, long pants, and hats; use mosquito netting; and EPA approved insect repellent (follow all safe use instructions)

Lyme

- Lyme disease is a tick-borne disease caused by the bacterium *Borrelia burgdorferi*
- Common in New York and surrounding states
- Most infections occur in the spring and in the summer when nymphal ticks abundant
- Result of a bite from an infected blacklegged tick (*Ixodes scapularis*), tick must be attached for 24-36 hours to transmit Lyme
- Lyme disease cannot be spread person to person

Blacklegged tick
Ixodes scapularis

Lyme

- Symptoms
  - Fever
  - Headache
  - Fatigue
  - Charateristic skin rash – erythema migrans
  - Infection can spread to the joints, heart and nervous system

Rocky Mountain Spotted Fever

- RMSF is a tick-borne disease
  - Caused by bacterium *Rickettsia ricketsii*
  - Occurs mainly in southeastern and south central US (but not limited to there)
  - Vectors include American dog tick (east of Rocky Mountains), Rocky Mountain wood tick, and the lone star tick
  - No person to person transmission
  - Cases have occurred in all five boroughs in NYC

Rocky Mountain Spotted Fever

- Symptoms include
  - Fever, headache, vomiting and muscle pain
  - Rash may develop
  - Can be severe or fatal if not treated in first few days

American Dog Tick
(east of the Rocky Mountains)

Rocky Mountain wood tick
(*Dermacentor andersoni*)

Lone Star Tick

Babesiosis

Blacklegged tick
Ixodes scapularis

- Rare but sometimes fatal tick-borne disease
  - Caused by *Babesia microti* protozoan parasite
  - Transmitted by infected blacklegged tick *Ixodes scapularis* (same tick that transmits Lyme disease and anaplasmosis)
  - Endemic in New York region including Suffolk County (Fire island and Shelter Island)
  - Transmission greatest in spring and summer

Babesiosis

- Symptoms:
  - Fever
  - Fatigue
  - Jaundice
  - And anemia (several days to several months)
  - Can be asymptomatic
- Most likely to be infected:
  - Elderly
  - Immunocompromised

Anaplasmosis

- Tick-borne infection caused by bacteria *Anaplasma phagocytophilum*
- Transmitted by blacklegged tick *Ixodes scapularis*
- Most become infected during spring and summer when nymphal ticks in greatest abundance
- Endemic in areas near NYC Long Island, Westchester County, and lower Hudson Valley
- More severe infection in immunocompromised

Blacklegged tick
Ixodes scapularis

Anaplasmosis

- Symptoms vary from person to person but can include:
  - Fever
  - Headache
  - Muscle pain
  - Malaise
  - Nausea/abdominal pain
  - Cough
  - Confusion
  - Rash (rare)
  - Difficulty breathing
  - Hemorrhage
  - Renal failure
  - Neurological problems

Tick Prevention

- If possible, stay away from grassy, wooded, or brushy areas
- Wear long sleeved, light colored shirts and pants tucked into socks
- Use insect repellent containing DEET
- Speak to your vet about tick prevention for pets

Images courtesy of CDC Public Health Image Library, CDC Division of Viral and Rickettsial Diseases and the CDC Division of Vector-Borne Infectious Diseases

Tick Prevention

- Check yourself (and your pets) carefully when returning from tick areas
  - Inspect your clothing and skin carefully, preferably with a buddy
  - Be sure to check your scalp, neck, behind ears and in crevices such as armpits
- If a tick is found, remove it as soon as possible

Tick Prevention

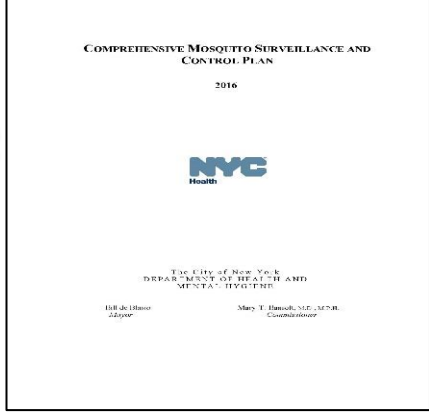
- Agencies should provide tick removal kits that include:
  - A magnifier
  - Fine tipped tweezers
  - Tick identification card
  - Instructions for removing tick
  - Disinfectant wipe
  - Plastic bag to save specimen (if the worker seeks medical attention the health care provider may ask to see the tick)

http://www.health.ny.gov/diseases/communicable/lyme/

Ticks (continued)

