Camp Based Lyme Disease Education and Prevention in Maryland

MPH Capstone and PHASE Internship project

Andrea Sutherland, MD, MSc

May 2007

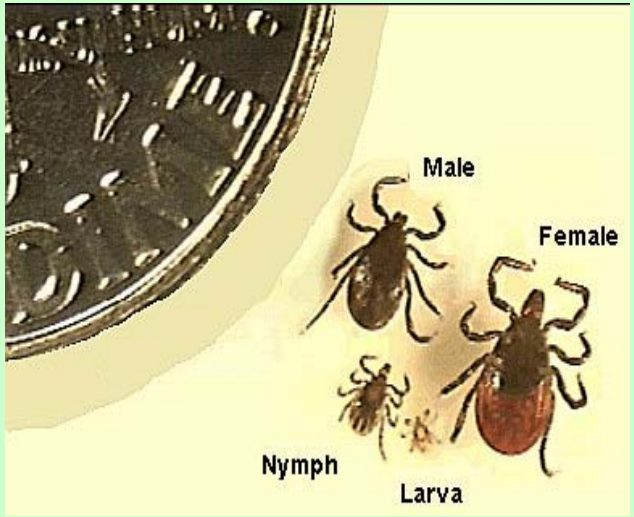
Summer Camp and Lyme Disease

- Lyme disease peaks in summer
- Outdoor activity in high risk areas (woods)
- Kids at risk of tick bites and Lyme disease

Camp = Summer+ outdoor activity+ kids = High Risk for Lyme disease

Basics of Lyme disease

- Lyme disease from tick bite (attached >24-36 hours)
- Blacklegged deer tick (*Ixodes scapularis)* carries bacterium (Borrelia burgdorferi)



- Lyme disease (LD) leading cause of tick-borne disease in the United States

Basics of Lyme disease

- Symptoms (if noted)
  - Days to weeks
    - “bull’s eye” rash ≥2.5 inches (5cm)
    - fatigue, fever, headache
    - stiff neck, muscle and joint pain
    - (wide variety of symptoms, not everyone has “typical symptoms”)
  - Months to years
    - aseptic meningitis, cranial neuritis
    - cardiac abnormalities
    - chronic arthritis

LD in Maryland

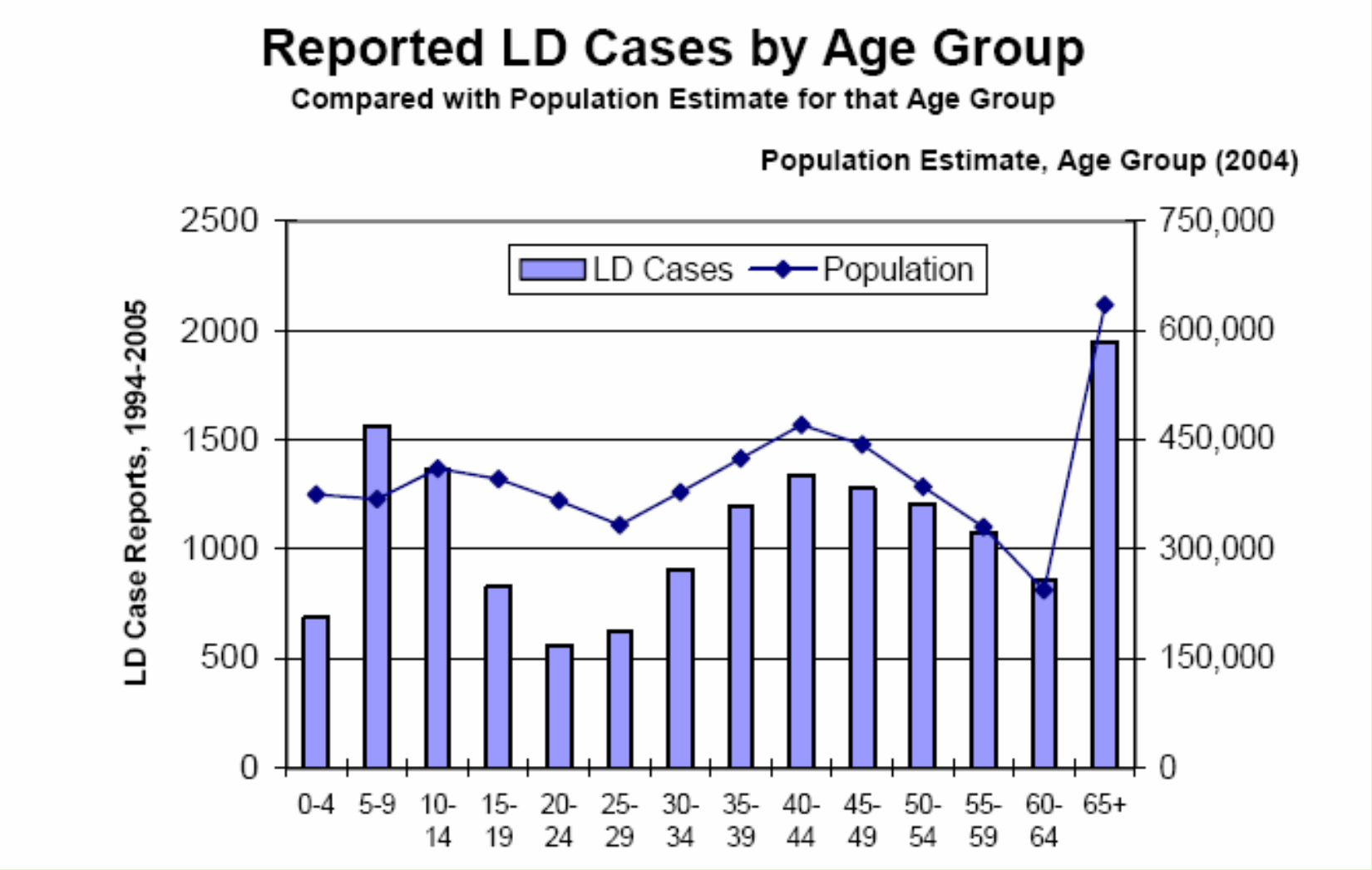
- The following table shows the annual numbers of confirmed LD cases in Maryland

