Lyme Disease

Let's Stay Protected!

CFO Clubs and Ranges Seminar ~ Georgian College

Barrie, Ontario

June 11 ,2016

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WHY IS VECTOR BORNE DISEASE IMPORTANT TO SMDHU?

- Residents of Simcoe County and District of Muskoka enjoy the outdoors and an active lifestyle.
  - Priority to prevent, reduce and raise awareness regarding exposure to VBDs within Simcoe-Muskoka.
  - Priority to communicate & educate the public regarding the potential risks associated with VBDs
- VBD's such as West Nile Virus and Lyme Disease are preventable!

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LET'S TARGET LYME

History • What is Lyme • Ticks • Prevalence • Risk

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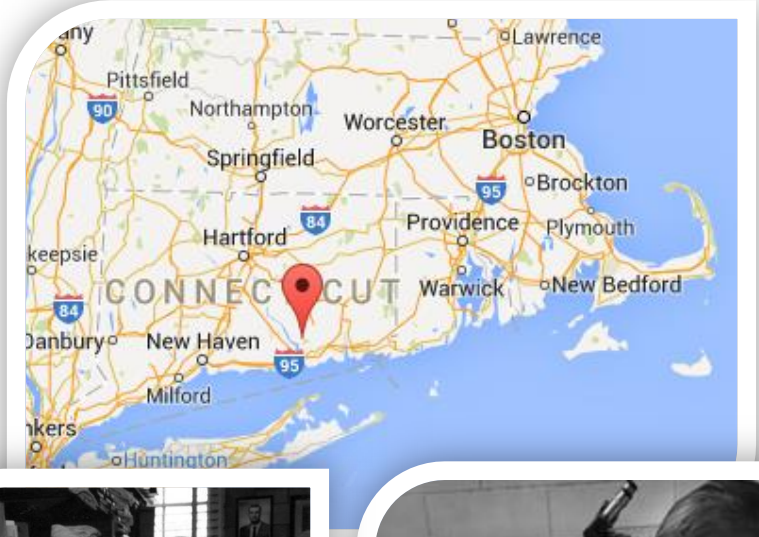
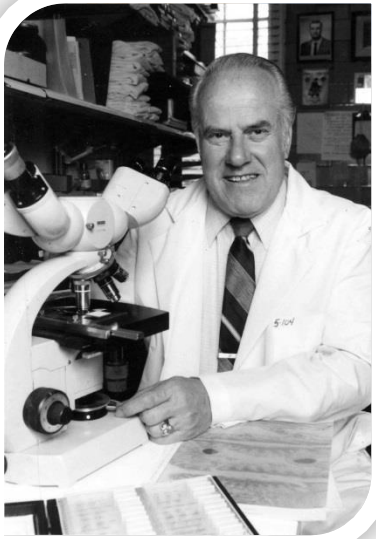
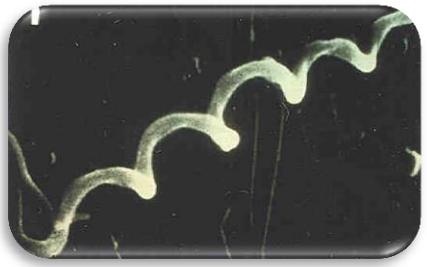
A BIT OF HISTORY…

- Early 1975 several juvenile rheumatoid arthritis cases were identified in Lyme, CT and neighbouring communities.
- The disease was named after the town where the children lived.
- The bacterium that causes the disease is named in honor of Dr. Willy Burgdorfer, the scientist who made the connection.

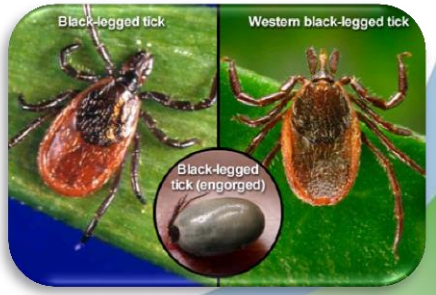




WHAT IS LYME DISEASE?

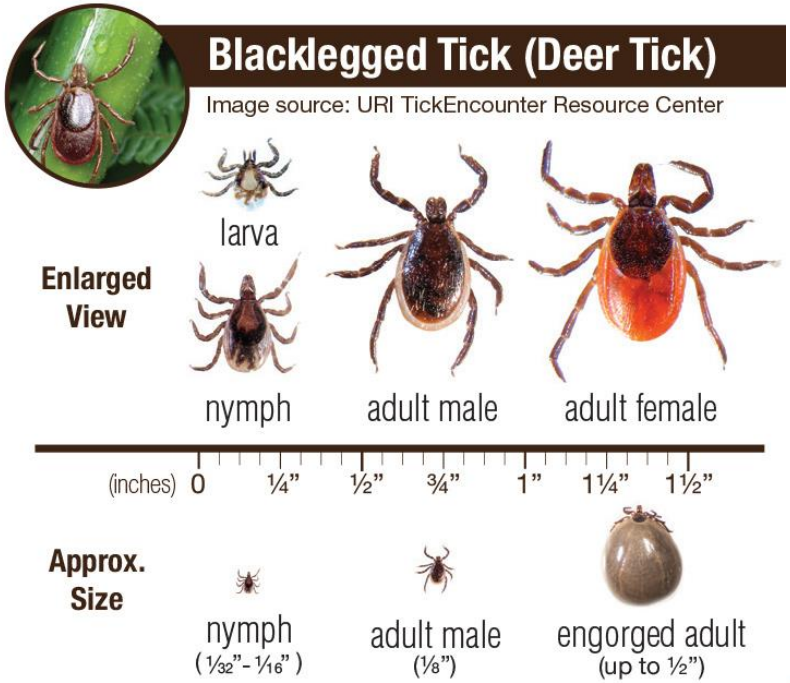


- Most common disease spread by ticks in Canada.
  - Lyme can have serious effects on humans when left untreated.
- A bacterial illness caused by the bacteria *Borrelia burgdorferi* .
- The bacteria is transmitted by an infected black-legged tick.
  - The blacklegged tick is the primary vector associated with Lyme Disease in Ontario.
  - The bacteria live inside the stomach of black legged ticks



HOW "BIG" ARE TICKS?

