

FIGHT THE BITE

U.S. TICK-BORNE + LYME DISEASE INITIATIVE

YEAR ONE: REPORT

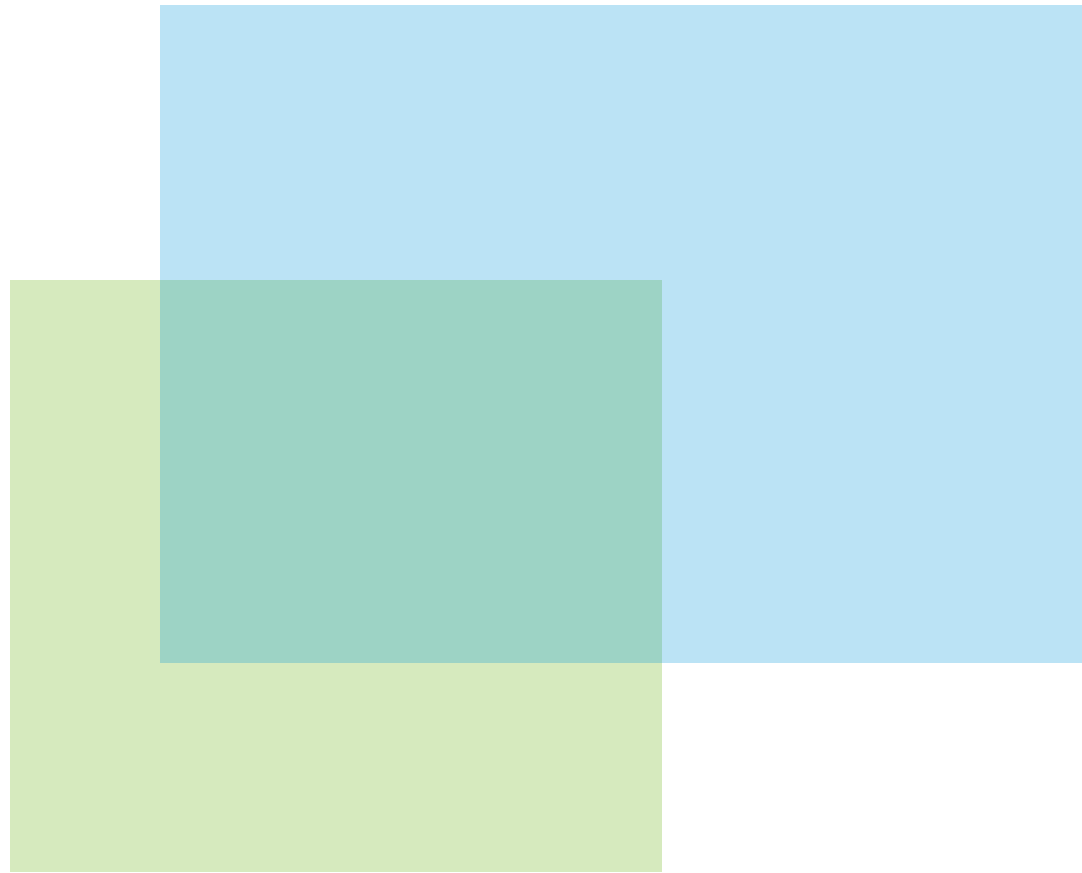


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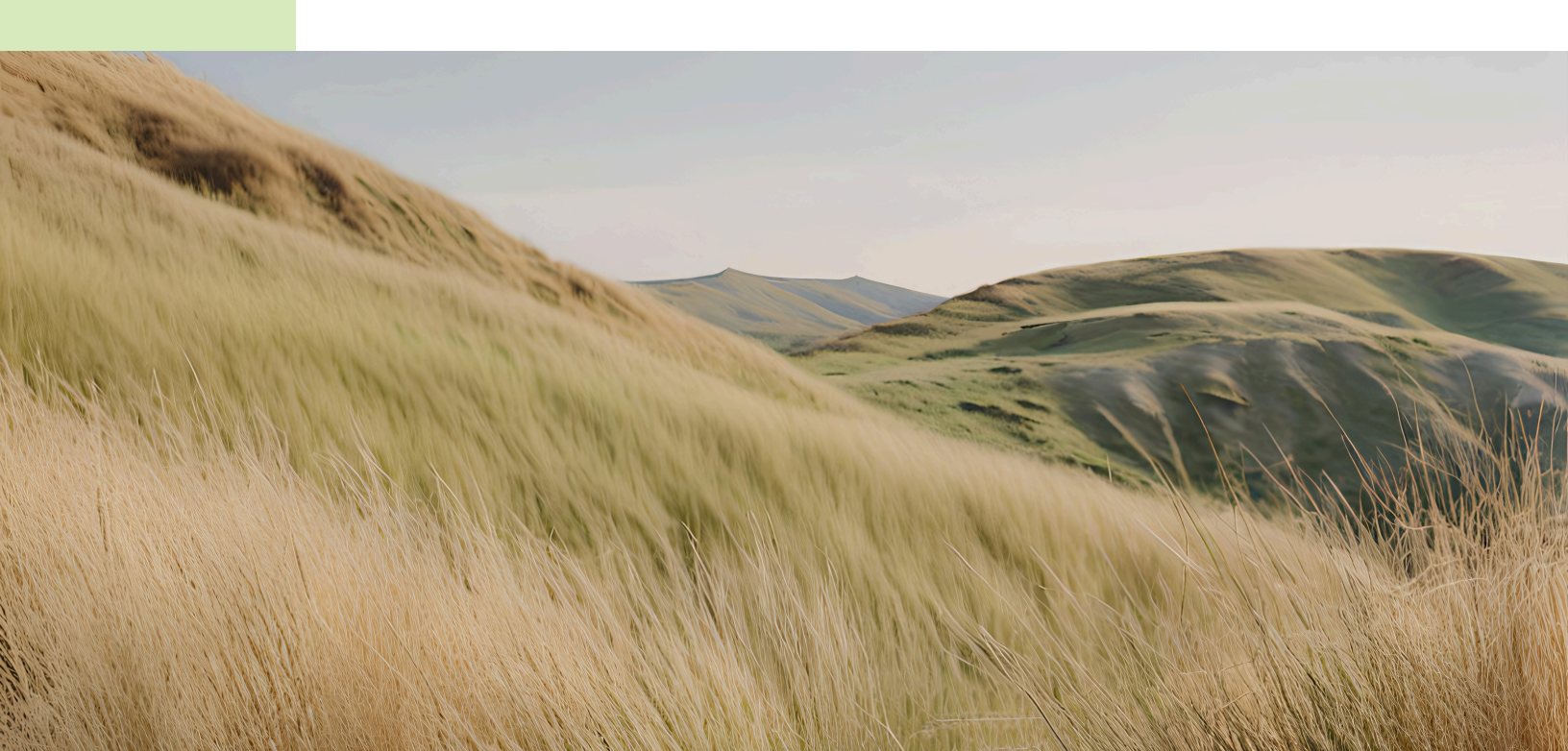


"WE ARE MOVED BY SC JOHNSON'S COMMITMENT TO SUPPORT OUR MISSION TO CREATE HEALTHIER CAMP COMMUNITIES. WITH ENVIRONMENTAL CHANGES IMPACTING THE NUMBER OF TICK-BITES REPORTED BY CAMPS LAST SUMMER, SC JOHNSON IS HELPING TO IMPROVE THE SAFETY OF CHILDREN AND THEIR FAMILIES ACROSS THE COUNTRY."