yr	‘94	‘95	‘96	‘97	‘98	‘99	2000	‘01	‘02	‘03	‘04	‘05
cases	343	336	423	494	659	899	688	608	738	691	891	1235

MDHMH, Report of the Lyme Disease Subcommittee of the Maryland Vector-Borne Disease Interagency Task Force to the Maryland Department of Health and Mental Hygiene

Recommendations for the Development of a Strategic Plan for Lyme Disease Prevention and Control in Maryland

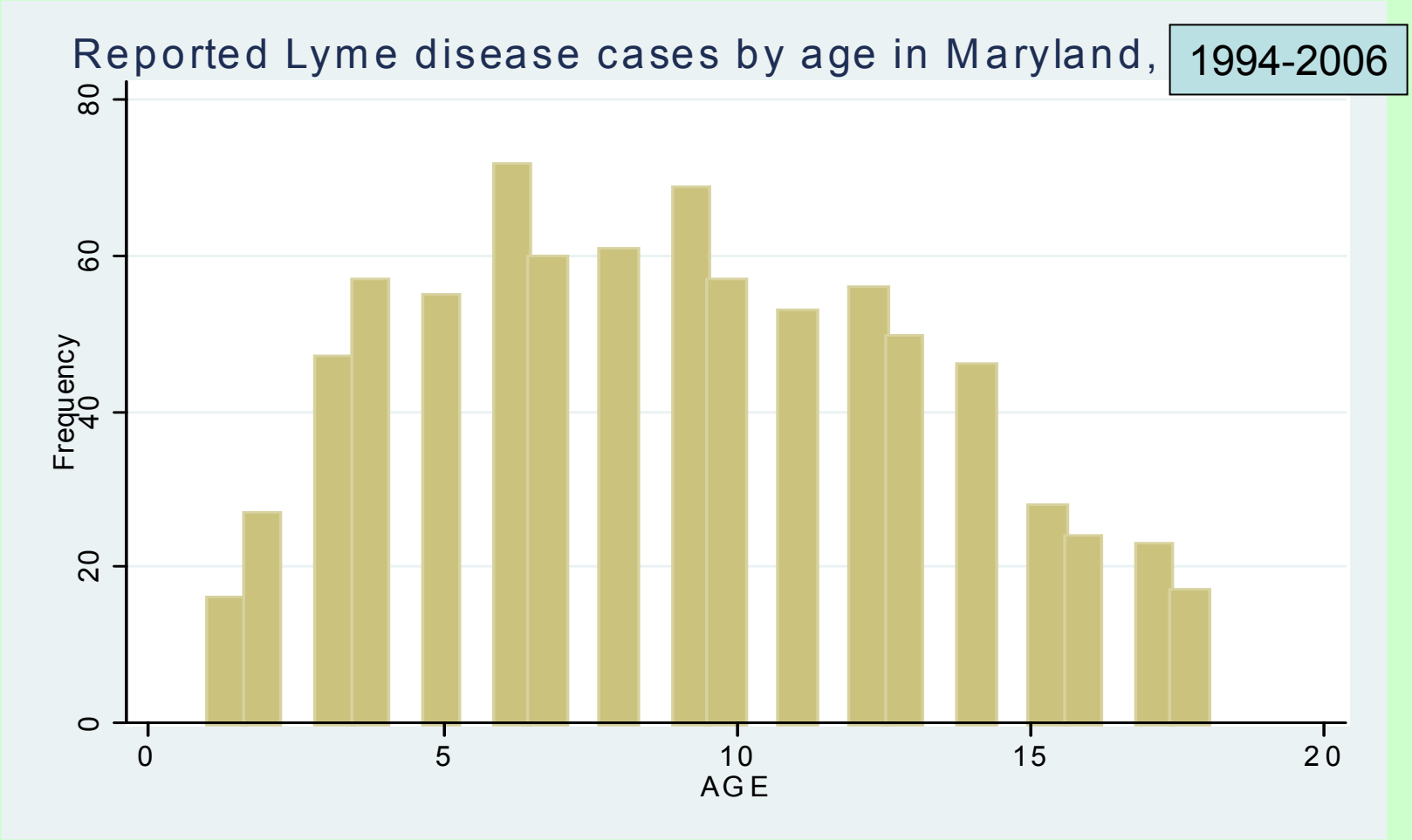
March 2007

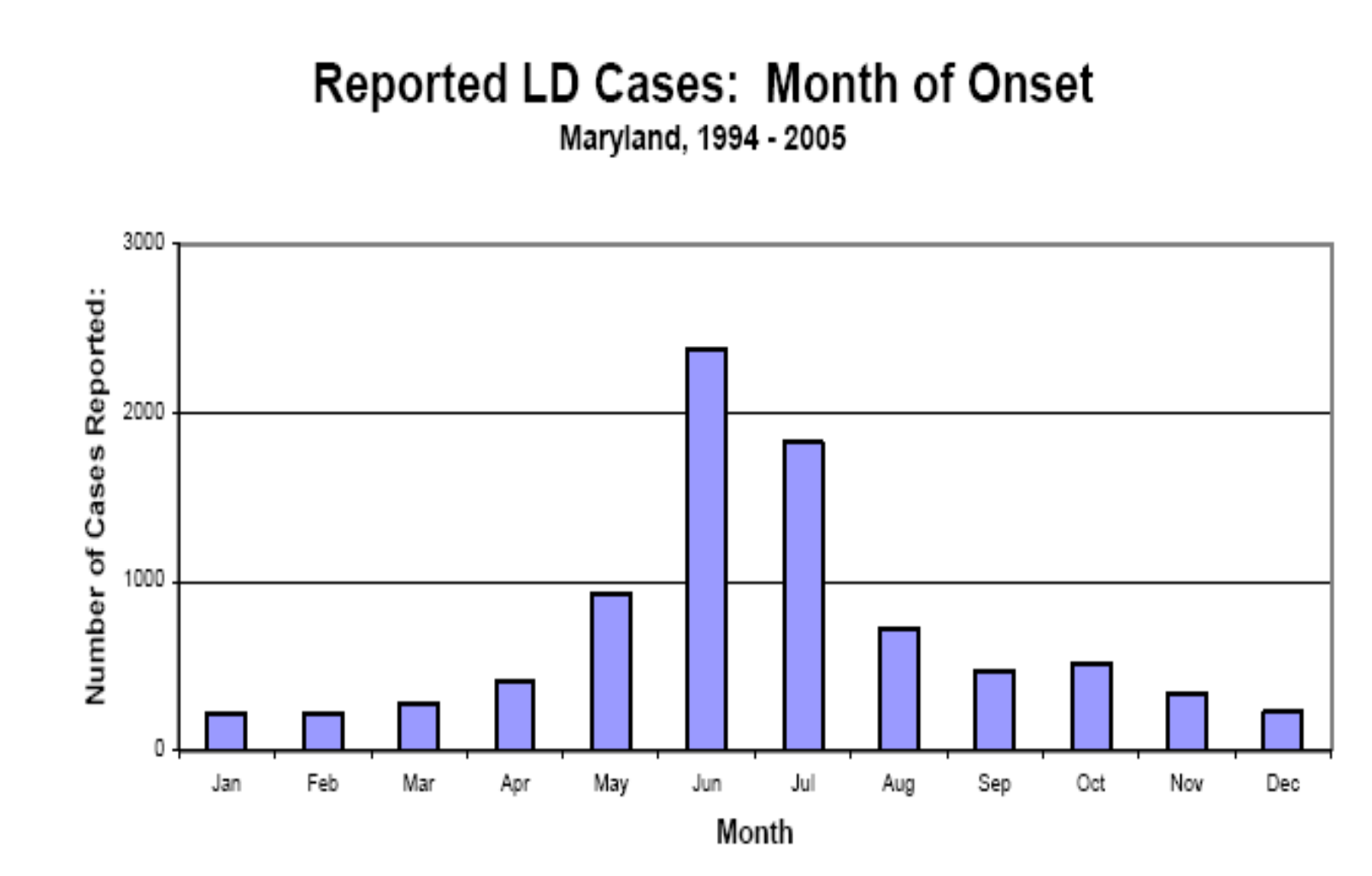


Lyme Disease in Maryland: An Update for Physicians

Jeffrey C. Roche, MD, MPH, Chief, Center for Clinical Epidemiology
Diane L. Matuszak, MD, MPH, Director, Community Health Administration
Maryland Department of Health and Mental Hygiene (DHMH)