- Be alert for symptoms and seek medical attention
- For more information about ticks, preventing tick bites and removing ticks visit:
  - http://nyc.gov/health
  - http://www.cdc.gov/niosh/topics/tick-borne/default.html
  - http://www.cdc.gov/ticks/removing_a_tick.html
  - http://www.health.ny.gov/diseases/communicable/lyme/

Comprehensive Mosquito Surveillance and Control Plan 2016


COMPREHENSIVE MOSQUITO SURVEILLANCE AND CONTROL PLAN

2016

NYC Health

- DOHMH has a plan to protect the public health and reduce the risk of an outbreak of West Nile or another mosquito-borne disease
- Goal is to decrease the number of mosquitoes by reducing their breeding sites.

Comprehensive Mosquito Surveillance and Control Plan 2016

- **Standing Water**
  - Assess all agency properties and your own property for standing water and prepare inventory for problem sites.
  - Remove or overturn containers capable of holding water.
  - Sweep away puddles that last more than 5 days.

Standing Water Complaints

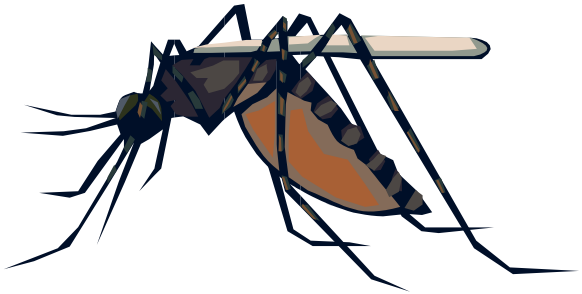
- Repair inadequate drainage systems.
- Provide dispositions on standing water referrals on a weekly basis.
- Advise employees on occupational health and safety protocols and provide personal protective equipment as necessary.
- Log standing water complaints by calling 311or via 311 online (using computer, web enabled devices or smartphone)

Comprehensive Mosquito Surveillance and Control Plan 2016

- **Primary Strategy**
  - Reduce the sources of breeding sites by removing accumulations of standing water.
- **Secondary Strategy**
  - **Where it is not possible to remove the source, larvicides and/or adulticides will be applied**

Comprehensive Mosquito Surveillance and Control Plan 2016

- Mosquito Development
  - Adult mosquitoes lay eggs, which hatch into larvae; larvae then become pupae, from which the adult mosquitoes emerge.
  - Some adult mosquitoes lay their eggs on surfaces of standing water and the larvae live and develop into pupae in the water.
- This is where larvicides may be applied



Larvicides

- Only relates to mosquito control; not applicable to ticks.
- Larvicides are natural bacteria, chemicals, or a combination of both that can be applied to kill mosquito larvae.
- Larvae are the immature stage of mosquito development.
- Larvicides will not be applied in areas that drain into waters consumed by humans.

Application of Larvicide

- DOHMH works with the New York City Department of Environmental Protection (DEP), the New York City Housing Authority, and the New York City Department of Parks and Recreation to treat catch basins and other mosquito breeding sites.
- Approximately 150,000 catch basins across the City will be inspected and if justified, treated at least three time each season by hand application of larvicides.
- In areas that are inaccessible by ground vehicles, larvicide may be applied aerially.

Adulticide

- Adulticides may be applied based on two criteria:
  - Prevalence of disease carrying mosquito
  - Nuisance spray events to control an unusually large amount of human biting mosquitoes

Notice of Pesticide Application

- Since exposure to any pesticide may cause adverse reactions, DOHMH will provide advance notice to Agencies and the public of the spraying schedules or events via media and community networks per New York State law.
- Agencies should notify workers who may be impacted by spray events

Personal Protective Equipment

- Workers who may be exposed to larvicide or adulticide as part of maintenance/inspection of potential point sources (such as catch basins) shall be provided with appropriate personal protective equipment as determined by the risk assessment and the information on the SDS and pesticide label.