- Ticks are small and can be difficult to see (especially larvae & nymphs)
- Part of the arachnid family and considered an ectoparasite



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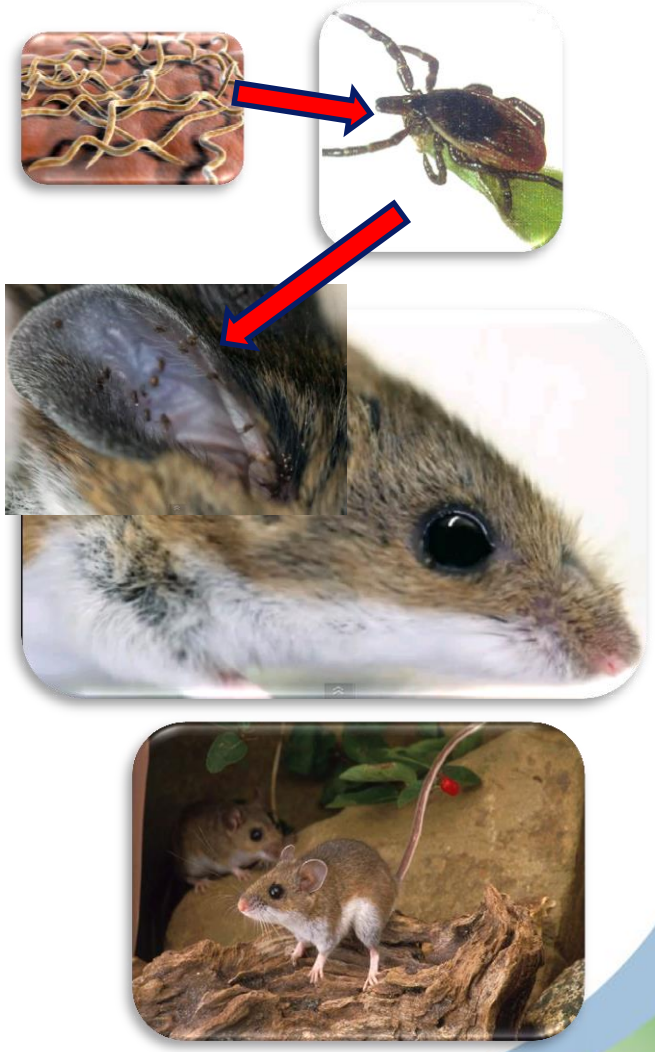
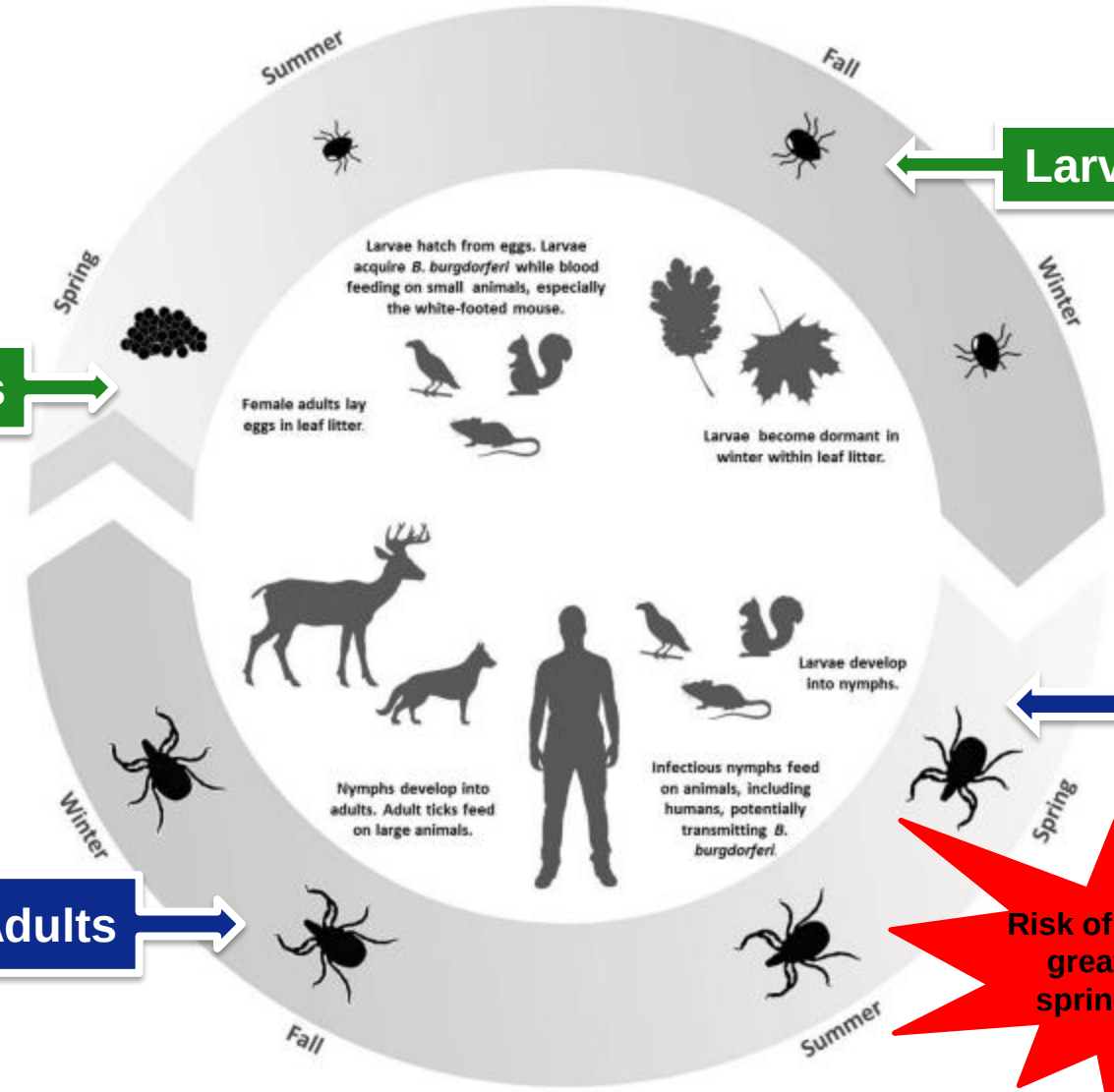
HOW DO TICKS BECOME INFECTED?

- Larvae and nymphs become infected when they feed on an infected host:
  - Small animals such as white-footed mice, chipmunks
- Once the larvae and nymphs mature, these ticks can pass the bacteria onto humans or animals when they feed:
  - Ticks require a blood meal as they pass through each stage of their lifecycle



LIFE CYCLE

Year 1



Eggs

Larvae

Nymphs

Adults

Risk of human infection greatest in the late spring and summer.

Year 2

Life Cycle Credit: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Blacklegged tick life cycle. Toronto, ON: Queen's Printer for Ontario; 2016.