TRACEY GASLIN, ACH CEO

"ENSURING A SAFE AND POSITIVE CAMP EXPERIENCE STARTS WITH PROPERLY EDUCATING STAFF ABOUT TICKS AND THE POTENTIAL HEALTH RISKS THEY POSE. WE'RE THRILLED TO COLLABORATE WITH SC JOHNSON, ACH, AND SELECTED SUMMER CAMPS ON THE YEAR 1 FIGHT THE BITE PILOT, AIMED AT GIVING STAFF THE ESSENTIAL KNOWLEDGE TO SAFEGUARD CAMPERS FROM TICK-BORNE ILLNESSES."

DR. BARRY GARST, CLEMSON UNIVERSITY PROFESSOR



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ACKNOWLEDGEMENTS

The Alliance for Camp Health expresses sincerest gratitude to the youth, staff, and administrators at these participating camps for their innovative spirit, support, and active participation to enhance youth care within the camp community through the implementation of the Fight the Bite pilot project. Specifically, we recognize:

Friends of WI: Camp TapaWingo Corporation, North Star Camp for Boys, Clearwater Camp, Camp Ojibwa, Camp Manito-wish YMCA, Wisconsin Lions Camp, Camp Menominee, WeHaKee Camp for Girls, Camp Lakotah, YMCA of Metro Chicago (Camo Duncan, Camp MacLean, Camp Nawakwa), Camp Interlaken JCC

WHAT IS FIGHT THE BITE?

“Fight the Bite” is a multi-year initiative aimed to bring an evidence-based tick education program to summer camps, health care providers, as well as parents and caregivers. Tick education is important for summer camps because ticks can carry diseases like Lyme disease, and camps often take place in outdoor settings where ticks are quite common. Teaching camp staff how to prevent tick bites, to properly remove ticks, and to recognize symptoms helps keep campers safe. It also ensures staff are prepared to act quickly if someone gets bitten by a tick, thereby reducing the chance of illness.

ACH’s CEO Tracey Gaslin stated, “We are moved by SC Johnson’s commitment to support our mission to create healthier camp communities. With environmental changes impacting the number of tick-bites reported by camps last summer, SC Johnson is helping to improve the safety of children and their families across the country.”

As a global, purpose-led company, SC Johnson is committed to making the world a healthier place today and for future generations. That means relentlessly bringing their expertise in science, innovation and partnerships to bear on some of the world’s most pressing environmental and health issues like reducing plastic waste, eradicating malaria and assisting in the mitigation of Lyme Disease and vector-borne illnesses.

SC Johnson has a place in our homes, schools, businesses and now at camps across the United States. ACH knows our collaboration with SC Johnson will significantly reduce the public health burden of tick-borne diseases in children, on a scale never seen before.

EXECUTIVE SUMMARY

The “Fight the Bite” U.S. Tick-Borne + Lyme Disease Initiative consists of a multi-pronged approach. The elements highlighted in this Year One Report showcase the multifaceted opportunities to extend the reach of Lyme Disease and tick prevention through research, education regarding ticks, and prevention activities in camp settings. The programmatic approach developed by ACH is intended to offer wraparound services and care as the program scales and expands across the US over a three-year period.

In Year One of Fight the bite, ACH collaborated with 13 camps in Wisconsin to educate staff in the provision of care benefiting over 8,000 children. The research conducted and education materials created in the first year of this initiative were developed in cooperation with the Centers for Disease Control and Prevention, faculty from Clemson University, and medical providers who have an interest and specialization in vector-borne conditions.

We focused on both implementation and outcomes in Year One to assess the effectiveness of the program. On the implementation side, we aimed to determine the level of participation among camps in the data collection initiative. This involved assessing whether camps engaged with the program and contributed data on tick encounters and the impact of the pre-camp online course on staff knowledge regarding ticks, tick-borne illnesses, and post-exposure practices. Additionally, we evaluated the quality of tick-related data collected from these camps to ensure accurate and meaningful insights.

