

A 9-year-old boy is brought to the clinic due to an erythematous skin rash that has slowly expanded over the last 2 weeks. His mother notes that he has no pain or itching and otherwise feels well. The patient had several upper respiratory infections in the past but has no other medical history. He did not receive childhood vaccinations due to his parent's religious beliefs. The family went to Cape Cod a month ago for vacation, and the patient went swimming, fishing, and hiking. Temperature is 37.2 C (99 F), blood pressure is 90/60 mm Hg, pulse is 88/min, and respirations are 18/min. The patient is alert and active and appears well. On the anterior surface of his left thigh, there is a 7-cm erythematous, annular skin lesion with central clearing. Which of the following measures would have prevented this patient's current condition?

- ☐ A. Antimicrobial prophylaxis during travel
- ☐ B. Avoidance of exposure to brackish water
- ☐ C. Receipt of recommended vaccinations
- ☐ D. Sanitary measures during food preparation
- ☐ E. Use of insect repellent and protective clothing



A 9-year-old boy is brought to the clinic due to an erythematous skin rash that has slowly expanded over the last 2 weeks. His mother notes that he has no pain or itching and otherwise feels well. The patient had several upper respiratory infections in the past but has no other medical history. He did not receive childhood vaccinations due to his parent's religious beliefs. The family went to Cape Cod a month ago for vacation, and the patient went swimming, fishing, and hiking. Temperature is 37.2 C (99 F), blood pressure is 90/60 mm Hg, pulse is 88/min, and respirations are 18/min. The patient is alert and active and appears well. On the anterior surface of his left thigh, there is a 7-cm erythematous, annular skin lesion with central clearing. Which of the following measures would have prevented this patient's current condition?

- ☐ A. Antimicrobial prophylaxis during travel [2%]
- ☐ B. Avoidance of exposure to brackish water [6%]
- ☐ C. Receipt of recommended vaccinations [1%]
- ☐ D. Sanitary measures during food preparation [0%]
- ☒ E. Use of insect repellent and protective clothing [90%]

[Proceed to Next Item](#)

### Explanation:

User Id: [REDACTED]

This patient recently hiked in New England, a **Lyme endemic area**. He then developed a spreading, annular rash with central clearing characteristic of **erythema migrans**. Erythema migrans is the harbinger of Lyme disease in most patients (80%) and typically arises 1-2 weeks after *Borrelia burgdorferi* transmission. Some patients may also experience flu-like symptoms (eg, fatigue, headache, myalgias, arthralgias) and regional lymphadenopathy. Only 25% of patients recall a preceding tick bite.

*Ixodes scapularis* is the tick that transmits Lyme disease (as well as anaplasmosis and babesiosis). Exposure occurs primarily in **wooded areas** due to direct contact with leaf litter, logs, or soil. Prevention hinges on the avoidance of tick exposure and the rapid recognition of tick attachment. This is achieved with **tick repellents** (eg, DEET [N,N-diethyl-meta-toluamide], permethrin), long sleeve/long leg **protective clothing**, tick checks, and bathing (to wash away unattached ticks).

**(Choice A)** There is no need for antimicrobial prophylaxis (doxycycline) when visiting Lyme endemic areas. Prophylaxis is reserved for patients who have *I scapularis* attachment for >36 hours.



a spreading, annular rash with central clearing characteristic of **erythema migrans**. Erythema migrans is the harbinger of Lyme disease in most patients (80%) and typically arises 1-2 weeks after *Borrelia burgdorferi* transmission. Some patients may also experience flu-like symptoms (eg, fatigue, headache, myalgias, arthralgias) and regional lymphadenopathy. Only 25% of patients recall a preceding tick bite.

*Ixodes scapularis* is the tick that transmits Lyme disease (as well as anaplasmosis and babesiosis). Exposure occurs primarily in **wooded areas** due to direct contact with leaf litter, logs, or soil. Prevention hinges on the avoidance of tick exposure and the rapid recognition of tick attachment. This is achieved with **tick repellents** (eg, DEET [N,N-diethyl-meta-toluamide], permethrin), long sleeve/long leg **protective clothing**, tick checks, and bathing (to wash away unattached ticks).

**(Choice A)** There is no need for antimicrobial prophylaxis (doxycycline) when visiting Lyme endemic areas. Prophylaxis is reserved for patients who have *I scapularis* attachment for >36 hours.

**(Choice B)** Swimming in brackish water off the New England coast could expose this patient to *Vibrio vulnificus*. This organism may cause cellulitis and, if ingested, sepsis with hypotension and bullous skin lesions. A slowly spreading annular rash is more consistent with Lyme disease.

**(Choice C)** Childhood vaccinations prevent many potentially devastating infectious illnesses. Lyme disease vaccination is no longer available due to poor demand and concern about adverse reactions; it was never a part of recommended childhood immunizations.

**(Choice D)** Foodborne illnesses are common, and some (eg, *Listeria monocytogenes*) may have significantly delayed manifestations. However, this patient with a slowly spreading rash who otherwise feels well almost certainly has Lyme disease. Lyme disease is a tick-borne, not a foodborne, illness.

#### Educational objective:

People in Lyme endemic areas (eg, New England) must be mindful of *Ixodes scapularis* exposure when visiting wooded areas. Prevention of tick bites and rapid recognition of tick attachments are achieved primarily with tick repellent, protective clothing, and tick checks.

#### References:

1. [Tick bite protection with permethrin-treated summer-weight clothing.](#)



Media Exhibit

Lyme Disease: Endemic Areas in the United States

## Lyme Disease: Endemic Areas in the United States