Personal Protective Equipment

- Workers shall don PPE and use prudent precautions when entering areas that have been treated with larvicides and/or adulticides.
- Workers shall inspect personal protective equipment prior to use to ensure structural integrity.
- Agencies shall ensure that PPE is replaced as needed.

Exposure - City Workers

- If you are required to work in outdoor areas that have been treated with pesticides, and you experience eye or skin irritation as a result of exposure
  - Flush with copious amounts of water and wash the skin thoroughly
  - Report exposure to the supervisor.
- If an occupational exposure occurs, employees shall be encouraged to seek medical attention from their physician.
- Keep copies of the report for your files.

Safety Data Sheets

Under the Hazard Communication and Right-to-Know Laws:

- If you may have contact with pesticides you can request a copy of the Safety Data Sheets (SDS) which will provide you with information on the material's hazards.
- Your annual RTK training will cover how to read the SDS

Reminder – General Prevention for Exposure to Vectors!

- For everyone:
  - Avoid being in areas where mosquitoes and ticks live and breed
  - Stay indoors during times of day when mosquitoes are most active (dawn and dusk for Culex/West Nile virus mosquito, daytime for Asian Tiger mosquito)
  - Have screens on windows and doors

Reminder – Specific Prevention for Zika (For Everyone)

- Pregnant or planning to become pregnant women and their partners should follow guidance to prevent Zika infection and transmission.
- Follow detailed precautions on
  - Travel
  - Prevention of mosquito bites
  - Transmission through sexual contact with infected partner

Reminder – General Prevention for Exposure to Vectors!

- Wear light weight, light-colored clothing that will cover exposed skin and allow ticks to be seen and removed, tuck pant leg into socks
- Use EPA approved insect repellent on exposed skin
- Check yourself (clothing, skin and scalp) for ticks and bites
- Be alert for symptoms of vector-borne diseases

Prevention for Workers

- Based on risk assessment:
  - Agencies should provide insect repellent to employees.
  - Agencies should make tick removal kits available to employees
- When insect repellent is used, employees will follow manufacturer's directions.

Prevention for Workers

- Workers working outside should use an EPA registered insect repellent containing DEET, picaridin, oil of lemon eucalyptus, or IR3535 to help reduce exposure to mosquitoes. Those containing DEET are also effective against ticks.
- Re-apply these repellents as recommended on the label, do not exceed the maximum number of applications

Prevention for Workers - Insect/Tick Repellent

- Apply a light coat of repellent to exposed skin. Heavy application is not needed to achieve protection.
- Do not apply repellent to skin that is under clothing.
- Do not apply repellent to cuts, wounds or irritated skin.
- Do not apply aerosol or pump products directly to your face. Instead, spray your hands and then rub them carefully over the face avoiding the eyes and mouth. Do not exceed the maximum number of applications marked on the label.

Prevention for Workers - Insect/Tick Repellent

- After returning indoors, wash treated skin with soap and water and always wash your hands before eating, drinking, and smoking.
- Do not spray aerosol or pump products in enclosed areas or near food and drink. (flammable)

Prevention for Workers – Insect/Tick Repellent

- Pregnant and Nursing Women
  - Women who are pregnant should take precautions to protect themselves from mosquito bites.
  - Insect repellents help reduce exposure to mosquitoes that may carry potentially serious viruses such as West Nile virus.
  - Pregnant women who want to minimize the use of repellents on their skin should avoid mosquito habitats, and wear clothing that covers arms and legs.
  - Nursing mothers who apply repellent should wash all repellents off their hands and areas of the breast with soap and water before breastfeeding their children.

Training

- Prior to initial assignment, Agencies must provide training to
  - Workers who may come into contact with vectors that can transmit diseases
  - May be incidentally exposed to chemicals used for vector control (i.e. access areas where pesticides have been applied)
- Training will include safe work practices and control measures including any personal protective equipment provided
- Training shall be conducted on an on-going basis.

Training

- Workers that handle and apply pesticides require separate in-depth training and licensing in accordance with State and City regulations.