EXECUTIVE SUMMARY

To better understand outcomes, we examined how completing the pre-camp online course influenced camp staff's knowledge of ticks, tick encounters, tick-borne illnesses, and their confidence in post-exposure practices. We also tracked the frequency of both unattached tick encounters and attached tick bites in the participating camps, providing valuable data on the effectiveness of the program in reducing tick-related risks and enhancing staff preparedness.

The Year One findings of the “Fight the Bite” initiative and tick related program education demonstrated significant improvements in camp staff knowledge and confidence related to ticks and tick-borne diseases. Completion of ACH’s online course led to substantial gains in understanding how to safely remove ticks, with a large, statistically significant effect. Staff awareness of tick-borne diseases, such as Lyme disease, reached 100%, and their ability to identify symptoms and handle tick exposure also improved dramatically. Additionally, the course increased staff concern about the risks posed by ticks, further underscoring the program’s impact. Confidence levels were exceptionally high, with staff rating themselves above 6.5 out of 7 in their knowledge and ability to perform tick-related tasks. These results highlight the practical effectiveness of the training in preparing staff to protect camp participants from tick-borne illnesses.

EXECUTIVE SUMMARY

Our Year One study demonstrated that a pre-camp tick education course targeting front line camp staff can be effective in increasing staff knowledge and confidence related to tick awareness, prevention, and post-exposure practices. Across all areas measured, there was a notable improvement in staff understanding from pre-training to post-training. **Based on the study findings, we can conclude the following about staff participation in the training:**

- A **significant increase** in staff knowledge about how to effectively remove a tick.
- Statistically significant improvements were found in recognizing early signs of Lyme disease (erythema migrans skin lesion), detecting it on different skin tones, and removing embedded ticks.
- There was a **higher likelihood** of staff of using proper post-exposure practices, such as applying soap to the tick site after removal.
- Staff confidence levels were high across the board, with post-test scores showing **strong belief** in their ability to apply their knowledge and perform tick-related tasks.
- Staff awareness of tick-borne diseases, particularly Lyme disease, **increased to 100% after the course**, and staff reported greater understanding about tick-borne illnesses.

PROJECT OVERVIEW

The Alliance for Camp Health believes that our collaboration with SC Johnson can significantly reduce the public health burden of tick-borne diseases in children, on a scale never seen before. An important component to the “Fight the Bite” U.S. Tick-Borne + Lyme Disease Initiative is to provide education and support as a means of creating comprehensive care. ACH will lead scaling efforts regarding tick-borne education piloted within the state of Wisconsin in 2024 to expand to US camps, their staff, as well as parents and caregivers in the reinforcing disease prevention and wellness.

HELPING FIGHT THE BITE!

An SC Johnson initiative to combat Lyme disease and other tick-borne diseases in the United States

Create Spaces to “Fight the Bite”

Credential spaces that host children (camps, schools, day cares, pediatrician offices, and at home) as “Fight the Bite” spaces

Educate to Prevent

Educate and empower to prevent tick bites where they are most likely to occur

Train for Diagnosis & Treatment

Equip HCPs to diagnose and treat Lyme disease to prevent suffering and save lives

PARTNERSHIPS, ADVOCACY, COMMUNICATION AND AWARENESS-BUILDING

METHODOLOGY

STUDY DESIGN

Year One of the Fight the Bite program was approved by Clemson University's Institutional Review Board and all participants provided informed consent. The main directive for Year One was to develop a pre-camp tick-education course. Utilizing Anderson and McFarland's (2018) community-as-a-partner model as a guide, the course content emphasized the assessment of risks such as tick exposure and also promoted tick-borne illness prevention.

ONLINE TICK EDUCATION COURSE

The pre-camp tick-education course was designed in close collaboration with the Centers for Disease Control and Prevention and utilized best practices in online learning to ensure effectiveness. To measure changes in camp staff knowledge, confidence, and awareness, a rigorous pre- post- evaluation design was administered using Qualtrics. Matched pre- and post- evaluation responses related to the training allowed us to identify changes at the individual (camp staff member) level.

