Summer HAZARDS

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Capital Area Safety Council
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- Heat-related
- Sun-related
- Poisonous plants
- Summer critters

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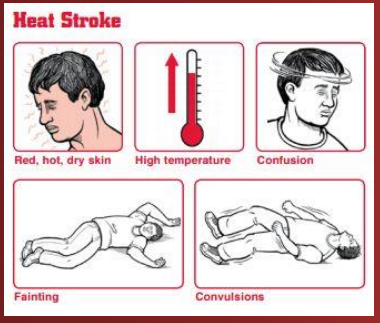
OSHA Heat Fatalities 2008-2014

Heat-Related Illnesses

Heat stress from most to least severe

- Heat stroke
- Heat exhaustion
- Heat cramps
- Heat syncope
- Heat rash

Heat Stroke - Diagnosis



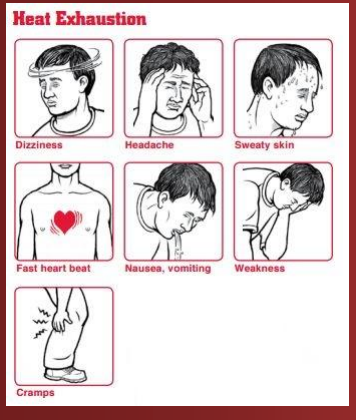
Occurs when the body becomes unable to control its temperature

- The sweating mechanism fails causing hot, dry skin
- The body's temperature rises rapidly, typically 104 or more

Heat Stroke – First Aid

- Can be fatal. Call 911.
- Cool worker quickly
  - Move worker to shaded, cool area.
  - Remove outer clothing.
  - Wet the skin and remaining clothing with cool water.
  - Place cold wet cloths or ice bags on head, neck, armpits, and groin.
  - Place on side so more body surface exposed.
  - Circulate the air around the worker to speed cooling.

Heat Exhaustion - Diagnosis



Heat exhaustion is the body's response to an excessive loss of water and salt, through excessive sweating

- Also has increased body temperature – but may only be slight

Heat Exhaustion – First Aid

- Take worker to clinic or emergency room, or call 911 if medical care not available.
- Remove worker from hot area.
- Remove unnecessary clothing, shoes and socks.
- Cold compresses and have worker wash head, face, and neck with cold water.
- Frequent sips of cool water. (Maybe I.V.)

Heat Cramps

- Typically slow, painful cramp in abdomen, arm or leg muscles that lasts 1-3 minutes
- Caused by reduction in body's sodium level from sweat losses
- Treat by rest, cool area, water, have a snack and/or sports drink
- Get medical help if worker has heart problems, or if cramps do not subside within 1 hour.

Heat Syncope (fainting)

- In healthy individual this is just temporary blood pressure decrease typically from standing for a long period or if getting up from seated position, especially if dehydrated
- Treat by sitting or lying down, cooling down, drinking fluids

Heat Rash

- Heat rash is a skin irritation caused by excessive sweating during hot, humid weather
- Medical term is miliaria, nickname is "prickly heat"
- Caused by sweat blocking off sweat gland ducts

Heat Rash

- Treat by removal from heat
- Wash skin when possible to avoid infection
- Keep rash area dry, ointments and creams should not be used

Who is at Increased Risk?

- Predisposing health conditions
  - cardiovascular disease including high blood pressure, diabetes, obesity, others
- Poor physical condition
- Older people
- Certain medications and alcohol - via dehydration and/or decreased sweating
- Street drugs such as cocaine, LSD – via increased muscle activity

Heat Stress Factors

- Heat index (temp, humidity)
- Direct sun, air movement
- Clothing
- Activity level
- Time of exposure
- Degree of acclimatization

NIOSH Prevention Measures

Engineering Controls

- Increase air velocity
- Use reflective or heat-absorbing shielding
- Reduce steam leaks, wet floors, humidity

