NEWS RELEASE

UTI-causing Bacteria Resistant to Current Drugs, Finds National Study by Hackensack Meridian CDI and Quest Diagnostics

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Published in Nature Communications, the new study finds that nearly 70% of a common bacterial strain that causes urinary tract infections, pneumonia and wound infections was non-susceptible to the three most used oral antibiotics

SECAUCUS, N.J., June 18, 2026 /PRNewswire/ -- A common bacterial strain that lives naturally in people's guts can cause a dangerous or deadly infection for some, especially when it becomes multidrug-resistant and causes chronic urinary-tract infections (UTIs) in elderly women. But the extent of its effect on the broader population and its prevalence in the community was not well known – until now.

Klebsiella pneumoniae is a growing drug-resistance problem, according to a groundbreaking new **study** in the peer-reviewed Nature Communications by scientists from the Hackensack Meridian Center for Discovery and Innovation (CDI), part of Hackensack Meridian Health (HMH), and Quest Diagnostics (NYSE: DGX), one of the nation's leading providers of diagnostic information services.

More than 2,000 samples across 42 states were screened through the collaboration, as outlined in the paper entitled "Nationwide spread of multidrug resistant Klebsiella pneumoniae across U.S. communities." A total of 267 multidrug resistant sequence types were identified, the data finds.

"For a long time, highly resistant superbugs were primarily considered a problem for hospitals, but this study reveals a dangerous shift. These bacteria are spreading, and causing common infections that are resistant to the recommended antibiotics used to treat them," said co-author Meghan W. Starolis, MS, Ph.D., senior science director, Infectious Disease, Quest Diagnostics. "This research provides critical updates for public health, and, more

importantly, it provides the genetic blueprint needed to start developing vaccines or other treatments for vulnerable patients."

Klebsiella pneumoniae is an overlooked threat. It not only causes urinary tract infections, pneumonia and wound infections, but also kills about 600,000 individuals annually worldwide, according to the **World Health Organization**. In the United States, it's the most common cause of **hospital-acquired pneumonia**. Worldwide, it's the second-leading cause of UTIs – and has shown itself to be especially prevalent in women of advanced age.

"Our work shows that there is a rapidly-evolving, plasmid-driven epidemic of community-associated multidrug resistant Klebsiella pneumoniae across the United States," said co-author Barry Kreiswirth, Ph.D., the veteran microbiologist at the CDI and professor of Medical Sciences at the Hackensack Meridian School of Medicine, who spearheaded the years-long project. "We need to continue surveillance of what these bacteria are doing, so we can detect, and ideally control, the emergence of the next high-risk clone."

Of the roughly 2,000 samples in the study, more than two-thirds were from female patients, and about three-quarters were from people older than 60. All told, 100 percent of the bacteria investigated were classified as multidrug resistant, and 69.5 percent were non-susceptible to the three most common oral antibiotics (fluoroquinolones, Bactrim and nitrofurantoin), "underscoring the urgent need for new oral treatment options." For patients who have these strains, the only option may be injectable antibiotics, said Kreiswirth.

The main culprit in this resistance spread is a gene known as CTX-M-15, which is easily swapped between different bacteria on plasmids (stray strands of DNA outside chromosomes). The gene has spread to hundreds of strains, bringing with it not only antibiotic-resistance traits but also tolerance for stress and metal exposure which has potentially enhanced its survival outside of human hosts, according to the findings.

The multidrug-resistant strains were previously identified mostly as a healthcare-associated pathogen. Beginning around 2007, however, studies started to identify an "expanding and under-recognized reservoir" of the culprit Extended-Spectrum Beta-Lactamase (ESBL) gene. The U.S. Centers for Disease Control and Prevention conducted a study finding a 53.3 percent increase in ESBL-producing bacteria between 2012 and 2017 – pointing toward community transmission.

The study by the CDI and Quest bridges that gap, the authors write. Geographical trends showed regional and statewide spread, and multi-state dissemination, "indicating widespread, underrecognized community reservoirs," according to the analysis.

Quest and CDI worked together to make this research possible. Using its nationwide network of microbiology labs, Quest Diagnostics provided CDI with deidentified culture isolates that were determined to be resistant to antibiotics

for further sequencing by CDI, providing the researchers with a diverse sample set for analyzing.

"This is establishing a baseline," concluded Kreiswirth. "We need to keep looking at this to better understand the extent of the problem. But this is definite confirmation that there is a problem – and it needs to be addressed."

The study's strengths include its large scale and unique focus on everyday community infections rather than hospital cases; however, its limitation is the lack of detailed patient medical histories, making it difficult to know exactly where or how the patients originally contracted the infections.

"We are very proud to collaborate with the Center for Discovery and Innovation on this research," said Yuri Fesko, M.D., senior vice president and chief medical officer, Quest Diagnostics. "Relationships between commercial clinical labs and research organizations like CDI are so important to improving and informing public health."

Quest and Hackensack Meridian have a long-standing collaboration through which Quest provides reference laboratory testing and manages HMH's inpatient hospital labs. The study is the largest yet by researchers with the two NJ-based organizations.

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