Tick removal and prevention



The classic bullseye rash of Lyme

Kids are running about and so are the ticks. We're talking about tick removal and prevention of tick bites in the Children's Hospital of Philadelphia Tip of the Week!

Julie Kardos, MD and Naline Lai, MD
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Holy Cannoli, Two Peds in a Pod® turns ten!



This little ten-month-old wishes Two Peds in a Pod® a happy ten-YEAR-old birthday!

Let’s take a stroll back ten years to 2009. Ten years ago

Facebook was just five years old. Back then there was no Instagram (2010), no Pinterest (2010), no Snapchat (2011). People were mesmerized by virtual vegetable picking (FarmVille) and taking care of Zhu Zhu pets. Bulky video gaming consoles ruled. The "New" Super Mario Bros. Wii really was "new." Apple's "pile of poo" emoji had just arrived the year before. And ten years ago, Two Peds in a Pod® was born. The idea that doctors would write advice on the internet was so novel that even NPR thought the concept worthy of a story. Today we take a Happy Birthday look back at our first five posts:

Then and now

Our blog's first five posts, from the summer of 2009, include the very same topics parents ask us about now in the summer of 2019.

Back then parents wondered about infant sleep, or lack thereof. Please note that we began our infant sleep podcast with the reminder that newborns are not meant to sleep through the night. Fisher Price should have listened to our podcast, because now in 2019 we are writing about rock' n play recalls.

Two posts tackled **Potty training** and **picky eating**. Spoiler to both posts: you can lead a horse to water but you can't make him drink!These days, we're still talking about both topics in the office. But now, people also ask about the need for probiotics to regulate bowels and digestive health in their child. Unfortunately, in 2019 probiotics have not panned out to be the hoped-for panacea for all gastrointestinal ailments. But they are helpful in some types of diarrhea.

In 2019 we talked about the tick borne illness **Lyme disease** and we're still talking about ticks now. As for the **mystery object** Dr. Lai found in a drawer, ten years later the models are kinder and sport a raised lip instead of a contraption

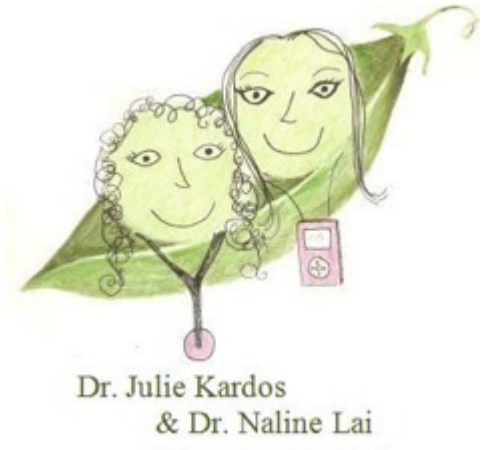
that can break off.

Blog writing a decade later

Internet traffic has grown exponentially. Possibly because of so many sources of misinformation, we see more and anxious parents who receive conflicting information about how to raise their kids. We depend on you to let your friends know about this site. We would rather spend more time on writing than on search engine optimization. Despite the congested writing climate, our mission (read our maiden voyage) remains the same, to bring you practical pediatric advice. What fuels us? Our intense and comprehensive pediatric training from Children's Hospital of Philadelphia, our combined **over forty years** of practicing pediatrics, and our passion for helping children and their families, give us the experience and the motivation to continue to help all of you whether online or in our offices.

A last blast from the past

How many of you remember our initial logo penned by the combined efforts of Dr. Kardos's brother and her sister-in-law? That's an iPod dangling from Dr. Lai's neck-remember those?



It's good to be ten.

Julie Kardos, MD and Naline Lai, MD
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Lyme Disease…it's back



The classic bullseye rash of Lyme

Just like last year, experts are predicting more Lyme disease. While it used to be a pesky disease only in our midatlantic/Lyme Connecticut area of the world, Lyme continues to appear across the northeast and has been reported on the

west coast of the United States. According to the American Academy of Pediatric's Redbook, about fifty percent of reported Lyme disease is during June and July. We've already had children come to our office with tick bites concerns, so here's an update:

Lyme disease is spread to people by blacklegged ticks. Take heart- even in areas where a high percentage of blacklegged ticks carry the bacteria that causes Lyme disease, the risk of getting Lyme from any one infected tick is low. Most of the little critters **DON'T** carry Lyme disease… but there are an awful lot of ticks out there. Blacklegged ticks are tiny and easy to miss on ourselves and our kids. In the spring, the ticks are in a baby stage (nymph) and can be as small as a poppy seed or sesame seed. To spread disease, the tick has to be attached and feeding on human blood for more than 36 hours, and engorged.