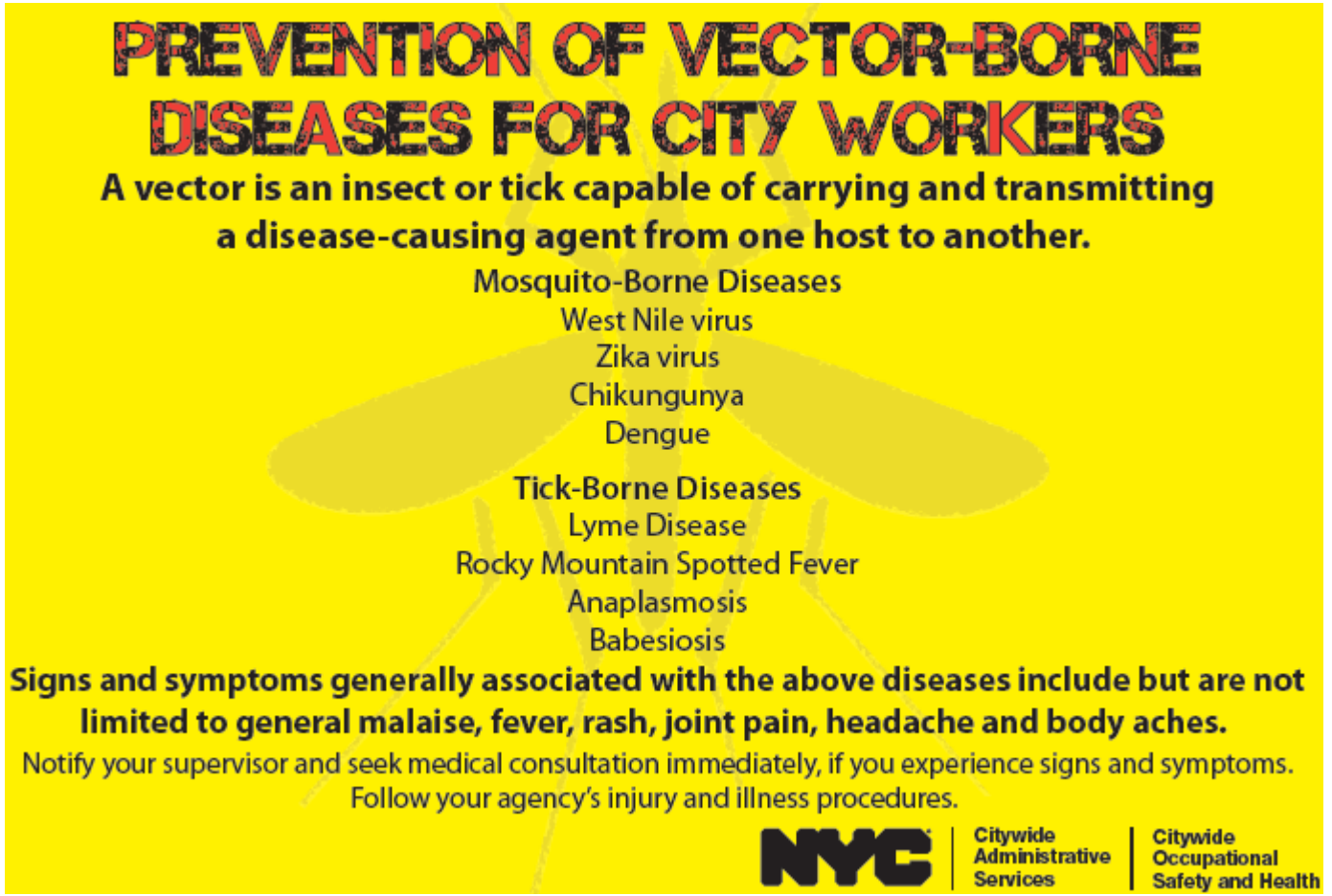
Recordkeeping

- Occupational injuries and illnesses will be reported in accordance with OSHA and PESH requirements

The following forms are to be used.

- **SH 900**-Log of Work Related Injuries and Illnesses.
- **SH 900.1**-Summary of Work Related Injuries and Illnesses.
- **SH 900.2**-Injury and Illness Report.