DATA COLLECTION AND MEASURES

Prior to and following the delivery of the pre-camp tick-education course, participants were directed to complete the pre- and post- evaluation. Items included on the pre- and post- evaluation addressed tick knowledge, tick exposure, post-exposure practices, tick prevention, and perceived competence. Included items that came directly from the Centers for Disease Control and Prevention or from previously published studies; Beaujean et al. (2013), Bayles et al. (2013), Gould et al. (2008), Mitchell et al. (2020), and Williams et al., (1998).

FINDINGS

YEAR ONE

HIGHLIGHTS

8,130 CAMPERS

were engaged in Fight the Bite in Year One

1,127 CAMP STAFF

were engaged in Fight the Bite in Year One

630 CAMP STAFF

received Fight the Bite Training

31,146 EXPOSURE DAYS

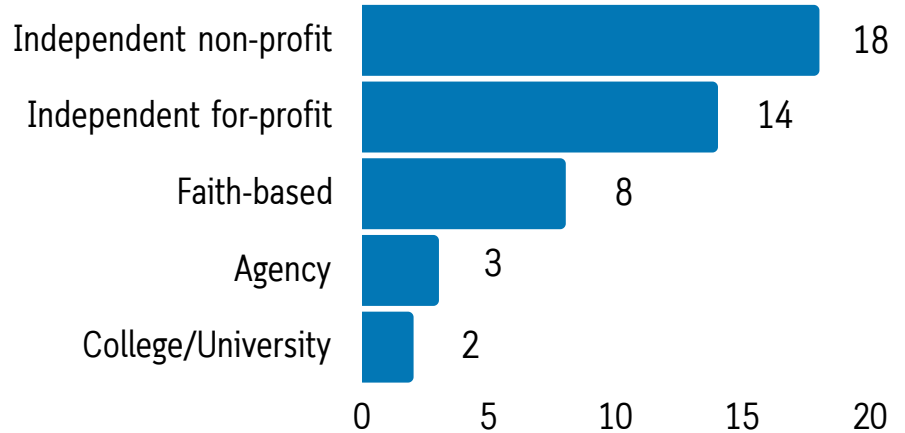
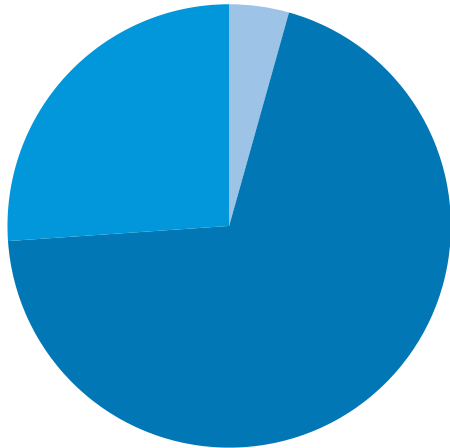
for campers and staff during the project

35 TICK BITES

per camp were reported (on average) for each week in Year One of Fight the Bite

CAMP CHARACTERISTICS

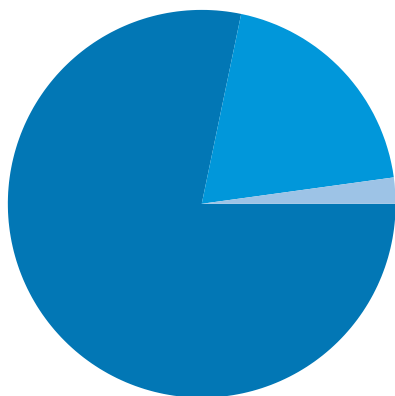
- Overnight or Residential - 69.6%
- Both - 21.6%
- Day Camp - 4.3%