Age distribution of summer LD: 2-18 y/o in MD





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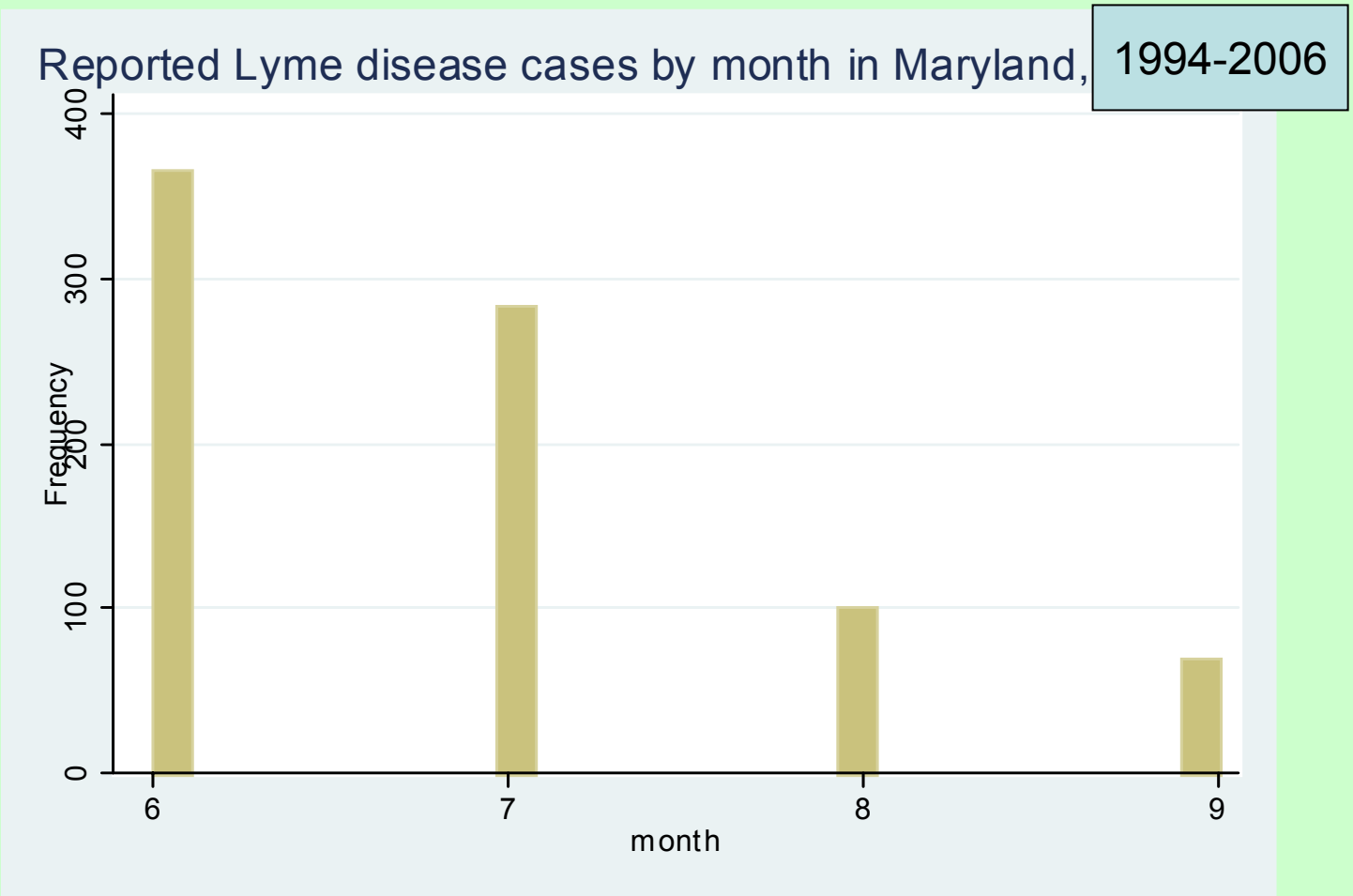
Measuring the summer magnitude: 2-18 year olds in MD