NIOSH Prevention Measures

Work practice recommendations

- Heat alert and acclimatization programs
- Limit time in heat and/or increase recovery time spent in a cool environment
- Reduce the metabolic demands of the job – for ex. increase number of workers per task
- Provide water and encourage workers to drink
- Require workers to conduct self-monitoring
- Implement a buddy system

NIOSH Prevention Measures

Acclimatization = Adaptation to heat levels over time

- Activity will be less demanding on heart, and sweating will be more efficient.
- Starts decreasing after 4 days off.
- Usually takes about 5 to 7 days, maybe up to 14 if more extreme risk levels.
- NIOSH Protocol – daily increment from 20%, 40%, 60%, 80%, to 100% of heat work demand. For someone already acclimated to work but change to excessive heat can start at 50% - i.e. 50%, 60%, 80%, 100%.

NIOSH Prevention Measures

Hydration

- Drink fluid even if not thirsty – water or sports drink. Not caffeine or alcohol.
- Pre-hydrate with 1 cup (8 oz) 4 hrs before and right before exertion.
- 1 cup every 15-20 min.
- If prolonged, especially if acclimatizing, consider Gatorade or other electrolyte replacement drinks. Ideally should avoid situations though were this would be needed.

NIOSH Prevention Measures

Rest Breaks

- Ensure and encourage workers to take appropriate rest breaks.
- Shorten work periods and increase rest periods when higher heat stress conditions.
- Assign new and unacclimatized workers lighter work and longer, more frequent rest periods.
- Permit rest and water breaks when a worker feels heat discomfort.

Heat Index Based Prevention Steps

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

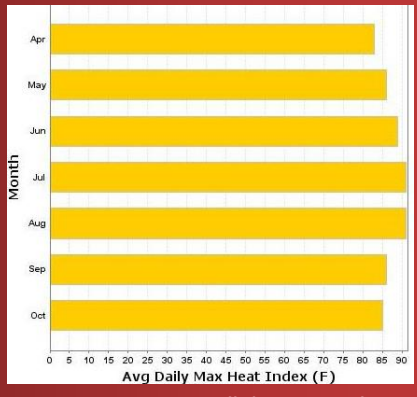
Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Index can increase by up to 15 if working in direct sun

Heat Index Based Prevention Steps

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



Franklin County 2000-2011	Avg	Max
Apr		87
May		103
Jun		107
Jul		114
Aug		109
Sep		105
Oct		92

All time record max = 116 on 7/15/1995

Heat Index Based Prevention Steps - Routine

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

Heat Index < 91 °F – Routine Risk Level
- Provide drinking water
- Worker heat safety training
- Encourage workers to wear sunscreen
- Acclimatize workers

If workers must wear heavy protective clothing, perform strenuous activity or work in the direct sun, additional precautions may be necessary.

Heat Index Based Prevention Steps - Moderate

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

Heat Index 91 to 103 °F – Moderate
- Schedule frequent breaks in shaded area
- Remind workers to drink water
- Review heat-related illness with workers
- Acclimatize workers
- Set up buddy system/instruct supervisors to watch workers for heat-related illness

If workers must wear heavy protective clothing, perform strenuous activity or work in the direct sun, additional precautions:
- Schedule activities when heat index is lower
- Develop work/rest schedules
- Monitor workers closely

Heat Index Based Prevention Steps - High

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

Heat Index 103 to 115 °F – High

- When possible, reschedule activities to a time when heat index is lower
- Adjust work activities (e.g., reschedule work, pace/rotate jobs)
- Establish and enforce work/rest schedules
- Alert workers of high risk conditions
- Actively encourage workers to drink water
- Avoid physical exertion (e.g. use mechanical lifts)
- Use cooling techniques
- Watch/communicate with workers at all times

Heat Index Based Prevention Steps –Very High

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

Heat Index > 115 °F – Very High

- Reschedule non-essential activity
- Move essential work tasks to the coolest part of the work shift; consider earlier start times or evening and night shifts.
- Strenuous work tasks and those requiring the use of heavy or non-breathable clothing should not be conducted