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DEER AND DEER TICKS

- Deer are considered “reproductive” and “dead end” hosts for the bacterium
  - Ticks bite, feed and reproduce on deer
  - A deer is generally the last feeding place for a BLT at the end of its life cycle
  - Deer do not pass the infection on to other ticks feeding on them.

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PROVINCIAL TICK DISTRIBUTION

- BLTs can be found in various areas across Ontario
  - Tick Established areas
    - Annually occurring & reproducing population
  - Ri
    -
    -
  - E
    - is capable of transmitting B. Burgdorferi
    - An area where there is an identified risk for Lyme disease
  - Bird-borne (adventitious) ticks

- Locations around Kingston along the St. Lawrence Valley to the border with Quebec and northeast towards Ottawa
- western Ontario in the region of Lake of the Woods
- Pinery Park on the shore of Lake Huron
- Rouge Valley region of eastern Toronto

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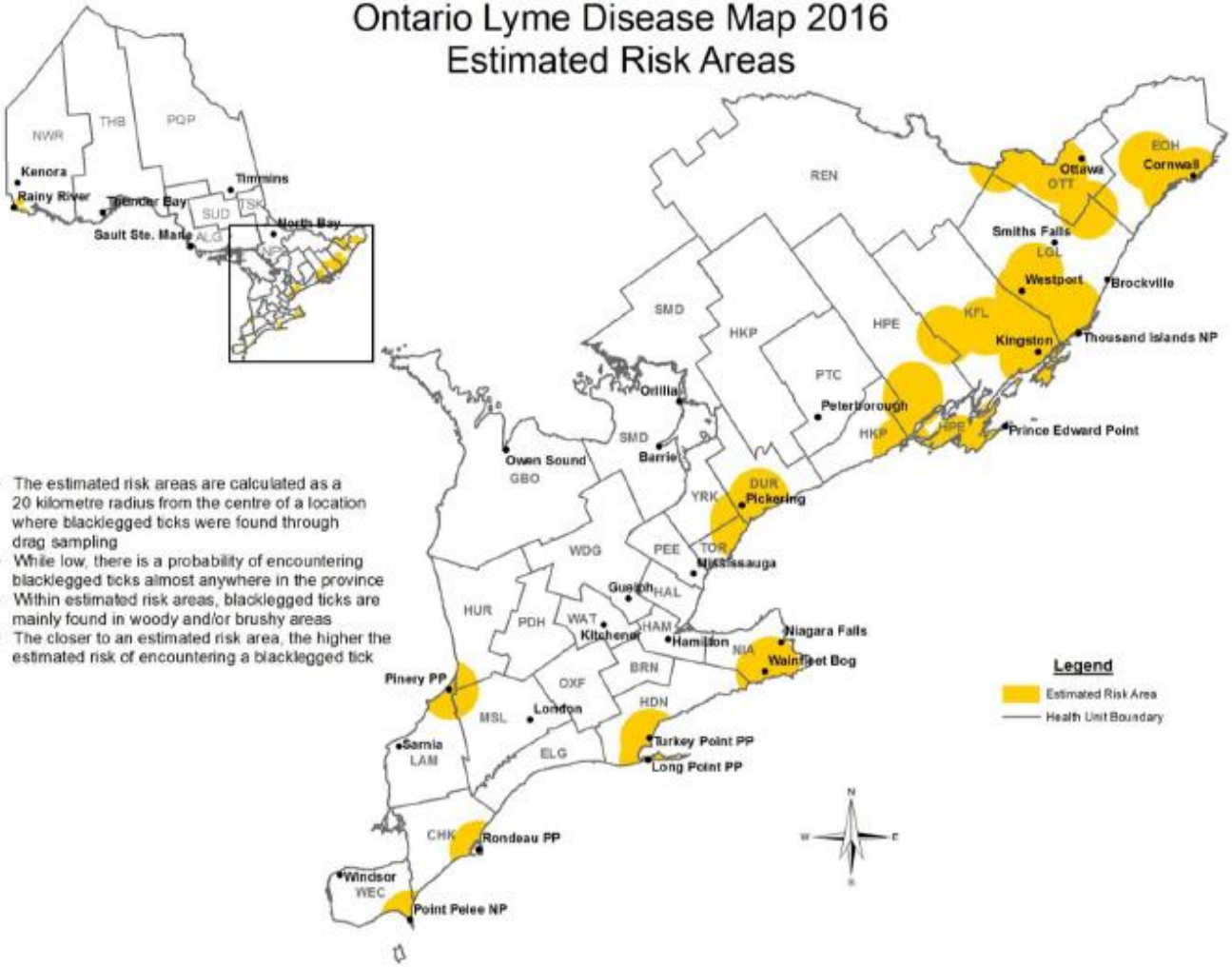
Public Health Ontario
PARTNERS FOR HEALTH

Santé publique Ontario
PARTENAIRES POUR LA SANTÉ

Ontario Lyme Disease Map 2016
Estimated Risk Areas



- The estimated risk areas are calculated as a 20 kilometre radius from the centre of a location where blacklegged ticks were found through drag sampling
- While low, there is a probability of encountering blacklegged ticks almost anywhere in the province
- Within estimated risk areas, blacklegged ticks are mainly found in woody and/or brushy areas
- The closer to an estimated risk area, the higher the estimated risk of encountering a blacklegged tick