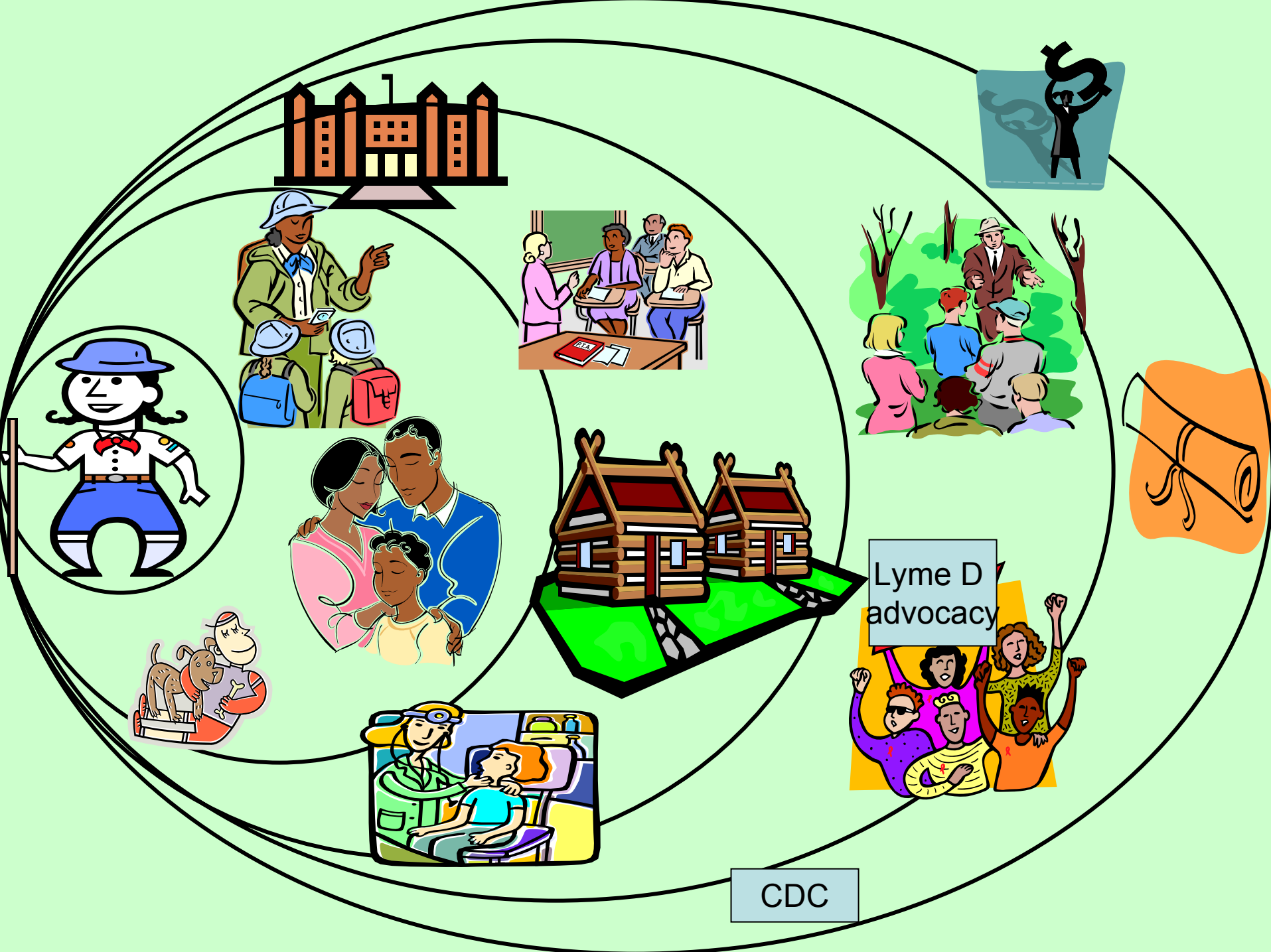
Limitations of data

- No specific camp data

  Although Health Logs exist – tick bites and LD symptoms and confirmed cases are neither recorded nor reported
- 1/60 camps reported 3 tick bites recorded in health log (per telephone surveys)
- MDHMH confirmed cases identified by residential zip code – not where tick bite occurred

Limitations of LD surveillance

- Underreporting?
- Many challenges to LD surveillance
- Case definition
- Clinical case unreported
- Patients not seeking care
- Physicians not diagnosing


Lyme D advocacy
CDC

“Tick Exposure and Lyme Disease At a Summer Camp in Maryland”,

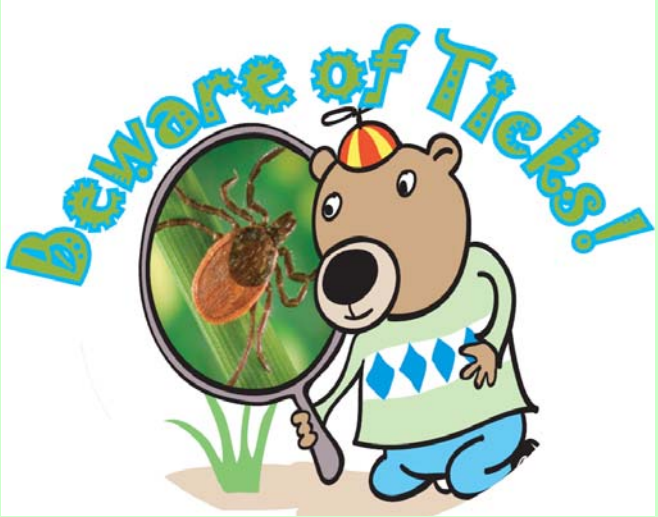
West Virginia Medical Journal, 2005.

Sarwari, Strickland, Pena, Burkot

- Detailed questionnaire to 1623 campers
- 537 campers returned survey
- 200 had found ticks on skin or clothing
- High risk: ropes course, night trip, camp-out
- 6 cases of LD = 3.3/1000 campers/10-14 day
- 238 ticks collected, 19% *Ixodes scapularis* of which 11% were infected with *B burgdorferi*

Prevention

- Prevent tick bites
- Tick Check – early detection and removal of ticks
- Early symptoms recognition and seeking early medical care



Tommy's Tick Tips

Know the risks. Avoid the ticks.

Do this stuff

Stay on paths and trails when hiking in the woods.

Wear long sleeved light colored clothing.

Always check for ticks after being outdoors.

Have adults remove attached ticks with tweezers. Note date on a calendar.

Wear long pants tucked into your socks.

Don't do this stuff

Don't spray repellent's on:
*your face
*hands
*sunburned skin
*rashes

Don't spray repellents indoors.

Don't ignore a bulls eye rash. Tell your parents.

Don't play in damp piles of leaves.

Don't go in tall grass or woods barefoot or in shorts or short sleeved shirts.