If essential work must be done:

- Conduct physiological monitoring (e.g., pulse, temperature, etc)
- Enforce protective work/rest schedules
- Stop work if essential control methods are inadequate or unavailable
- Alert workers of extreme heat hazards
- Establish water drinking schedule

OSHA Heat Fatalities 2008-2014, 2 in Ohio

6/13/2013 Salesville, OH worker engaged in construction
8/22/2012 Miamisburg, OH worker engaged in roofing

8/22/12 Heat Fatality Miamisburg, OH

- Employer did not have a heat-related illness program. The company had not trained its managers, permanent employees, or temporary employees.
- 60-year-old temporary worker, first day on job.
- Given “easiest job” on the site - throwing roofing material off the roof into a dumpster located below.
- 6AM began work on a roof in direct sunlight.
- Later in the day the temperature was 85 degrees. Heat Index ratings were between Caution and Extreme Caution.
- Wearing dark clothing.
- Took one 15-minute break in over a 5 hr period. He refused to drink water.
- He was sweating profusely. He was not removed from work, not provided shade, water, or medical attention during this heat exhaustion stage.
- He began acting disoriented and was non-responsive when spoken to so at 11:41 a.m. squad called and transported to hospital. His body temp was recorded as 105 degrees.
- Died on August 22, 2012, as a result of the heat illness

- Heat-related
- Sun-related
- Poisonous plants
- Summer critters

Sun Related Diagnoses

- Skin Cancer
- Sunburn

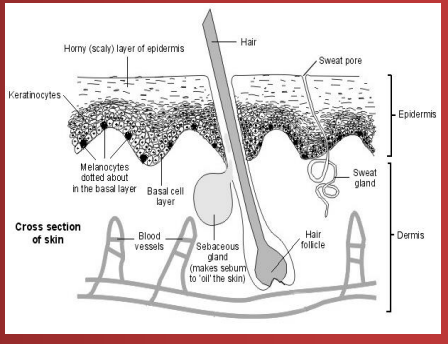
Skin Cancer Stats

- Most common form of cancer
- Estimated more than 90% are caused by sun
- Affects 1 out of every 7 Americans
- Over 1 million Americans diagnosed per year
- Approximately 60,000 melanomas per year

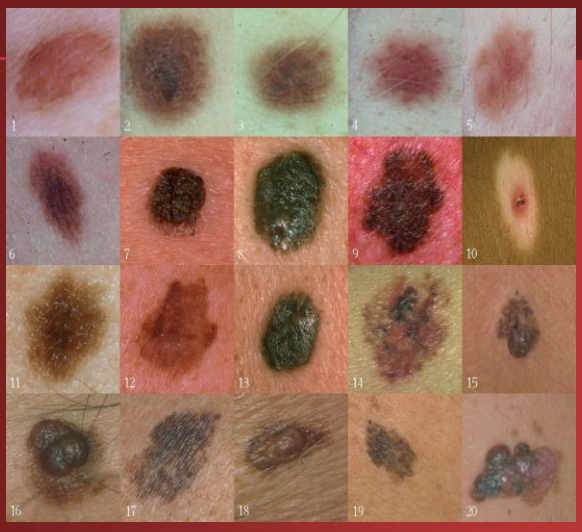
Main Types of Skin Cancer

Named after cell of origin

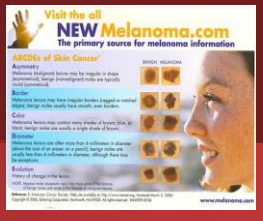
- Melanoma
- Squamous cell carcinoma
- Basal cell carcinoma



Melanoma?