http://www.publichealthontario.ca/en/eRepository/Lyme_disease_risk_areas_map.pdf

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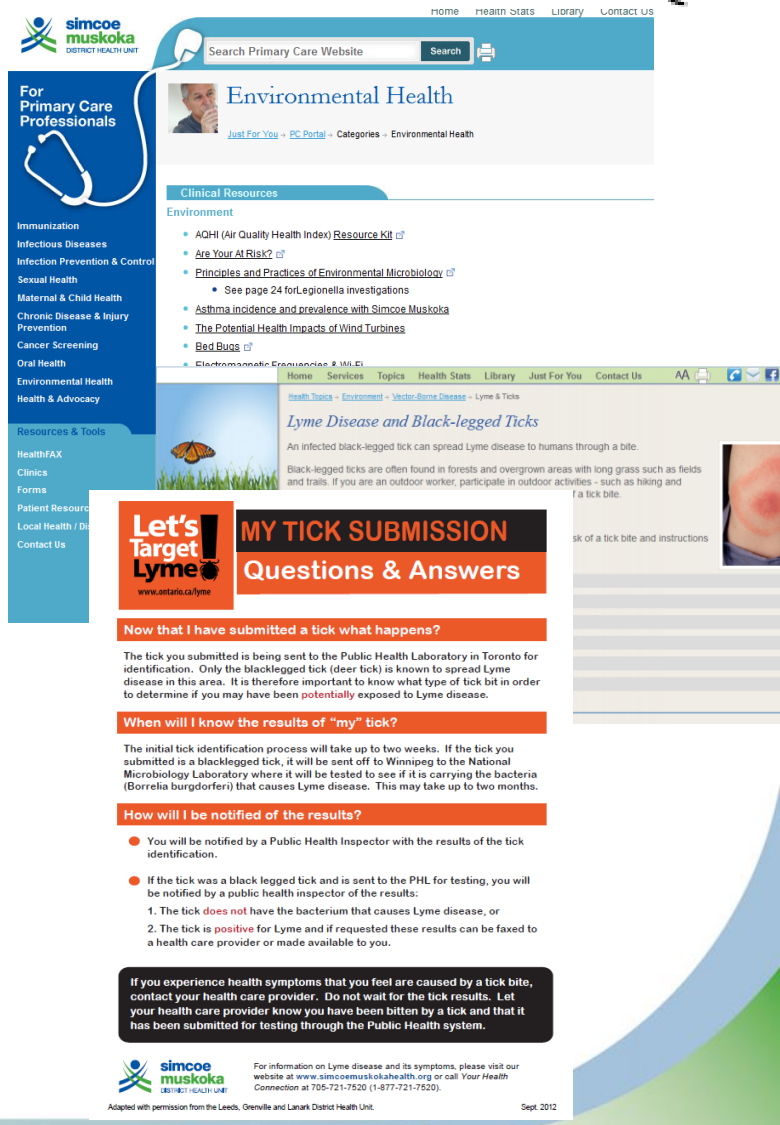
SMDHU & TICKS

- **Surveillance**
  - **Passive** –submissions received from the public
  - Passive tick surveillance program allows us to better understand the type and abundance of ticks present within the Simcoe-Muskoka area
- **Public Education & Awareness**
  - Social Media, Web, Traditional Media
  - Community education



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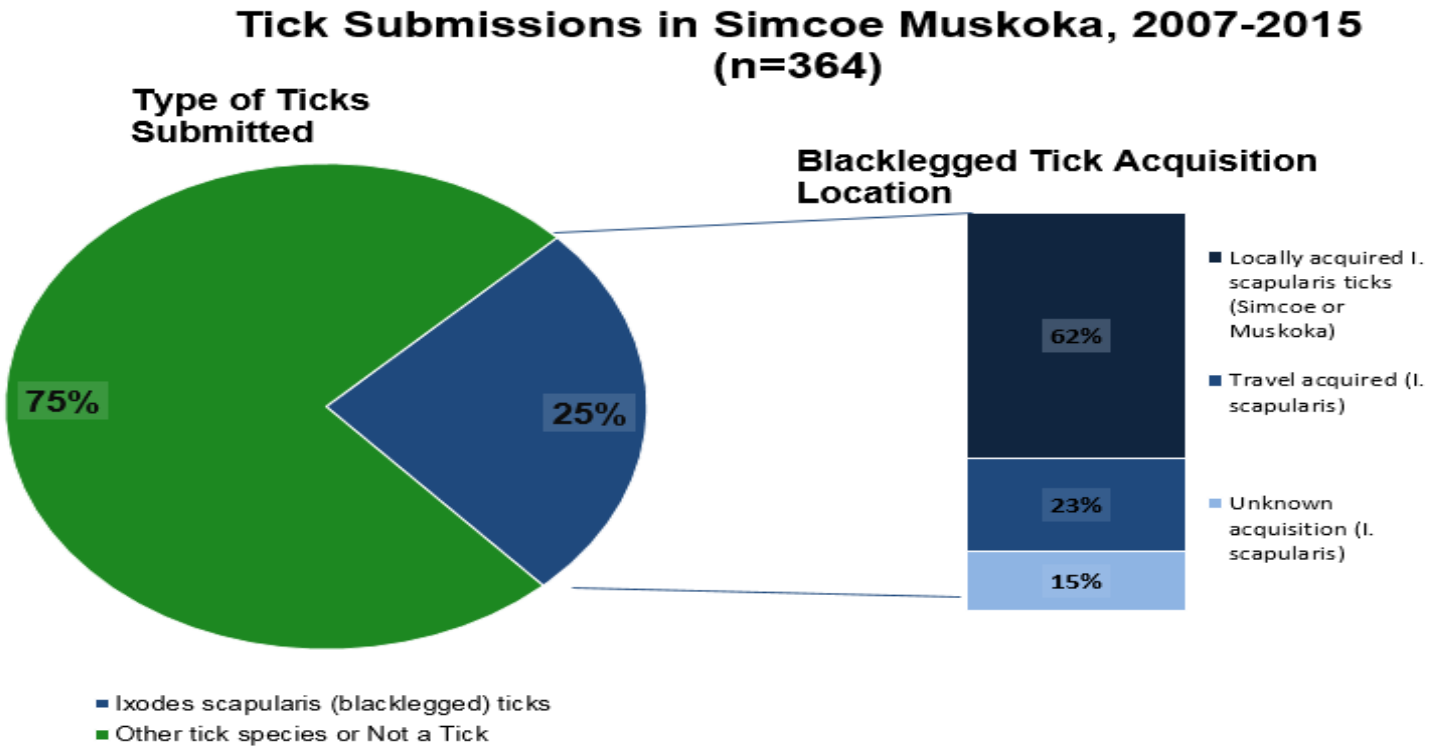
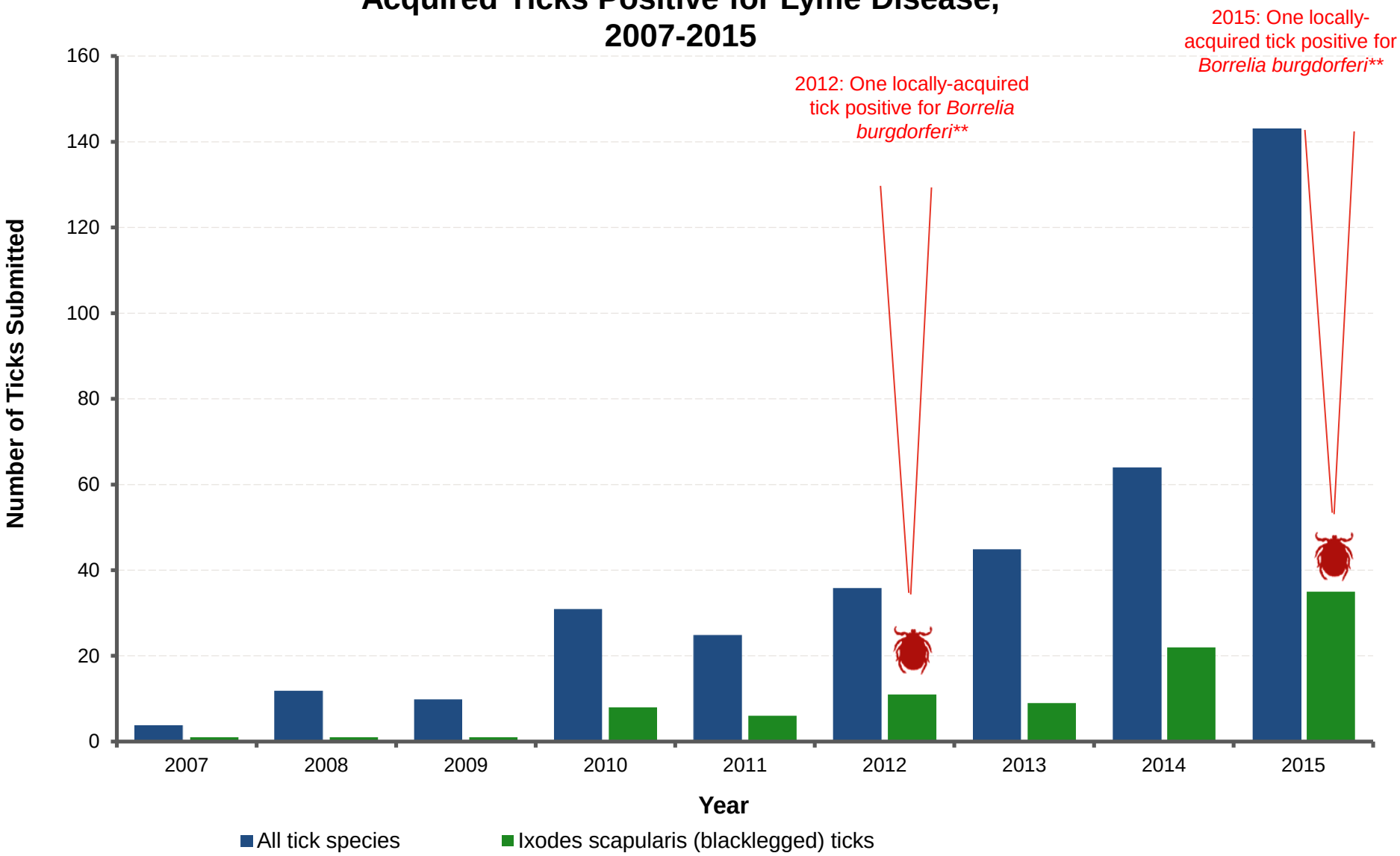
PREVALENCE OF TICKS IN SIMCOE-MUSKOKA

