

Team finds bacterial infections differ based on geography, healthcare spending

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Where you live affects the type of bacteria that cause bloodstream infections, according to researchers at Rhode Island Hospital and an international team of investigators. The closer you live to the equator, the greater the likelihood of a bloodstream infection caused by a group of bacteria called Gram-negative bacteria, which thrive in warm and moist environments, compared to another group of bacteria referred to as Gram-positive bacteria. The study also found that the proportion of a country's GDP spent on health care impacted the type of bacteria causing such infections. The study was published in the scientific journal *PLOS ONE*.

"This study reflects the fascinating interaction of the environment, human health, and economic factors that together help shape the sorts of diseases that become manifest in different parts of the world," said Leonard Mermel, D.O., medical director of the department of epidemiology and infection control at Rhode Island Hospital. "A better understanding of this phenomenon may help us prepare for the effects they have on future human generations around the globe. In addition, such information may assist physicians who need to empirically administer antibiotics to patients with possible bloodstream infections in different areas of the world."

Mermel, corresponding author, was part of a five-member international steering committee that collected and studied data from 2007-2011 from 23 medical centers (with two hospitals participating from Sao Paulo, Brazil) including in the U.S., Greece, Egypt, Israel, Australia, Canada,

Japan, Italy, Netherlands, Thailand, Switzerland and Argentina. For each site, data was obtained regarding latitude, longitude, mean annual precipitation, mean daily temperature, population density, per-capita gross domestic product and the percentage of GDP in that country allocated for [health care](#).

"It's fascinating to discover how geography and socioeconomic determinants factor into disease management," said Mermel. "This five-year study indicates that the likelihood that bloodstream infections by Gram-negative bacteria correlates with distance from the equator and [health care spending](#)."

Provided by Lifespan

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