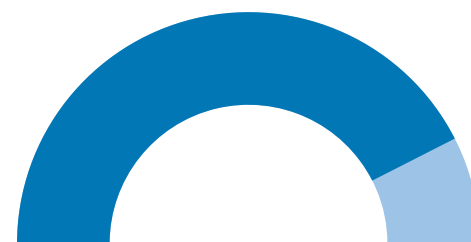
Average years of experience: 2.19 years; 41.3% in their first year

STAFF WHO RESPONDED

- Female - 78.3%
- Male - 19.6%
- Self Identify - 2.2%



AVERAGE AGE (N=46)
35 YEARS



- White - 84.8%
- Asian, Black, Hispanic - 15.2%

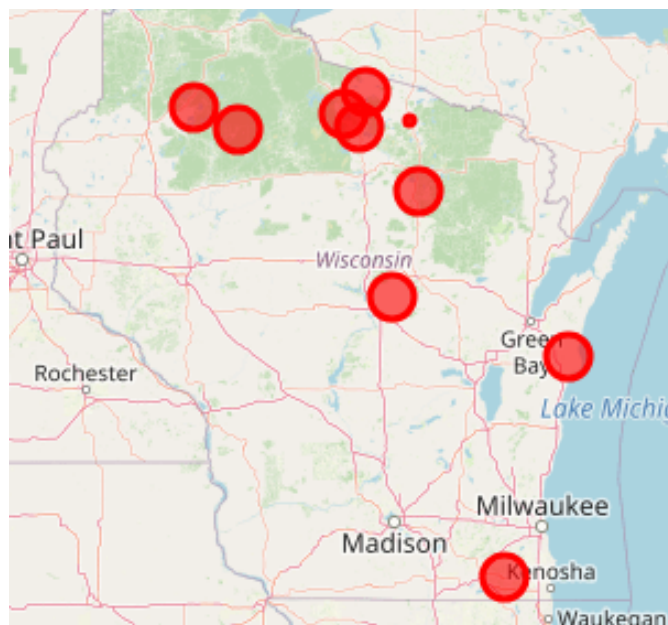
CAMPS' EXPERIENCE WITH TICKS IN THE SUMMER OF 2024

Tick Encounters and Tick Bites

Year One pilot camps reported their total tick encounters and their total tick bites for each camp session.

A **tick encounter** refers to any instance where a person comes into contact with a tick, whether the tick is found crawling on clothing, skin, or in the environment, but has not yet attached or bitten. Tick encounters across the participating camps ranged from 4 to 145, with an average of 8 encounters per week. The map below visualizes the Year 1 camps and tick encounters.

A **tick bite**, on the other hand, occurs when the tick attaches to a person's skin and begins to feed on their blood. Tick bites ranged from 34 to 51, with an average of 35 tick bites per week.



CAMP STAFF KNOWLEDGE ABOUT TICKS

A statistical difference tells us whether the change in learning before and after the tick education course is likely due to the course itself and not by chance. The effect size shows us how big or meaningful that change is— whether the tick education course had a small, medium, or large impact on what camp staff learned.

Key Finding: Camp staff completion of the pre-camp tick education online course was associated with considerable increases in staff knowledge and confidence in targeted areas about ticks, tick-borne illness, and tick exposure.

Based on a comparison of pre and post training scores, camp staff "tick knowledge" increased from pretest to posttest in measured areas.

Across the board, camp staff showed an increase in their understanding of ticks, especially how to safely remove them, because of completion of the online course. In fact, the improvement in this area was especially strong, with big gains in knowing the right way to get rid of a tick (a statistically significant increase ($p < .001$) with a large effect size, $d = 1.09$).