Skin Self-Exam



A,B,C's of melanoma

- Asymmetry: one half does not match other
- Border: irregular, scalloped, notched
- Color: uneven, multiple shades
- Diameter: larger than 6mm (pencil eraser)
- Evolution: Enlargement or Elevation

Skin Self-Exam

Other Warning Signs

- Sore that doesn't heal
- New
- Change in sensation
  – itchy, tender, painful
- Change in surface
  – scaly, oozy, bleeding, bump or nodule

Mole vs Melanoma

Basal Cell Carcinoma

- Most common cancer: 25% of all cancers, more than 400,000 new patients annually.
- Slow growing, can be locally destructive but very rarely metastasizes.
- Shiny, pearly or waxy raised lesion, often with rolled edges and central ulceration.


Basal Cell Carcinoma

Squamous Cell Carcinoma

- Usually solitary, rough/eroded, pink, raised/nodular.
- May arise from a precancerous AK=actinic keratosis.


Squamous Cell Carcinoma

AKs = Actinic Keratosis

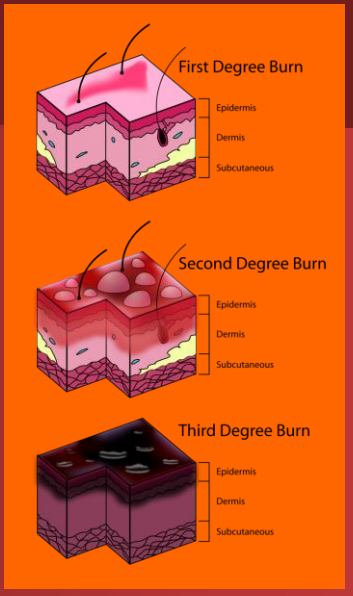
Someone in the room has this

- Small rough or scaly spots. May be whitish, pink-red or flesh colored.
- Usually on the face, ears, hands, and arms.
- Usually does not cause any symptoms and is slow-growing, but it can turn into squamous cell cancer.
- Treat with cryo, laser, prescription topical cream (ex. Efudex or Aldara), etc

Sunburn

Degrees of Burn

- First – red coloration
- Second – blisters
- Third – not from sun, requires intense heat like fire – no pain on area and yellow, white, or black coloration to skin



First Degree

Treatment if desired

- Over the counter pain med (Tylenol, Advil)
- Aloe vera gel
- Cool cloth

Second Degree

Additional Treatment

- Clean with soap and water
- Cover with bandaid
- Leave blister in place
- Maybe prescription Silvadene cream to prevent infection

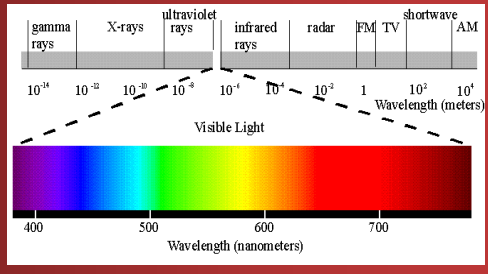
Third Degree

Additional Treatment

- Prescription Silvadene, pain meds, antibiotics.
- IV fluids
- Removal of scarred skin, skin grafts or other surgical procedures

Sunlight

- Electromagnetic spectrum from sun includes infrared (felt as heat), visible light, and ultraviolet radiation.
- UV light invisible, high energy which can damage DNA.



UV Light Wavelengths

- UV-A is 315 to 400 nm
  – premature aging, wrinkling, recently implicated as skin cancer cause
- UV-B is 280 to 315 nm
  – more dangerous than UVA, sunburns, main cause of skin cancer, cataracts
- UV-C range
  - doesn't penetrate our atmosphere

Protection

- Limit exposure to sun
- Don't tan
- Cover up in sun
- Wear sunscreen

Slip! Slop! Slap!®

- **Slip on a shirt.** Choose shirts and pants to protect as much skin as possible.
- **Slop on sunscreen.** Choose a sunscreen with a Sun Protection Factor (SPF) of 15 or higher.
- **Slap on a hat.** Choose a hat that shades the face, neck, and ears.
- **Wrap on sunglasses.** Protect your eyes from UV rays.
- **Limit sun exposure.** Stay out of the sun between 10 a.m. and 4 p.m. when the UV rays are strongest.