- Data has shown us that black-legged ticks are present in Simcoe-Muskoka
- Tick submissions have steadily increased from 2007-2015 (4 → 143)
  - Examples of species identified include: I. scapularis, D. variabilis, I. cookei



Data Source: Passive Tick Surveillance Data, extracted May 2016

Tick Submissions to Simcoe Muskoka District Health Unit* and Locally Acquired Ticks Positive for Lyme Disease, 2007-2015



Data Sources: Passive Tick Surveillance Spreadsheet, extracted May 2015

*Ticks are submitted to the health unit by those who have removed it from their (or another person's) body, and are aware to submit it to the health unit for testing. See the health unit's fact sheet on Lyme disease for more information about safe removal of a tick. Submitted ticks may originate from anywhere that the submitter has traveled in recent days, and not necessarily from within Simcoe Muskoka. 62% of submitted ticks are acquired in Simcoe Muskoka.

**In addition to the locally acquired positive ticks, there have been four additional positive ticks in 2014-15: three from locations in Ontario outside of Simcoe Muskoka and one had an unknown acquisition

RISK: WHO AND WHERE?

- Woody, brushy areas that provide food and cover for hosts
- Exposure to ticks can be greatest in tall grassy areas, along trails and edges of woods

- Anyone who participates in outdoor activities where ticks could be present:
  - Outdoor enthusiasts
    - Hiking
    - Biking
    - Sporting Activities
    - Hunting & Fishing
    - Camping
    - Gardening
  - Outdoor workers
    - Landscapers
    - Parks and Rec Employees

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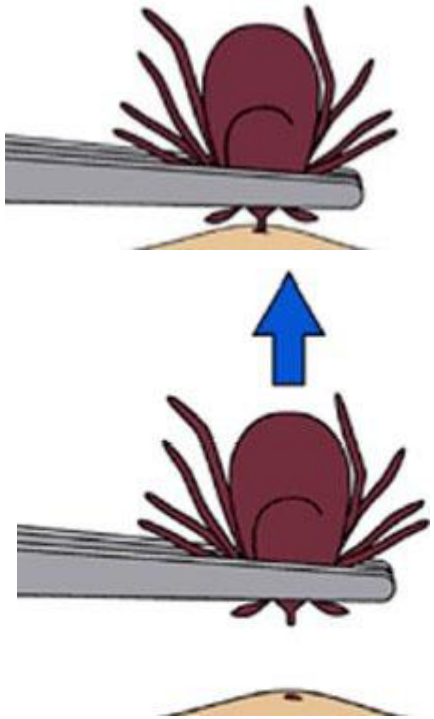
RISK: WHEN?

- The risk of being bitten by a tick begins when the weather warms up in the spring and continues through until the fall.
- However, the greatest risk of being bitten by an infected tick occurs the summer months– peak in June and July

I FOUND A TICK! WHAT SHOULD I DO?

- **Remove the tick as soon as possible!**
- **Four easy steps to remove a tick:**
  1. Use fine tipped tweezers to grab the tick as close to your skin as possible.
  2. Pull the tick upwards with firm pressure (careful not to crush the tick or break body parts) out of our skin.
  3. Thoroughly clean the bite area with soap and water.
  4. Place the tick into a small sealable container – you can take this tick to your local public health unit office; we will submit it for identification for you!



It is important to monitor for Lyme disease symptoms. If you feel unwell seek medical attention. Be sure to tell your physician about your recent tick bite, when it occurred and where you may have picked up the tick!