Anne Arundel County Department of Health
Communicable Diseases

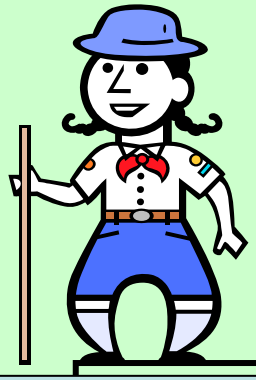
Tick ID Line (MDA)
410-841-5920

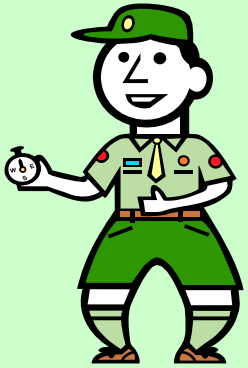
Avoid High Risk Areas Like Leaf Piles! Balancing Enjoying Childhood Outdoors and Preventing Lyme Disease . . .

Tiny ticks!

- Tick checks
- ??Role for washing tick off before it attaches??

Intrapersonal



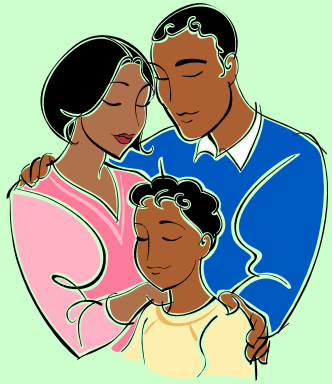


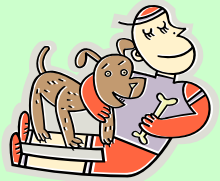
Camper/Kid

Counselors

Other kids

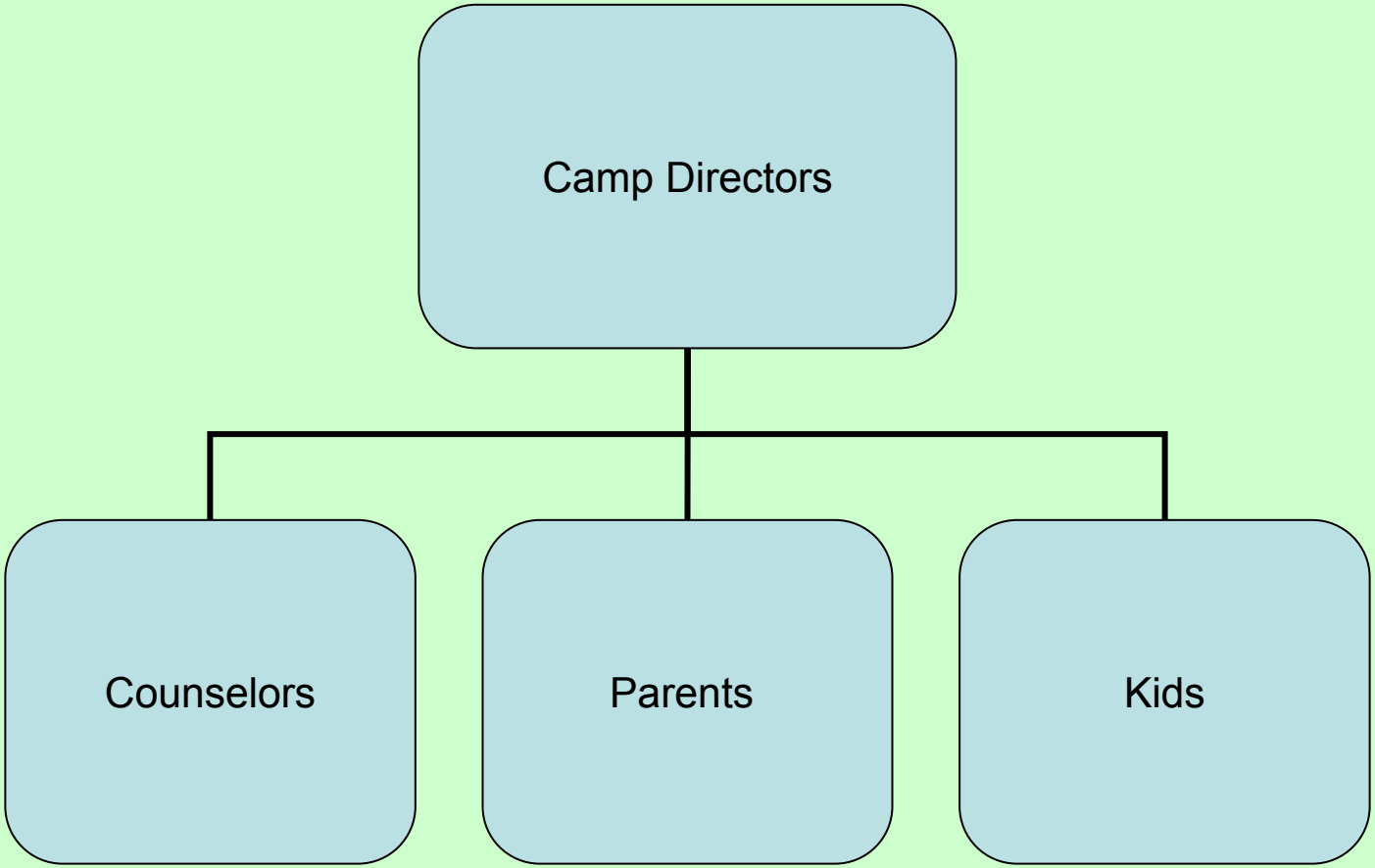
Parents/ family





Don’t forget about pets . . .yes, some camps have pets!