STAFF PERSPECTIVES OF TICK-BORNE DISEASES

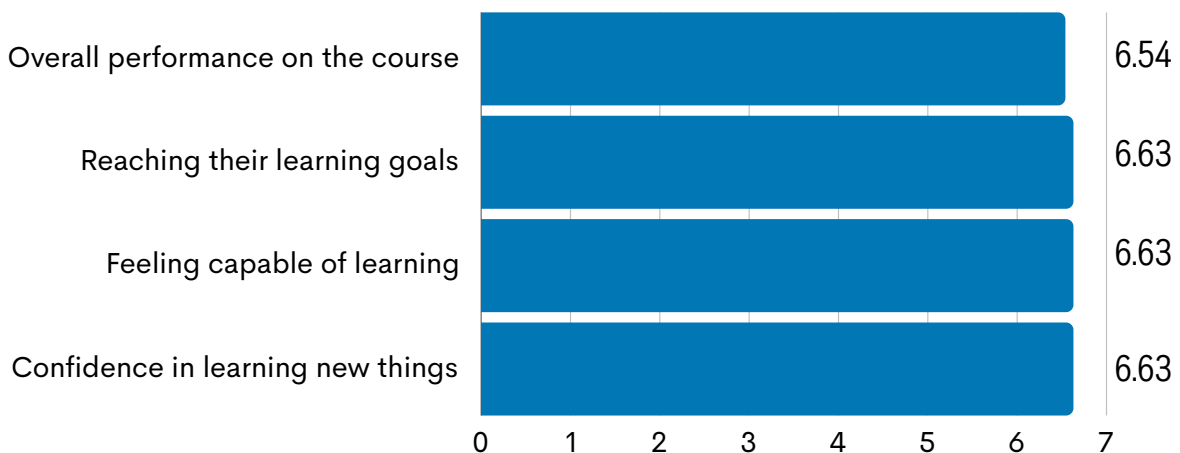
Knowledge and Concerns

100% of staff were aware of Lyme disease after the training. In addition, staff were more understanding about tick-borne illnesses, with a higher percentage of staff indicating they better understood the risks.

Incidentally, after completing the course 11% fewer staff knew the correct amount of time an infected tick must be attached to transmit Lyme disease.

STAFF CONFIDENCE IN LEARNING ABOUT TICKS

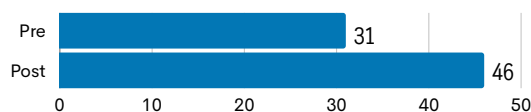
After the course, camp staff were very confident in their abilities. On a scale of 1-7, they rated themselves highly on how well they learned, how capable they felt, and how confident they were in reaching their goals and performing well in tick-related tasks. Scores were consistently above 6.5 out of 7!



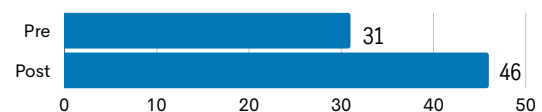
STAFF UNDERSTANDING OF TICK POST-EXPOSURE PRACTICES

WHAT DID STAFF DO AFTER TICK EXPOSURE?

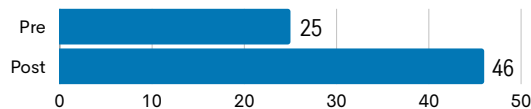
Camp staff showed small to medium improvements in their knowledge to *use tweezers to remove the tick* and *apply soap to the bite site after removal*. Additionally, camp staff now understand what post-exposure practices are not recommended following the completion of the course. Big jumps were seen among the following incorrect practices:



Using a heat source, such as a match, to remove the tick



Applying fingernail polish remover on the tick



Rubbing petroleum jelly on the tick

OVERALL, WHAT DID STAFF UNDERSTAND ABOUT TICK EXPOSURE?

All camp staff (100%) came away with a higher level of comfort in removing ticks and identifying symptoms of tick-borne illness. For example, they could quickly name common symptoms of tick-borne illnesses and knew how to handle a tick that's already embedded in the skin.

Camp staff also came away from the course knowing about infectious diseases, such as Lyme disease, and had a higher level of comfort in recognizing early signs of Lyme disease, including the distinctive rash. Results also indicated improvement in camp staff ability to detect signs of Lyme on different skin tones.