Caution: Sunlamps and tanning booths are just as harmful to your skin as the sun.

Some prescription drugs can greatly increase your skin's sensitivity to UV rays. Check with your pharmacist.

Parents: Take Note!

Avoiding sunburn during childhood and adolescence is very important in reducing the risk of skin cancer later in life.

Sunscreen is not recommended for children less than six months old. Keep infants in the shade and protect them with clothing.

1.800.ACS.2345
www.cancer.org

Hope.Progress.Answers.®

Exposure

- Avoid afternoon direct sun when possible
- Water exposures can double impact from reflective surface
- Movement of air (such as boating, convertible) can reduce heat and make you less aware of exposure

Cover Up in the Sun

- Wear protective clothing, esp hats
- Wear sunglasses that say any of these:
  - block 99 to 100% of UVA and UVB
  - "UV absorption up to 400nm" = 100%
  - "Meets ANSI UV Requirements".

SPF (Sunscreen)

- Sun Protection Factor (SPF) 20 allows 5 out of every 100 UV protons to reach skin, means 20 min equivalent to 1 minute.
- Can burn in 15 minutes. So with SPF 20 used properly won't burn until 15 x 20 = 300 min.
- Average white cotton T-shirt has SPF 6.
- SPF rating is for UV-B only, but if 15 or more likely covers UV-A too.

Sunscreen Application

- Sunscreen SPF 15 (or SPF 30 if between 10AM-4PM, sunny location – lake or skiing) or higher.
- Not for kids under 6 months - keep them in shade.
- Apply 30min before outdoors, reapply every 2 hours adults and even every hour if under age 18.
- Reapply after swimming, sweating or toweling. Waterproof last about 80min and water resistant last about 40 min in water. All rub off with towel.
- Wear sunscreen lip balm too.

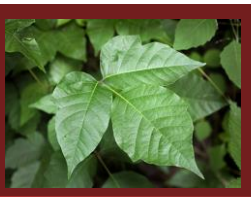
Summer HAZARDS

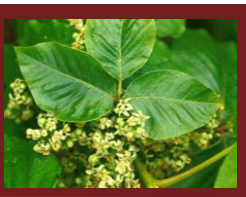
- Heat-related
- Sun-related
- Poisonous plants
- Summer critters

Poisonous Plants

- Poison ivy, poison oak, and poison sumac release an oil, urushiol. When the oil gets on the skin an allergic reaction, referred to as contact dermatitis, occurs in many people.
- Workers may become exposed via:
  - Direct contact with the plant
  - Indirect contact, such as touching tools, or clothing that have urushiol on them
  - Inhalation of particles containing urushiol from burning plants

Poison Ivy





- Eastern poison ivy is typically a hairy, ropelike vine with three shiny green (or red in the fall) leaves budding from one stem
- Western poison ivy is typically a low shrub with three leaves that does not form a climbing vine
- May have yellow or green flowers and white to green-yellow or amber berries

Poison Oak

- Typically a small shrub or ground vine with leaves of three, similar to poison ivy
- May have yellow or green flowers and clusters of green-yellow or white berries

Poison Sumak

- Woody shrub that has stems that contain 7-13 leaves arranged in pairs
- May have glossy, pale yellow, or cream-colored berries

Poisonous Plants – First Aid

- Immediately rinse skin with rubbing alcohol, degreasing soap (such as dishwashing soap) or detergent, and lots of water.
- Scrub under nails with a brush.
- Apply wet compress, calamine lotion, oatmeal bath, hydrocortisone cream, or antihistamine such as diphenhydramine (Benadryl) for symptoms.
- Seek medical attention if severe, on face, or breathing problems.