Palm Card


PREVENTION OF VECTOR-BORNE DISEASES FOR CITY WORKERS
A vector is an insect or tick capable of carrying and transmitting a disease-causing agent from one host to another.
Mosquito-Borne Diseases
West Nile virus
Zika virus
Chikungunya
Dengue
Tick-Borne Diseases
Lyme Disease
Rocky Mountain Spotted Fever
Anaplasmosis
Babesiosis
Signs and symptoms generally associated with the above diseases include but are not limited to general malaise, fever, rash, joint pain, headache and body aches.
Notify your supervisor and seek medical consultation immediately, if you experience signs and symptoms.
Follow your agency's injury and illness procedures.
NYC
Citywide Administrative Services
Citywide Occupational Safety and Health

Resources

- New York City Health Department
  - **nyc.gov/health/zika**
  - Include **@NYCHealthy** , **@DrMaryTBassett** and **@DrJayVarma** on Twitter for the latest updates
  - 311
- Centers for Disease Control and Prevention
  - **www.cdc.gov/zika**

Heat-Related Illness

June 2016

NYC
Bill de Blasio
Mayor

Citywide Administrative Services
Lisette Camilo
Commissioner

Citywide Office of Occupational Safety and Health
Office of the General Counsel

Target Audience

City employees who are exposed to hot and humid conditions during work activities.

Training Topics

- Types of heat-related illness
- Common signs and symptoms of heat-related illness
- Hierarchy of Controls
- Precautions to prevent heat-related illness
- Importance of acclimatization
- Hydration
- Emergency procedures
- What is a heat index?

What is a heat-related illness?

- **Heat-related illnesses** occur when the body is not able to lose enough heat to balance the heat generated by physical work and external heat sources.
- Weather conditions are the primary external heat sources for outdoor workers.

TYPES OF HEAT-RELATED ILLNESSES

Heat Rash (Prickly heat)

- Reddish, bumpy rash that often itches
- Hot, humid environments where sweat can't evaporate
- Sweat ducts to skin become blocked or swell
- Treatment:
  - Rest in a cool place
  - Keep your skin dry and clean

Heat Syncope (Fainting)

- Dizziness or fainting due to high temperature
- Pale, sweaty skin, tunnel vision, decreased pulse
- Blood pools in the legs, so less blood goes to the brain due to low blood pressure
- Treatment:
  - Move to a cool/shaded area and lie down, elevate legs
  - Rehydrate
  - Monitor the vital signs

Heat Exhaustion

- Loss of fluids and salt
- Feeling weak, dizzy, or nauseous
- Skin is clammy and complexion is pale or flushed
- Heavy sweating
- Treatment:
  - Rest in cool place
  - Lie down, loosen clothing, apply cool, wet cloths
  - Drink electrolyte solution (ex: Gatorade, Powerade)
- Severe cases: victims vomit or lose consciousness, seek medical attention

Heat Cramps

- Acute, painful, involuntary muscle contraction; Painful muscle cramps
- Caused by loss of salt when sweating, result due to hydration
- Treatment:
  - Stop activity, drink electrolyte liquids, massage muscle, stretch
- Severe cases require intravenous saline solutions

Heatstroke

- Body fails to regulate its own temperature (Core temp rises)
- Increased heart rate, decreased blood pressure
- Victim stops sweating
- Symptoms include hot, dry skin
- Confusion, convulsions, or loss of consciousness may follow
- Treatment:
  - Medical emergency; Call 911 immediately
  - Keep victim cool and apply cool, wet cloths. Monitor temperature. Do NOT give fluids
- Severe cases: seizures, coma, vomiting, diarrhea

Heat Can Cause Accidents

- Decreased strength, increased fatigue
- Reduced comprehension and ability to retain information
- Operational procedures can be comprised
- Other risks (ex: sweat, fogged up glasses)