CAMP TICK PREVENTION ADVICE

TO KEEP TICKS AWAY, DO THIS DAILY:



WEAR REPELLENT ON YOUR EXPOSED SKIN OR WEAR CLOTHES THAT HAVE **TICK** REPELLENT BUILT-IN AND WEAR PERMETHRIN-TREATED CLOTHES OR BOOTS.
***ALWAYS FOLLOW PRODUCT INSTRUCTIONS**

TAKE A SHOWER! IT WILL HELP WASH OFF THE **TICKS** YOU CAN'T SEE.



CHECK FOR **TICKS** AT THE END OF EACH DAY.

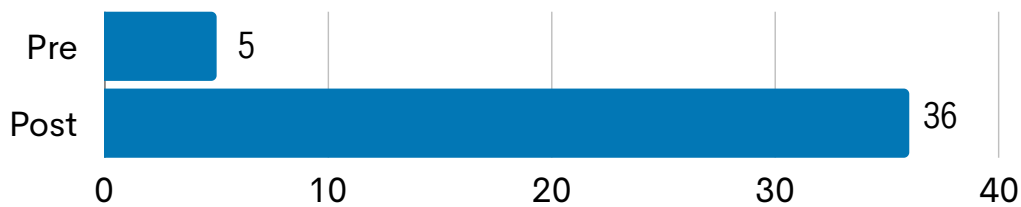
CHANGE CLOTHES. PUT CLOTHES IN THE DRYER ON HIGH HEAT (15+ MIN) TO KILL **TICKS** AFTER COMING INDOORS.



AVOID SHORT CUTS THROUGH THICK BRUSH AND GRASS- **TICKS** COULD BE LURKING.



In line with recommended tick check protocols, more camp staff reported checking **themselves for ticks right after being outside** following the completion of the course (jumped from 10.9% to 78.3%).



STAFF INTEREST IN FUTURE TICK TRAINING

At the end of the pre- and post- evaluation, camp staff were given the opportunity to share any questions they had related to ticks, tick-related illnesses, or tick prevention. Of the provided responses, staff expressed wanting to learn more about: 1) **tick detection and identification**; 2) **tick prevention and removal**; and 3) **associated health risks and diseases**.

IMPLICATIONS AND RECOMMENDATIONS

Based on the Year One findings, we recommend the following steps to maximize the impact of the Fight the Bite program as the project advances into Year Two:

1. **Expand Tick Removal Training:** Given the large effect size in staff knowledge about tick removal, continued emphasis on this area is crucial. Additional hands-on training or demonstration videos could further boost confidence. Adding camps and training more staff will lead to greater program impact.
2. **Enhance Post-Exposure Practices:** Although there was improvement in post-exposure practices, further focus on this topic is recommended, especially regarding effective site care after tick removal.
3. **Target Lyme Disease Awareness:** Increase emphasis in Year Two on educating staff about the correct amount of time an infected tick must be attached to transmit Lyme disease, as post-course assessments in Year One showed a 11% decrease in knowledge on this key point.
4. **Broaden Content on Tick Identification and Risks:** Staff expressed a clear interest in learning more about tick identification and the broader health risks associated with tick exposure. Supplementary materials or workshops could be developed to meet this need.
5. **Raise Awareness Among Parents and Caregivers:** Camps should continue sharing prevention tips, such as walking on camp paths, prompt showering, maintaining brush-free play areas, and using EPA-registered insect repellents on clothes or skin. These practices should also be communicated more widely to parents and guardians to ensure year-round prevention.
6. **Continue to Monitor and Adapt Curriculum Based on Staff Feedback:** Regularly assessing and updating the course content based on participant feedback and emerging trends in tick-borne diseases will ensure that the training remains contemporary, relevant, and effective.
7. **Measure Knowledge and Skill Change Durability:** Assess changes in camp staff knowledge and skills at the end of the summer to determine how well staff retain what they learned in training.



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