Poisonous Plants – Prevention

- Wear long sleeves, pants, boots, and gloves.
- Wash exposed clothing separately in hot water with detergent.
- Barrier skin creams, such as a IvyBlock (bentoquatum) lotion, may offer some protection before contact.
- After use, clean tools with rubbing alcohol (isopropanol or isopropyl alcohol) or soap and lots of water. Urushiol can remain active on object surfaces for up to 5 years.
- Do not burn plants that may be poison ivy, poison oak, or poison sumac.

Poisonous Plants – Prevention

Recommendations If Required to Burn Poisonous Plants

- Employers should provide workers with A NIOSH-certified half-face piece respirator rated P–95 or better.
- Respirators must be used in the context of a written comprehensive respiratory protection program.

Summer HAZARDS

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Summer Critters

- Stinging insects
- Mosquitos
- Ticks

Bee, Wasp (incl Yellow Jackets), Hornet Stings

- Wash the site with soap and water.
- Remove the stinger by wiping gauze or scraping a fingernail over the area.
  - Never squeeze the stinger or use tweezers.
- Apply ice to reduce swelling.
- Do not scratch the sting as this may increase swelling, itching, and risk of infection.

Sting Prevention

- Avoid flowering plants when possible.
- Avoid perfumed soaps, shampoos, and deodorants.
- Wear clothing to cover as much of the body as possible.
- Wear clean clothing and bathe daily. (Sweat may anger bees.)
- Discard food and keep work areas clean.

Mosquitos

Mosquito-borne diseases that occur locally in Ohio

- West Nile virus (WNV) - 17 cases 2016
- La Crosse virus (LACV) – 9 cases 2016
- St. Louis encephalitis virus (SLEV) - 1 case/10yr

West Nile Virus

Culex pipiens

- The main vector in Ohio is the northern house mosquito.
- Birds and horses can get infected too.
- Most people infected will have no symptoms.
- About 1 in 5 people who are infected will develop a fever and other symptoms.
- Less than 1% of those infected will develop a serious neurologic illness - specifically encephalitis (inflammation of the brain) or meningitis (inflammation of the brain lining nd spinal cord).

La Crosse Virus

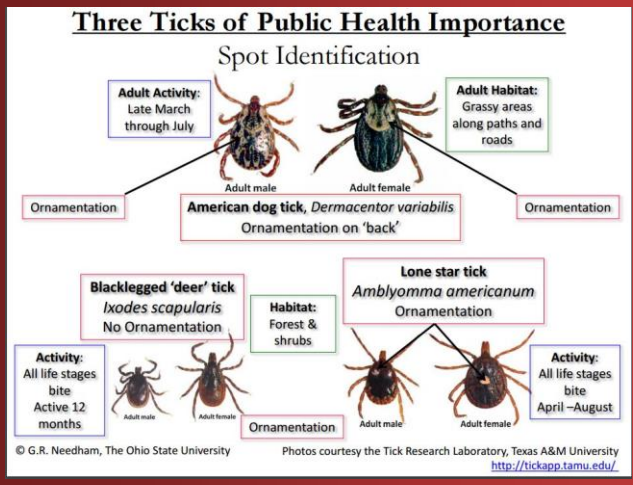
Aedes triseriatus

- In Ohio most people are infected by the eastern treehole mosquito. Ohio has reported more human cases than any other state in the United States, averaging about 20 per year.
- While many people infected with LACV have no apparent symptoms, it can lead to severe febrile illness, encephalitis or meningitis.

St. Louis Encephalitis Virus

- Less than 1% of SLEV infections have are clinically apparent and the vast majority of infections remain undiagnosed.
- In those developing encephalitis symptoms, the overall case-fatality ratio is 5 to 15%.