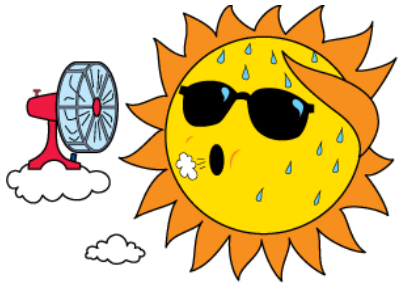
Hierarchy of Controls

- **Engineering Controls**
  - General ventilation
  - Spot cooling (exhaust system, AC room)
- **Administrative Controls**
  - Schedule heavy work for a cooler time of year or in the evening and early morning
  - Allow more frequent breaks or longer rest periods
  - Reduce physical demand on workers
  - Allow time for workers to become conditioned to heat
  - Alternate staff

Hydration

- Drink plenty of water all day
- Drink electrolyte-balanced fluids if you sweat a lot
- Drink at least one cup of fluid every 15-20 minutes when working in hot conditions
- Avoid caffeine and alcohol

Control Measures



Personal Cooling Measures

- Hats
- Water-dampened clothing
- Cooling vests
- Reflective clothing

Preventing Heat Illness

- Cooling
- Common sense (pace the work)
- Humidity (if high, take frequent breaks)
- Protection (ex: light clothing)
- Fluids (drinking lots of fluids)

WATER.
REST.
SHADE.

The work can't get done without them.

First Aid Procedures

- Heat-related illness may require assistance immediately
- Provide support in taking the employee to a cool/shaded area
- Keep the employee calm, generally have them lie down, feet elevated
- Provide fluids, apply wet, cool cloths
- Immediately call 911 and notify a supervisor

What is a "**heat index**" chart?

- Developed by **U.S. National Oceanographic and Atmospheric Administration (NOAA)**
- The **"heat index"** is a single value that takes both temperature and relative humidity into account.
- For employees working in outdoor hot weather, both temperature and relative humidity affect how hot they feel.
- **Relative humidity** is a measure of the amount of moisture in the air.

Why humidity matters?

- Evaporation of sweat from the skin is one of the ways the human body cools itself on a hot day
- Sweat does not evaporate as quickly when the air is moist as it does in a dry climate
- Humidity reduces our natural cooling potential
  - We feel hotter
  - Sweat evaporates rapidly
  - Leads to severe dehydration if the worker does not drink enough water

NOAA Heat Index Chart for Shaded Conditions and Light Winds

The NOAA bands have been modified for use at worksites

Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning
91°F to 103°F	Moderate	Implement precautions and heighten awareness
103°F to 115°F	High	Additional precautions to protect workers
Greater than 115°F	Very High to Extreme	Triggers even more aggressive protective measures

Steps to take in response to an elevated heat index

- Develop a heat illness prevention plan for work based on the heat index
- Track the worksite heat index daily
- Train employees on the heat illness prevention plan
- Review and revise plan throughout the summer

Plan Element	Heat Index Risk Level			
	Lower (Caution)	Moderate	High	Very High/Extreme
Supplies (ensuring adequate water, provisions for rest areas, and other supplies)	✓	✓	✓	✓
Emergency planning and response (preparing supervisors and crews for emergencies)	✓	✓	✓	✓
Worker acclimatization (gradually increasing workloads; allowing more frequent breaks as workers adapt to the heat)	✓	✓	✓	✓
Modified work schedules (establishing systems to enable adjustments to work schedules)		✓	✓	✓
Training (preparing workers to recognize heat-related illness and preventive measures)	✓	✓	✓	✓
Physiological, visual, and verbal monitoring (using direct observation and physiological monitoring to check for signs of heat-related illness)		✓	✓	✓

Important Considerations:
Heat Index Chart for Shaded Conditions and Light Winds

- Full sunshine can increase the heat index values by up to 15°F
- Heat index could be higher than listed in the table if the work is in direct sunlight without a light breeze
- Strenuous work and the use of heavy or specialized protective clothing can have an additive effect
- Extra measures may be necessary (i.e. Develop visual monitoring)

Key Points to Remember

- Working in hot conditions can affect your health and safety
- Know symptoms of heat-related illness and first-aid response
- Understand the risks and take precautions
- Use control measures to reduce heat-related stress

Resources

- www.osha.gov
  - OSHA's Campaign to Prevent Heat Illness in Outdoor Workers
  - Download "Using the Heat Index: A Guide for Employers"

For additional safety and health information

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www.nyc.gov/cosh