In areas in the United States where Lyme disease is prevalent (New England and Mid-Atlantic states, upper Midwest states such as Minnesota and Wisconsin, and California), parents should be vigilant about searching their children's bodies daily for ticks and for the rash of early Lyme disease. Tick bites, and therefore the rash as well, especially like to show up on the head, in belt lines, groins, and armpits, but can occur anywhere. When my kids were young, I showered them daily in summer time not just to wash off pool water, sunscreen, and dirt, but also for the opportunity to check them for ticks and rashes. Now that they are older I call through the bathroom door periodically when they shower: "Remember to check for ticks!" Read our post on how to remove ticks from your kids.

"I thought that Lyme is spread by deer ticks and deer are all over my yard." Nope, it's not just Bambi that the ticks love. Actually, there are two main types of blacklegged ticks, *Ioxdes Scapularis* and *Ioxdes Pacificus*, which both carry Lyme and feed not only on deer, but on small animals such as mice. (Fun fact: *Ioxdes Scapularis* is known as a deer

tick or a bear tick.)

Most kids get the classic rash of Lyme disease at the site of a tick bite. The rash most commonly occurs by 1-2 weeks after the tick bite and is round, flat, and red or pink. It can have some central clearing. The rash typically does not itch or hurt. **The key is that the rash expands to more than 5 cm**, and can become quite large as seen in the above photo. This finding is helpful because if you think you are seeing a rash of Lyme disease on your child, you can safely wait a few days before bringing your child to the pediatrician because the rash will continue to grow. The Lyme disease rash does not come and then fade in the same day, and the small (a few millimeters) red bump that forms at the tick site within a day of removing a tick is not the Lyme disease rash. Knowing that a rash has been enlarging over a few days helps us diagnose the disease. Some kids have fever, headache, or muscle aches at the same time that the rash appears.

If your child has early localized Lyme disease (just the enlarging red round rash), the diagnosis is made by having a doctor examine your child. Your child does not need blood work because it takes several weeks for a person's body to make antibodies to the disease, and blood work checks for for antibodies against Lyme disease, not actual disease germs. In other words, the test can be negative (normal) when a child does in fact have early localized Lyme disease.

Other symptoms of early Lyme disease may accompany the rash or can occur even in the absence of the rash. This stage is called Early Disseminated disease. Within about one month from the time of the tick bite, some children with Lyme develop a rash that appears in multiple body sites all at once, not just at the site of the tick bite. Each circular lesion of rash looks like the rash described above, but usually is smaller. Additional symptoms include fever, body aches, headaches, and fatigue without other viral symptoms such as sore throat, runny nose, and cough. Some kids get one-

sided facial weakness. Blood testing at this point is more likely to be positive.

The treatment of early Lyme disease is straightforward. The child takes 2-3 weeks of an antibiotic that is known to treat Lyme disease effectively such as amoxicillin or doxycycline. Your pediatrician needs to see the rash and evaluate other symptoms to make the diagnosis. Treatment prevents later complications of the disease. Treated children fortunately do not get "chronic Lyme disease." Once treatment is started, the rash fades over several days and other symptoms, if present, resolve. Sometimes at the beginning of treatment the child experiences chills, aches, or fever for a day or two. This reaction is normal but you should contact your child's doctor if it persists for longer.

Later stages of Lyme disease may be treated with the same oral antibiotic as for early Lyme but for 4 weeks instead of 2-3 weeks. The most common symptom of late stage Lyme disease is arthritis (red, swollen, mildly painful joint) of a large joint such as a knee, hip, or shoulder. Some kids just develop joint swelling without pain and the arthritis can come and go.