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COMPLETE REMOVAL OF A TICK

INCOMPLETE REMOVAL OF A TICK

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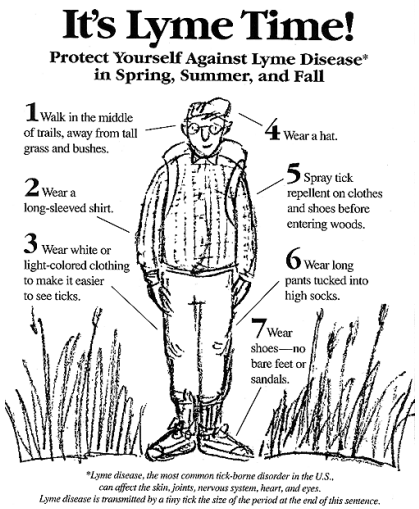
YOUR HEALTH AND LYME DISEASE

How can you become infected • Symptoms • Diagnosis • Treatment • Prevention • Protection



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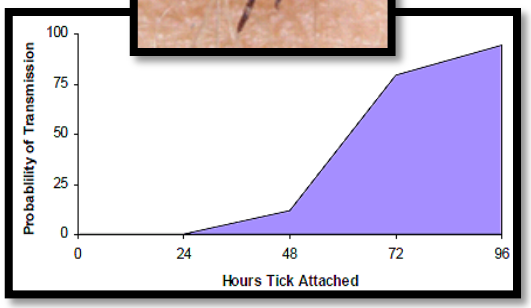
HOW DO HUMANS BECOME INFECTED?



- When bitten by an infected tick.
  - Ticks feed slowly and their body gradually enlarges as it feeds, making it more visible.
  - It usually takes from 3 to 7 days for a blacklegged tick to take a complete blood meal.
- Ticks are most likely to transmit the bacteria after being attached for greater than 24 hours.
  - It is important to removed a tick as soon as possible.
  - You cannot tell if a tick is infected.
  - Faster a tick is removed, the risk of Lyme decreases!

SIGNS AND SYMPTOMS

- Three days to a month after being bitten by an infected tick.
- There are 3 distinct phases of Lyme disease.
- Each phase involves different parts of the body and symptoms vary throughout each stage.
- Recommend seeking medical attention as soon as possible:
  - ✓ Provide information to your physician re: tick exposure
  - ✓ Length of time tick may have been feeding (attached)
  - ✓ Providing travel history or outdoor activities (particularly if travel included a risk area)

SIGNS AND SYMPTOMS

Stage I – Early localized disease

- Fatigue
- Fever
- Chills
- Headache
- Muscle/Joint Pain
- Swollen lymph nodes
- Erythema migrans – "Bulls-eye" rash

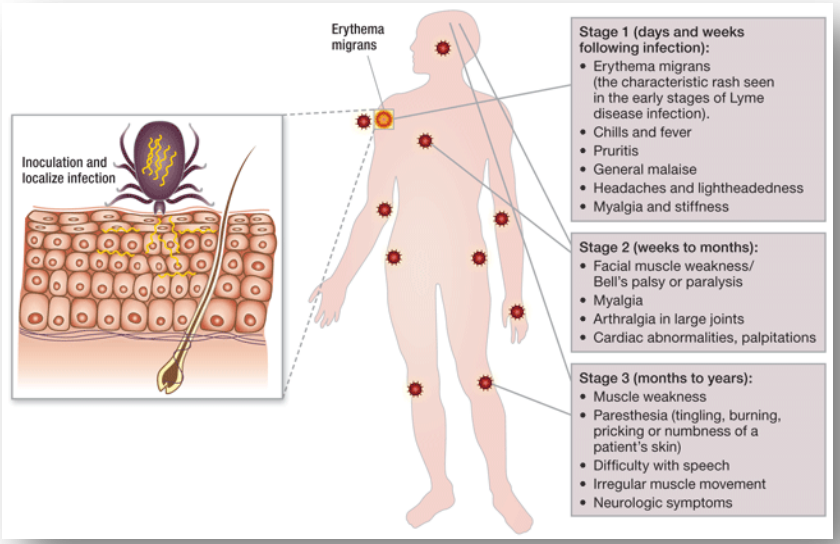
"Classic" erythema migrans rash

Image: cdc.gov

SIGNS AND SYMPTOMS

Stage II – Early Disseminated Disease

- Can last several months
- Multiple skin rashes
- Heart palpitations
- Arthritis, arthritic symptoms
- Extreme fatigue, weakness
- CNS & PNS disorders
- Can experience recurring neuro problems



SIGNS AND SYMPTOMS

Stage III – Late Disease

- May last for months or years
- Recurring neuro problems
- Arthritis
- Facial or Bell's Palsy
- Heart palpitations/irregular heart beat
- Nerve pain – tingling, shooting pains

Facial palsy

Swollen knee

Image: cdc.gov

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HOW IS LYME DIAGNOSED?

- Diagnosis can be difficult as symptoms vary from person to person.
  - Symptoms can mimic other illnesses
- Diagnosis primarily made after:
  - Clinical signs & symptoms
  - Travel to endemic or risk areas
- Blood serum samples
  - Allows for the detection of antibodies which the body produces in response to infection.
  - 4 to 6 weeks AFTER exposure (body needs time to produce enough antibodies for detection)

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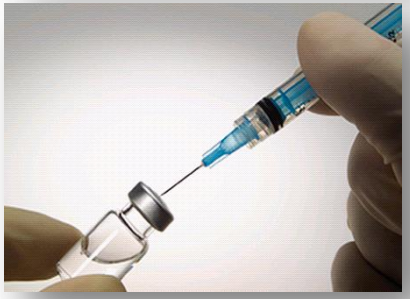
TREATMENT

- Being attentive to how you are feeling and symptoms you may be experiencing is important.
- Most cases can be effectively treated with 2 to 4 weeks of antibiotics.
- Longer course of antibiotics may be required depending on symptoms and time of diagnosis.
- If untreated during the early stages, disease can progress.