Information Dissemination



Assessing Camp Directors KAB

Mixed methods qualitative and quantitative research

Telephone surveys, in person interviews at camp expo's and camp director training

60 Camp directors

Counselors, Parents and Kids also interviewed

**Good reminder to start at community level!

KAB survey results

- Wide variation in levels of knowledge and practices at camps
- Most knew of LD as a serious disease
- Beyond this, many had minimal LD knowledge
- Few (in high case report zip codes) camps educated counselors, provided parent information weekly, scheduled tick checks after high risk activities, buddy tick checks
- DEET used for mosquito/gnat repellant
- Difficult to get kids to shower at camp

KAB survey results

- VERY willing to learn and participate in LD education and prevention at their camps
- Thought education and LD prevention could make a difference
- VERY willing to pass on education to counselors, kids and parents
- Would use resources on camp website
- Consider recording tick bites and LD, using tick bite notification

Factors that determine if Camp Directors address LD

- LD Knowledge
- Risk perception
- Local LD culture/high community awareness
- Personal experience with LD
- Camp culture of LD
- Structurally incorporated in “curriculum”; Boy and Girl Scouts
- Local Health Department active in LD education/outreach/surveillance

Determinants of Tick-Avoidance Behavior

Beliefs and perceptions that:

- At risk for LD
- LD is a <u>serious disease</u>
- <u>benefits</u> of behaviors outweighed the inconveniences
- LD prevention behaviors were effective
- Could find a tick with a tick check
- Could properly remove a tick if found

Determinants for seeking LD care

- Basic LD knowledge
- Could recognize LD symptoms
- Belief that LD serious disease
- Awareness of treatment
- Knowledge of benefits
  of early treatment

What can camps do. . .

- Counselor extensively trained in LD
- Campers educated
- Tick checks after high risk activities
- DEET
- Letter sent home to parents about possible tick exposure
- Educational information given or mailed
- Environmental modifications to reduce ticks

“Tick Exposure and Lyme Disease At a Summer Camp in Maryland”,

West Virginia Medical Journal, 2005.

Sarwari, Strickland, Pena, Burkot

“The impact of this simple method of education should not be underestimated. Parents of at least 2 of the 6 campers with LD took their children to physicians only after comparing skin lesions on their child to the photographs on EM in the brochure.”

(Note 3/6 did not recall a tick bite!)

Education to Behavior Change

- Motivate Camp Directors to help teach counselors, kids, and parent about LD and promote preventive behaviors

↓

- Encourage kids to use LD preventive measures (avoid ticks, do tick checks, proper tick removal)
- Encourage kids and Parents recognize early symptoms and seek prompt care

THIS SUMMER THINK ABOUT

LYME DISEASE

- Summer camp months are peak months for Lyme disease!
- Kids doing outdoor activities are at risk for Lyme disease.
- Camp directors can play an important role in educating counselors, campers and parents about Lyme disease prevention!
- Prevent tick bites
- Check for ticks regularly and remove properly
- Recognize signs and symptoms of Lyme disease and seek medical care promptly
- Learn more and make a difference this summer!

-Mary Munoz

The Basics and Prevention of Lyme Disease in Maryland

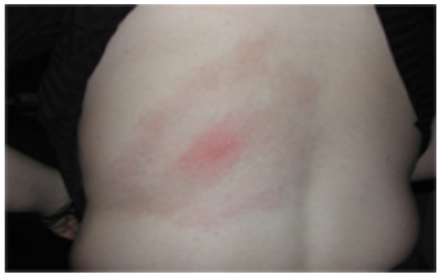
Office of Epidemiology and Disease Control Programs
DHMH

POWER POINT PRESENTATION FOR CAMP DIRECTORS TO USE IN TRAININGS

TICK BITE NOTIFICATION

Your child, _____,
was bitten by a tick on (date) _____.
(Location on body of tick bite:_____)

If your child develops symptoms of Lyme disease, please seek medical care promptly. If you have questions contact your local health department.



Early symptoms of Lyme disease (LD) appear 3 to 32 days after the bite of an infected tick which was attached for at least 24 hours. Some people with Lyme disease will get a rash. The rash starts as a small red round area, which usually gets bigger and can reach 2 or more inches across. The center of the rash may clear giving a "bull's eye" appearance.

Other symptoms which may occur during the early stage of Lyme disease include:

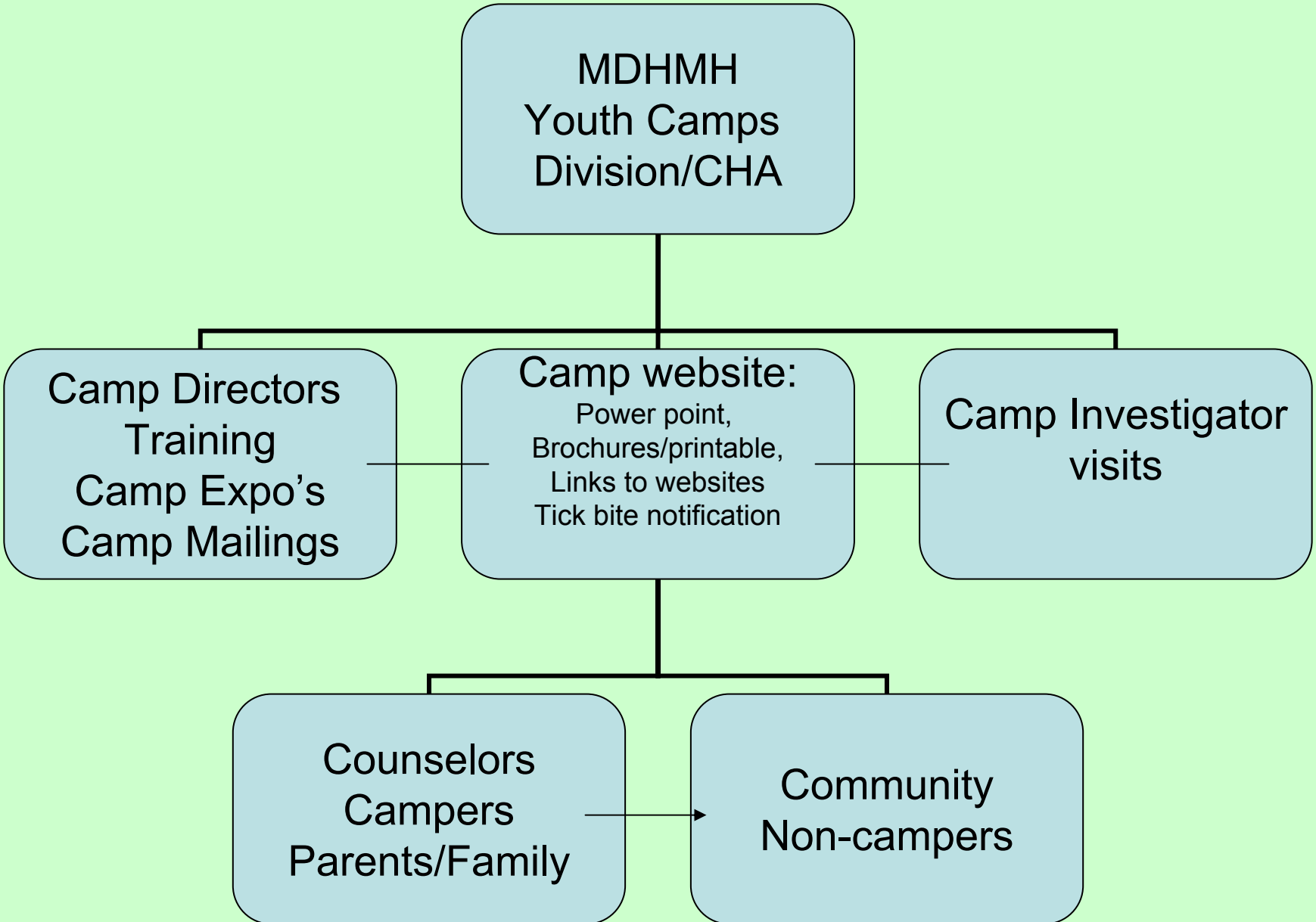
- Chills
- Fever
- Headache
- Tiredness
- Stiff neck
- Joint pain
- Swollen lymph nodes
- Rash that spreads to other parts of the body

Early LD is usually curable using antibiotics that your health care provider can prescribe. Without treatment, the disease may progress to arthritis, meningitis, facial nerve paralysis, or hearing abnormalities. The later symptoms may occur in people who did not recognize early symptoms. Swelling and joint pain may recur over many years. If your child has any of these symptoms, or you think your child may have Lyme disease, promptly check with your medical care provider and seek medical care. EARLY TREATMENT IS IMPORTANT!!!

Education materials

- Power Point presentation
- LD fact sheet – printable
- Tick Bite notification form
- Parent education about symptoms for all campers
- Posters for camps
- Helpful web links
- Links to LD educational materials
- CDC brochures

Disseminating LD information



Evaluation and Follow-up

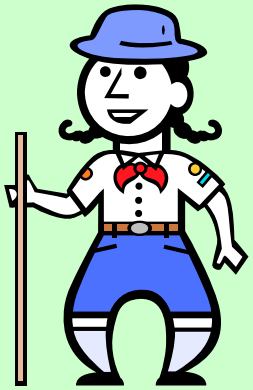
- Camp investigators can assess LD practices
- Survey (via mail or Email) at end of summer
- Random telephone calls at the end of the summer to assess LD education and prevention.
- Next spring: before and after surveys at camp directors' training
- Next summer: targeted before and after surveys

- Challenge: Lack of staff and resources

Limitations and Challenges

- Lack of LD funding additional staff
- High turnover of camp staff
- Many demands on camp staff
- No baseline camp LD data for MD
- Surveillance limitations
- Sustainability??
- How well do LD preventive measures work?
- LD diagnosis and treatment in Maryland
- Lack of scientific/medical LD knowledge

Acknowledgements

- Mary Munoz, preceptor
- Pamela Engel and the great staff at CHA
- Dipti Shah and Dr. Ibrahim
- Bi Wee and Kim Mitchell
- Dr. Blythe and Dr. Krick
- All the other MDHMH staff who helped!

Questions? Comments?