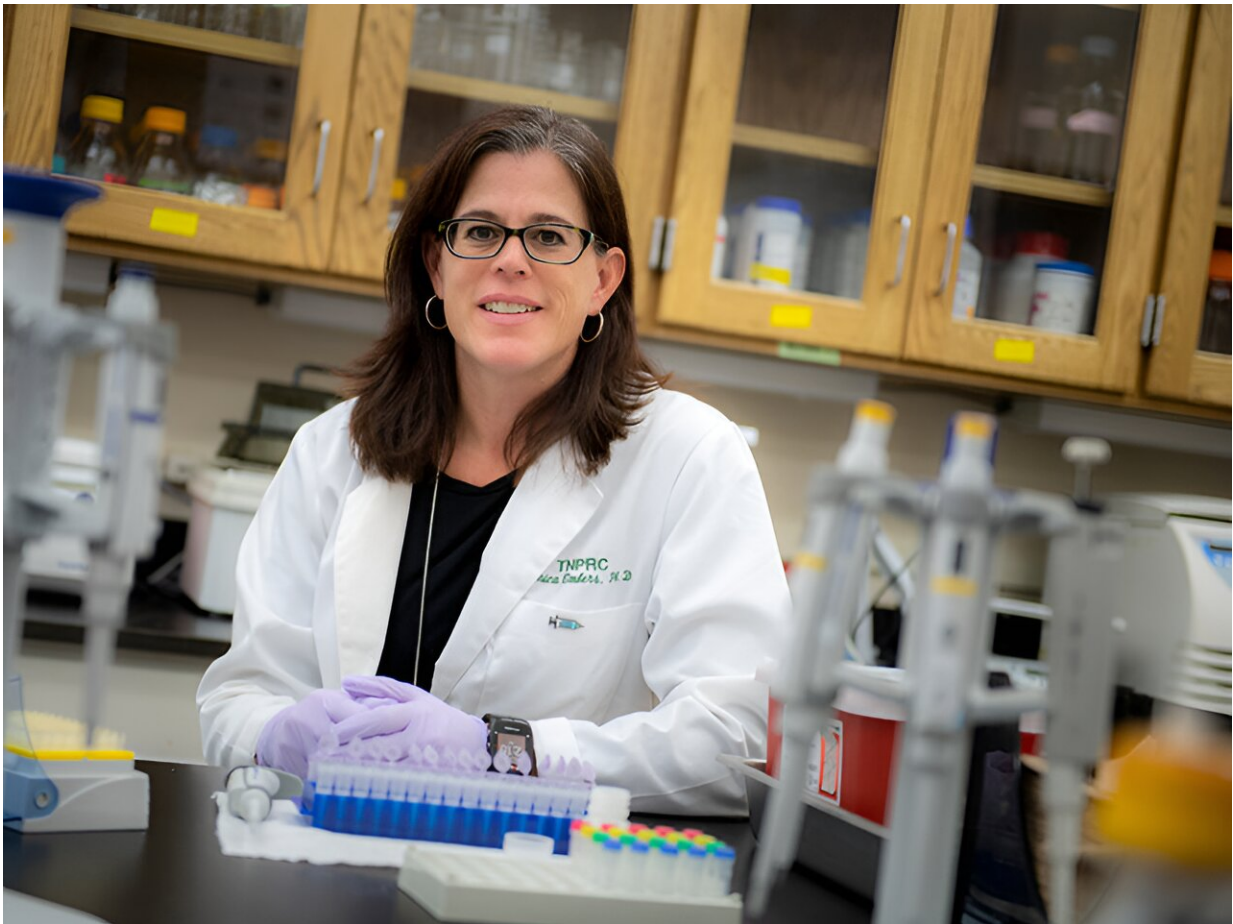


# Combined antibiotics more effective against Lyme disease: Study

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The study findings could pave the way for improved Lyme disease treatments, particularly in persistent cases, said lead researcher Monica Embers, PhD, associate professor of microbiology and immunology. Credit: Paula Burch-Celentano

Researchers at Tulane University have found that a combination of antibiotics is more effective in treating Lyme disease than the commonly prescribed course of one single antibiotic. This finding, [published](#) in *Frontiers in Microbiology*, could pave the way for improved Lyme disease treatments, particularly in persistent cases that have not responded to standard antibiotic treatment.

Lyme disease, caused by the bacterium *Borrelia burgdorferi* and transmitted through tick bites, is a growing health concern with more than 476,000 estimated cases annually in North America alone. While most cases resolve with a short course of oral antibiotics, a notable percentage of patients develop chronic symptoms known as post-treatment Lyme disease due to delayed or insufficient treatment.

The study, led by associate professor of microbiology and immunology, Monica Embers, Ph.D., involved a series of experiments using various antibiotics both alone and in combination in a mouse model of Lyme disease. The research team used multiple detection methods to assess the efficacy of treatments.

While none of the single antibiotics completely eradicated the persistent [infection](#) after a 28-day treatment course, several combination therapies of already FDA-approved drugs, were successful in clearing the infection.

Specifically, four different dual combinations of antibiotics ([doxycycline](#) and ceftriaxone; dapsone and rifampicin; dapsone and clofazimine; doxycycline and cefotaxime) and three triple combinations of antibiotics and antimicrobials (doxycycline, ceftriaxone and carbomycin; doxycycline, cefotaxime and loratadine; dapsone, rifampicin and clofazimine) eradicated persistent infections of the bacteria. These results suggest a need for further studies of combination antibiotic therapies in successfully eradicating Lyme disease.

"Lyme disease is a complicated disease due to the evasive nature of *Borrelia burgdorferi*, which hides in organs soon after infection," Embers said. "This finding could be a game-changer in how we approach this complex and often debilitating disease."

This study represents a significant step in persistent Lyme disease treatment and could lead to more effective strategies in combating this disease.

**More information:** Yasir Alruwaili et al, Superior efficacy of combination antibiotic therapy versus monotherapy in a mouse model of Lyme disease, *Frontiers in Microbiology* (2023). [DOI: 10.3389/fmicb.2023.1293300](https://doi.org/10.3389/fmicb.2023.1293300)

Provided by Tulane University

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