SMDHU & LYME

- **Surveillance**
  - **Human**—Lyme disease is a reportable disease in Ontario
    - Case investigations provide us with information on where the illness might have been acquired and can assist with local or provincial Lyme disease risk assessments
- **Public Education & Awareness**
  - Social Media, Web, Traditional Media
  - Community education

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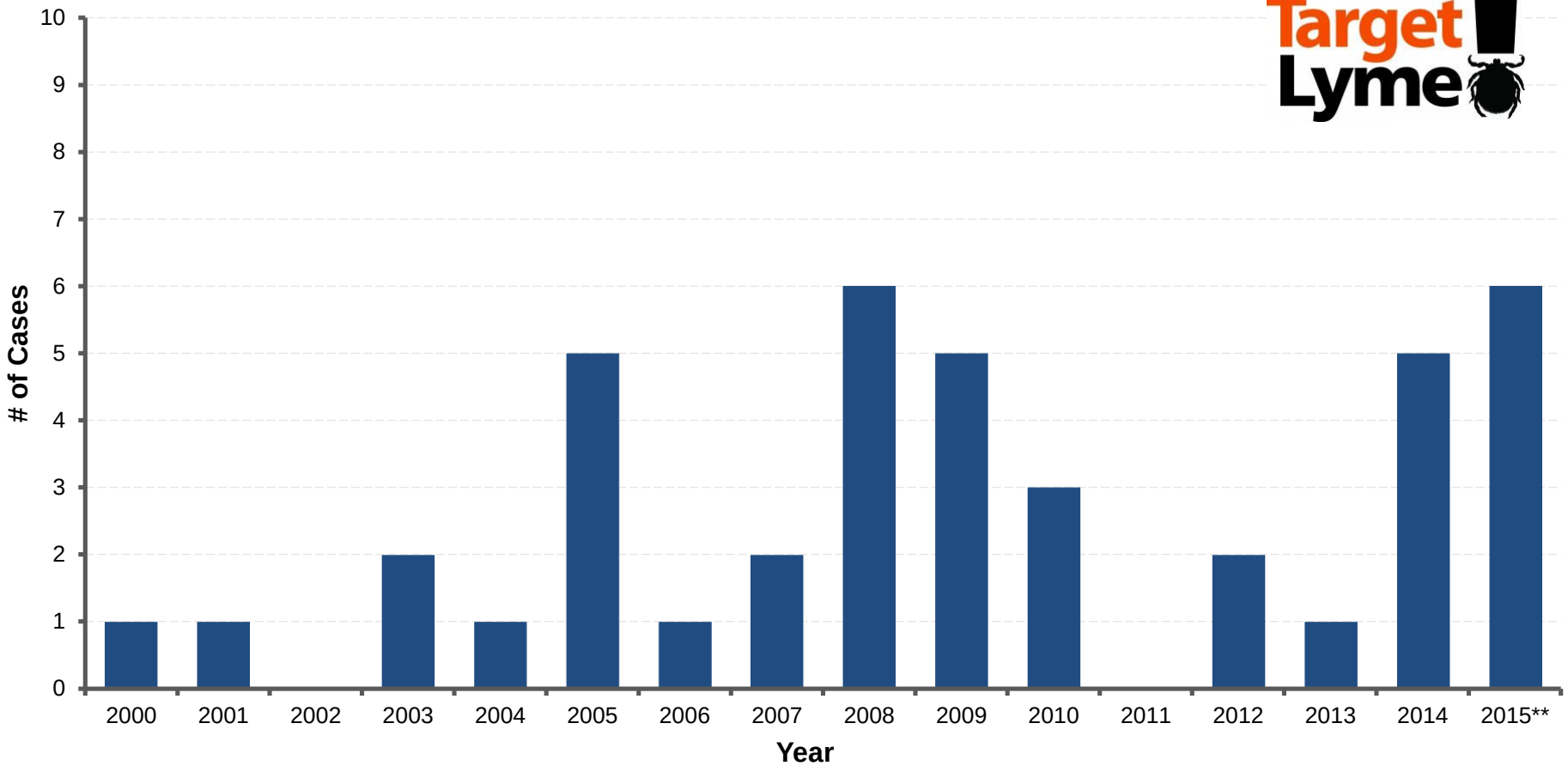
CASES OF LYME IN SIMCOE-MUSKOKA