For some manifestations, IV antibiotics are used. The longest course of treatment is 4 weeks for any stage. Again, children do not develop "chronic Lyme" disease. If symptoms persist despite adequate treatment, sometimes one more course of antibiotics is prescribed, but if symptoms continue, the diagnosis should be questioned. No advantage is shown by longer treatments. Some adults have lingering symptoms of fatigue and aches years after treatment for Lyme disease. While the cause of the symptoms is not understood, we do know that prolonged courses of antibiotics do not affect symptoms.

For kids eight years old or older, if a blacklegged tick has been attached for well over 36 hours and is clearly engorged, and if you live in an area of high rates of Lyme disease-carrying ticks, your pediatrician may in some instances choose

to prescribe a one time dose of the antibiotic doxycycline to prevent Lyme disease. The study that this strategy was based on and a few other criteria that are considered in this situation are described here. Your pediatrician can discuss the pros and cons of this treatment.

Bug checks and insect repellent. Protect kids with DEET containing insect repellents. The Centers for Disease Control recommends 10 to 30 percent DEET- higher percent stays on longer. Spray on clothing and exposed areas and do not apply to babies under two months of age. Grab your kids and preform daily bug checks- in particular look in crevices where ticks like to hide such as the groin, armpits, between the toes and check the hair. Ticks can be tough to spot. Dr. Lai once had a elementary school patient who had a blacklegged tick in the middle of his forehead. The mother noticed it at breakfast, tried to brush it off, thought it was a scab and sent the boy to school. Later that day the teacher called saying, "I think your son has a bug on his face."

Misinformation about this disease abounds, and self proclaimed "Lyme disease experts" play into people's fears. While pediatricians who practice in Lyme disease endemic areas are usually well versed in Lyme disease, if you feel that you need another opinion about your child's Lyme disease, the "expert" that you should consult would be a pediatric infectious disease specialist.

For a more detailed discussion of Lyme disease, look to the Center for Disease Control website: www.cdc.gov.

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Update on Lyme disease: Is it bug-check season in your area of the United States?



The classic bullseye rash of Lyme

Our infectious disease colleagues warn us that this year, winter in the Northeast United States was not cold enough for long enough to kill off as many ticks as usual. Thus, we folks in Pennsylvania are in for a more burdensome Lyme disease season. We've already had children come to our office this spring with concerns of tick bites, so here's an update on

Lyme disease:

Lyme disease is spread to people by blacklegged ticks. Take heart- even in areas where a high percentage of blacklegged ticks carry the bacteria that causes Lyme disease, the risk of getting Lyme from any one infected tick is low. Niney-nine percent of the little critters DON'T carry Lyme disease… but there are an awful lot of ticks out there. Blacklegged ticks are tiny and easy to miss on ourselves and our kids. In the spring, the ticks are in a baby stage (nymph) and can be as small as a poppy seed or sesame seed. In order to spread disease, the tick has to be attached and feeding on human blood for more than 36 hours, and engorged.

In areas in the United States where Lyme disease is prevalent (New England and Mid-Atlantic states, upper Midwest states such as Minnesota and Wisconsin, and California), parents should be vigilant about searching their children's bodies daily for ticks and for the rash of early Lyme disease. Tick bites, and therefore the rash as well, especially like to show up on the head, in belt lines, groins, and armpits, but can occur anywhere. When my kids were young, I showered them daily in summer time not just to wash off pool water, sunscreen, and dirt, but also for the opportunity to check them for ticks and rashes. Now that they are older I call through the bathroom door periodically when they shower: "Remember to check for ticks!" Read our post on how to remove ticks from your kids.

"I thought that Lyme is spread by deer ticks and deer are all over my yard." Nope, it's not just Bambi that the ticks love. Actually, there are two main types of blacklegged ticks, *Ioxdes Scapularis* and *Ioxdes Pacificus*, which both carry Lyme and feed not only on deer, but on small animals such as mice. (Fun fact: *Ioxdes Scapularis* is known as a deer tick or a bear tick.)

Most kids get the classic rash of Lyme disease at the site of a tick bite. The rash most commonly occurs by 1-2 weeks after

the tick bite and is round, flat, and red or pink. It can have some central clearing. The rash typically does not itch or hurt. **The key is that the rash expands to more than 5 cm**, and can become quite large as seen in the above photo. This finding is helpful because if you think you are seeing a rash of Lyme disease on your child, you can safely wait a few days before bringing your child to the pediatrician because the rash will continue to grow. The Lyme disease rash does not come and then fade in the same day, and the small (a few millimeters) red bump that forms at the tick site within a day of removing a tick is not the Lyme disease rash. Knowing that a rash has been enlarging over a few days helps us diagnose the disease. Some kids have fever, headache, or muscle aches at the same time that the rash appears.