Ticks in Ohio



Ticks-borne Diseases in Ohio

Black Legged "Deer" Tick

- Lyme disease - 160 cases in Ohio in 2016
- Anaplasmosis
- Babesiosis
- Powassan encephalitis

American Dog Tick (most common tick in Ohio):

- Rocky Mountain Spotted Fever - about 20 cases/yr in Ohio
- Tularemia

Lone Star Tick

- Ehrlichiosis
- Tularemia
- Southern Tick-Associated Rash Illness (STARI)

Tick Identification

- ODH doesn't provide this service.
- Franklin County Health Department gave link http://www.BayAreaLyme.org/lyme-disease-prevention/tick-testing/ for free tick testing.
- Not diagnostic tool for health-care decisions, has links to other sites for this.
- Provides info on what tick, and tests it for 5 of the Ohio diseases including Lyme and RMSF.

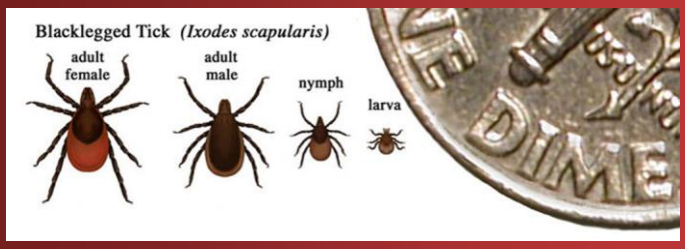
Tick-borne Diseases Symptoms

May not have all of these symptoms, and many of them occur with other diseases as well.

- Body/muscle aches, joint pain
- Fever
- Headaches
- Fatigue
- Rash
- Stiff neck
- Facial paralysis

Lyme Disease

- Most commonly reported tick-borne disease in the United States. In 2010, approx 30,000 reported cases to CDC. Ohio highest ever of 160 in 2016.
- Tick carrying bacterium *Borrelia burgdorferi*.

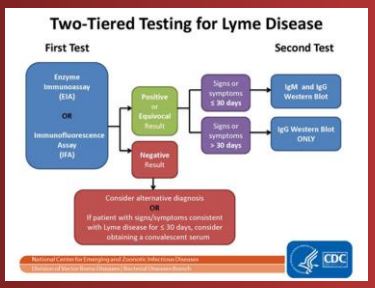


Lyme Disease

- Typical symptoms include fever, headache, fatigue, and a characteristic rash called erythema migrans.
- If left untreated infection can spread to joints causing joint pain and/or weakness; to the heart causing palpitations; and to the nervous system causing pain, numbness, facial paralysis, .
- Diagnosis is based on symptoms, rash, and the possibility of exposure to infected ticks.

Lyme Disease

- Lab test helpful if performed with validated methods to lower the high false positive rate.



- Most cases of Lyme disease can be treated successfully with a few weeks of antibiotics.

Tick Bites - how to remove

1. Use fine-tipped tweezers and grasp the tick as close to the skin's surface as possible.
2. Pull upward with steady, even pressure. Don't twist or jerk the tick. If you can't remove the mouth easily, leave it alone to heal.
3. Avoid folklore remedies such as "painting" the tick with nail polish or petroleum jelly, or using heat to make the tick detach from the skin.

Tick Bites - how to remove

4. Clean the bite area and your hands with alcohol, an iodine scrub, or soap and water.
5. Dispose of a live tick by placing it in alcohol, a sealed container, or tightly wrapped tape; or flushing it down the toilet. Don't crush it with your fingers.
6. If you develop a rash or fever within several weeks of removing a tick, see your doctor.

Mosquitos & Ticks Prevention

- Use repellent.
- When weather permits wear long sleeves, long pants and socks when outdoors.
- Reduce sources of standing water, leaf litter, uncut grass and brush, etc.
- Ensure that doors and windows have screens and are kept closed when possible.

Repellant Safety

- EPA-registered repellents for skin containing 20-30% DEET. Proven safe and effective against mosquitos and ticks, even for pregnant and breastfeeding women.
- Permethrin repellant for clothing and gear. Permethrin should not be applied to the skin. Kills ticks on contact.
- Carefully follow label directions for repellent use and reapplication.
- Do not use repellent under clothing or on skin that is injured or irritated.
- If also applying sunscreen, apply sunscreen first and insect repellent second.

Questions?

Thanks for your time

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