Number of Lyme Disease* cases in Simcoe Muskoka, 2000-2015

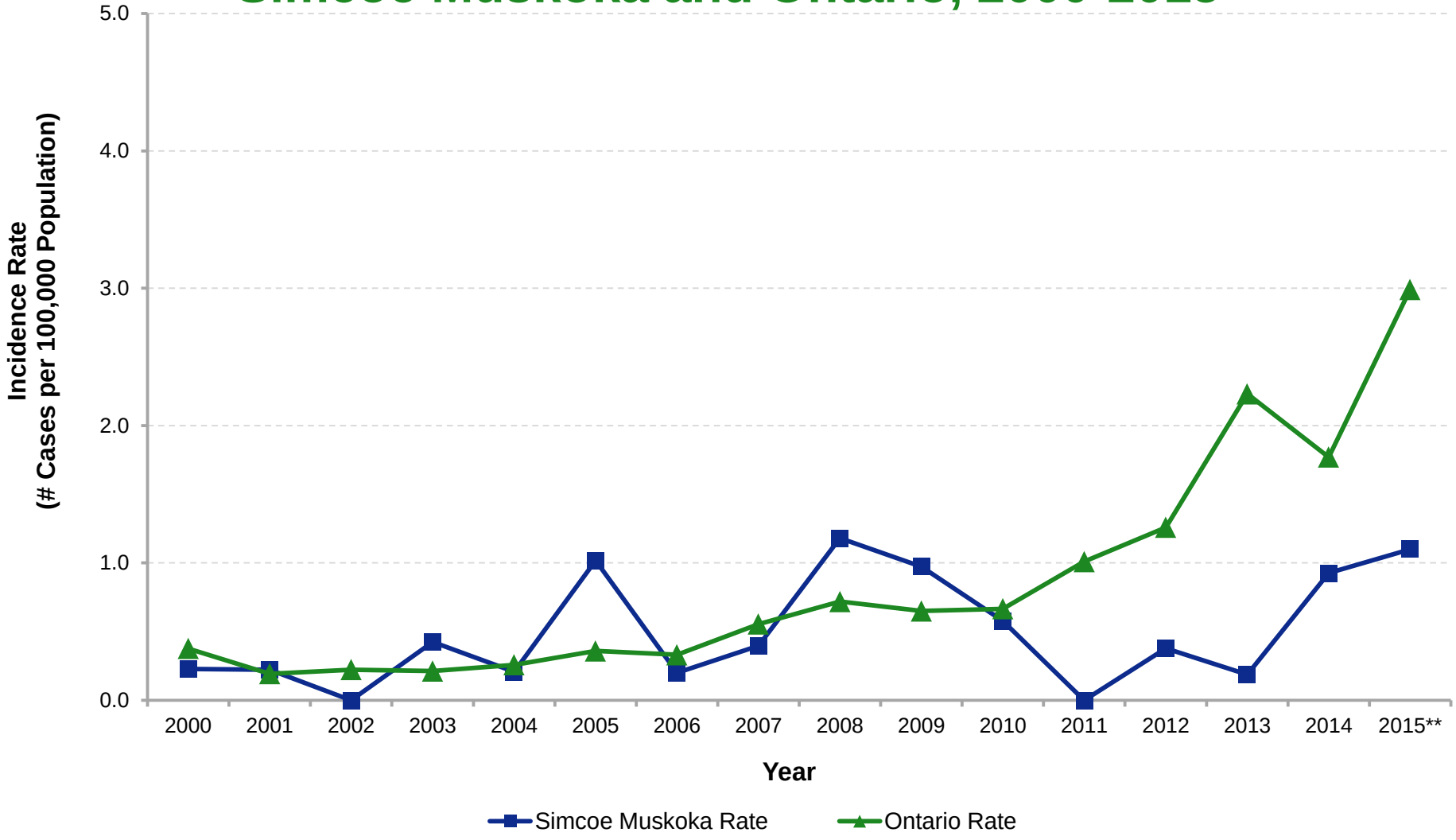


Data Source: Integrated Public Health Information System (iPHIS), extracted March 2016

* Confirmed + Probable Cases

**Note that the confirmed case definition changed in 2015 to include those with travel to a 'risk area' as well as an endemic area for lyme disease along with clinical and/or lab evidence. There are more risk areas in Ontario than endemic areas so this change makes the case definition more sensitive and therefore may increase the number of cases.

Incidence Rate of Lyme Disease* in Simcoe Muskoka and Ontario, 2000-2015^



Data Sources: Integrated Public Health Information System (iPHIS), extracted March 2016; iPHIS data posted on PublicHealthOntario.ca e-portal and Query@PHO Population Estimates&Projections, Intellihealth, extracted April 2015

* Confirmed + Probable Cases

^ The 2013-2015 rates are based on the projected population rather than the estimated population.

**Note that the confirmed case definition changed in 2015 to include those with travel to a 'risk area' as well as an endemic area for lyme disease along with clinical and/or lab evidence.. There are more risk areas in Ontario than endemic areas so this change makes the case definition more sensitive and therefore may increase the number of cases.

REPEL • INSPECT • REMOVE

- Ticks like long grasses and tops of shrubs, wooded bushy areas and the leaf litter areas of forests.
  - Stay on the middle of hiking trails.
  - Dress appropriately.
  - Wear a repellant containing DEET or Icaridin
  - Around your home:
    - Keep your yard trimmed, remove piles of leaves, sticks
    - Move woodpiles and bird feeders away from the house
- Preform "tick checks" on yourself, family members and pets.
- Take a shower within two hours.

Source: http://extension.missouri.edu/p/IPM1032

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INSECT REPELLENTS

Never use a product labelled as an insecticide on your body!

- Provides protection against tick bites
- Choose a product that meets your needs.
  - If out for a short period of time, use a product with a lower concentration
  - Reapply based on need and following manufacturers directions
- Use a repellant containing DEET
  - Effective at repelling insects such as ticks. Always follow manufacturer's directions
- Approved Health Canada products contain a Pest Control Product (PCP) registration number

- **Alternatives to DEET?**
  - **P-menthane 3,8-diol** – registered in Canada, provide up to 2hrs of protection, not to be used on children under three. Can be applied up to 2 times per day.
  - **Soybean Oil** – 2% blocker repellent providing 3.5hrs protection. No age restrictions or limitations on frequency of use
  - **Citronella** – Look for registered products, protection for 30min to 2 hrs, not to be used on infants or toddlers. Read product labels before use.

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WHAT ARE THE "DEETS" ON DEET?

- Health Canada recommends:

Age Group	DEET Concentration
Adults Children over 12	• Up to 30% • One application = 6hr protection vs. mosquitoes
Children (2-12yrs)	• Up to 10% • Applied up to 3 times daily • One application = 3hr protection vs. mosquitoes
Children (6 months – 2yrs)	• Up to 10% • Applied no more than once daily • One application = 3hrs protection vs. mosquitoes
Children (Under 6 months)	• Do NOT use personal insect repellents containing DEET • Use alternatives, like mosquito netting

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USING REPELLENTS SAFELY

- Read the label and follow directions.
- Apply a small amount.
- Only apply to exposed skin and clothing.
- Avoid contacting:
  - Eyes
  - Open wounds
  - Sunburned skin
- Use in a well ventilated area. Avoid breathing in.
- Avoid spraying on hands – this will prevent it from getting in eyes and mouth
- Check for skin irritation or reactions.

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THINGS TO REMEMBER ABOUT LYME AND TICKS!

- Lyme Disease and tick bites are preventable!
- Not all black-legged ticks carry the bacteria responsible for Lyme disease.
- Personal protection and being aware of your surroundings can greatly reduce your chance of being bitten by a tick.
  - REPEL ● INSPECT ● REMOVE
  - Conduct thorough "Tick Checks" following any activity outdoors where ticks could be.
- If you find a tick attached, remove it immediately, watch for symptoms, speak to your health care provider, and submit your tick to your local public health unit!

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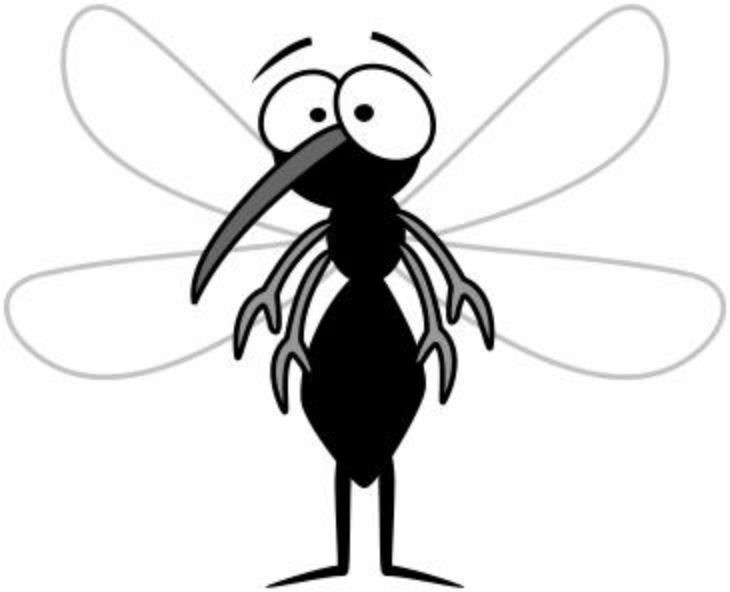
QUESTIONS?



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THANK YOU!

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