If your child has primary Lyme disease (enlarging red round rash), the diagnosis is made by a doctor examining your child. Your child does not need blood work because it takes several weeks for a person's body to make antibodies to the disease, and blood work tests for antibodies against Lyme disease, not actual disease germs. In other words, the test can be negative (normal) when a child does in fact have early Lyme disease.

The second phase of Lyme disease occurs if it is not treated in the primary phase. It occurs about one month from the time of tick bite. Children develop a rash that looks like the primary rash but appears in multiple body sites all at once, not just at the site of the tick bite. Each circular lesion of rash looks like the primary rash but typically is smaller. Additional symptoms include fever, body aches, headaches, and fatigue without other viral symptoms such as sore throat, runny nose, and cough. Some kids get the fever but no rash. Some kids get one-sided facial weakness. This stage is called Early Disseminated disease and is treated similarly to the way that Early Lyme disease is treated- with a few weeks of antibiotics.

The treatment of early Lyme disease is straightforward. The

child takes 2-3 weeks of an antibiotic that is known to treat Lyme disease effectively such as amoxicillin or doxycycline. Your pediatrician needs to see the rash to make the diagnosis. This treatment prevents later complications of the disease. While the disease can progress if no treatment is undertaken, fortunately children do not get “chronic Lyme disease.” Once treatment is started, the rash fades over several days. Sometimes at the beginning of treatment the child experiences chills, aches, or fever for a day or two. This reaction is normal but you should contact your child’s doctor if it persists for longer.

Later stages of Lyme disease may be treated with the same oral antibiotic as for early Lyme but for 3-4 weeks instead of 2-3 weeks. The most common symptom of late stage Lyme disease is arthritis (red, swollen, mildly painful joint) of a large joint such as a knee, hip, or shoulder. Some kids just develop joint swelling without pain and the arthritis can come and go.

For some manifestations, IV antibiotics are used. The longest course of treatment is 4 weeks for any stage. Children do not develop “chronic Lyme” disease. If symptoms persist despite adequate treatment, sometimes one more course of antibiotics is prescribed, but if symptoms continue, the diagnosis should be questioned. No advantage is shown by longer treatments. Some adults have lingering symptoms of fatigue and aches years after treatment for Lyme disease. While the cause of the symptoms is not understood, we do know that prolonged courses of antibiotics do not affect symptoms.

For kids eight years old or older, if a blacklegged tick has been attached for well over 36 hours and is clearly engorged, and if you live in an area of high rates of Lyme disease-carrying ticks, your pediatrician may in some instances choose to prescribe a one time dose of the antibiotic doxycycline to prevent Lyme disease. The study that this strategy was based on and a few other criteria that are considered in this situation are described here.* Your pediatrician can discuss

the pros and cons of this treatment.

Bug checks and insect repellent. Protect kids with DEET containing insect repellents. The Centers for Disease Control recommends 10 to 30 percent DEET- higher percent stays on longer. Spray on clothing and exposed areas and do not apply to babies under two months of age. Grab your kids and preform daily bug checks- in particular look in crevices where ticks like to hide such as the groin, armpits, between the toes and check the hair. Be suspicious of random scabs. Dr. Lai once had a elementary school patient who had a blacklegged tick in the middle of his forehead. The mother noticed it at breakfast, tried to brush it off, thought it was a scab and sent the boy to school. Later that day the teacher called saying, "I think your son has a bug on his face."

Misinformation about this disease abounds, and self proclaimed "Lyme disease experts" play into people's fears. While pediatricians who practice in Lyme disease endemic areas are usually well versed in Lyme disease, if you feel that you need another opinion about your child's Lyme disease, the "expert" that you could consult would be a pediatric infectious disease specialist.

For a more detailed discussion of Lyme disease, look to the Center for Disease Control website: www.cdc.gov.

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*link corrected 4/18/2016

Lyme Disease: What Makes it Tic? Ticks!



As we are in the middle of Lyme disease season here in the Northeastern United states, I thought I should address Lyme disease. I have diagnosed 8 cases so far this summer, seven in my office and one at a picnic, and what struck me in each case was how relieved the parents were to find out how easy it is to treat the disease when it is diagnosed early. It is important to treat Lyme disease in the early phase because this treatment prevents later manifestations of the illness (arthritis, meningitis, etc.).

Lyme disease is spread to people by deer ticks. Any one deer tick that you pull off your child has only a 1% chance of transmitting Lyme disease, but the reason so many people get Lyme disease is that there are an awful lot of deer ticks out there.

In areas where Lyme disease is prevalent (New England and Mid-Atlantic states, upper Midwest states, and California), parents should be vigilant about searching their children's bodies daily for ticks and for the rash of early Lyme disease. Tick bites, and therefore the rash as well, especially like to show up on the head, in belt lines, groins, and axillas (armpits), but can occur anywhere. I shower my kids daily in summer time not just to wash off pool water, sunscreen, and dirt, but also for the opportunity to check them for ticks and rashes.

Most kids do get the classic rash of Lyme disease at the site of a tick bite. The rash most commonly occurs by 1-2 weeks after the tick bite and is round, flat, and typically red. It can have some central clearing. The key is that the rash expands and becomes larger than 5cm. Untreated, it can become quite large as seen in the above photo. The rash does not itch or hurt. This finding is helpful because if you think you are seeing the primary rash of Lyme disease on your child, you can safely wait a day or two before bringing your child to his health care provider because the rash will continue to grow. The Lyme disease rash does not come and then fade in the same day. In fact, the history of a rash that enlarges over a few days is helpful in diagnosing the disease. Some kids have fever, headache, or muscle aches at the same time that the rash appears.

The second phase of Lyme disease occurs if it is not treated in the primary phase. It occurs about one month from the time of tick bite. Children develop a rash that looks like the primary rash but appears in multiple body sites all at once, not just at the site of the tick bite. Each circular lesion of rash looks like the primary rash but typically is smaller. Additional symptoms include fever, body aches, headaches, and fatigue without other viral symptoms such as sore throat, runny nose, and cough. Some kids get the fever but no rash. Some kids get one-sided facial weakness. This stage is called Early Disseminated disease and is treated similarly to the way that Early Lyme disease is treated.

If your child has primary Lyme disease (enlarging red round rash), the diagnosis is made on clinical presentation alone. **No blood work is needed** because it takes several weeks for a person’s body to make antibodies to the disease, and blood work tests for antibody response. In other words, the test can be negative when a child does have early Lyme disease. Therefore, treatment begins after taking a history and performing a visual diagnosis.

The treatment of early Lyme disease is straightforward. The child takes 2-3 weeks of an antibiotic that is known to treat Lyme disease effectively such as amoxicillin or doxycycline prescribed by your child's health care provider. This treatment prevents later complications of the disease. While the disease can progress if no treatment is undertaken, in children there is no evidence of "chronic Lyme disease" despite claims to the contrary. Once treatment is started, the rash fades over several days. Sometimes at the beginning of treatment the child experiences chills, aches, or fever for a day or two. This reaction is normal but your child's health care provider should be contacted if it persists for longer.

If not treated early, then treatment starts when diagnosis is made during later stages of Lyme disease and may include the same oral antibiotic as for early Lyme but for 4 weeks instead of 2-3 weeks. The most common symptom of late stage Lyme disease is arthritis (red, swollen, painful joint) of a large joint such as a knee, hip, shoulder. Some kids just develop joint swelling without pain. The arthritis can come and go. This stage is prevented by early treatment but is also can be treated with antibiotics.

For some manifestations, IV antibiotics are used. The longest course of treatment is 4 weeks for any stage. Again, children do not develop "chronic Lyme" disease. If symptoms persist despite adequate treatment, sometimes one more course of antibiotics is prescribed, but if symptoms continue, the diagnosis should be questioned. No advantage is shown by longer treatments.

Misinformation about this disease abounds, and self proclaimed "Lyme disease experts" play into people's fears. If you feel that you need another opinion about your child's Lyme disease, the "expert" that you could consult would be a pediatric infectious disease specialist.

For a more detailed discussion of Lyme disease, I refer you to

the Center for Disease Control website: www.cdc.gov.

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