

Plain Language Summary of Published Articles at the Journal of Medical Microbiology and Infectious Diseases (JoMMID) in 2025

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ABSTRACT

Journal of Medical Microbiology and Infectious Diseases (JoMMID), 2025, volume 13, issues 1-4 provide a multifaceted and valuable overview of the current landscape of infectious diseases, offering critical insights for researchers, clinicians, and public health officials working to address these threats at local, national, and global levels. This knowledge translation provides plain language summaries of the published articles at the Journal of Medical Microbiology and Infectious Diseases in 2025.

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INTRODUCTION

Volume 13 of the Journal of Medical Microbiology and Infectious Diseases (JoMMID) presents a comprehensive collection of research addressing critical challenges in infectious diseases worldwide. The issues in this volume cover a wide spectrum of topics, from epidemiological surveillance and the rise of antimicrobial resistance, to innovative vaccine technologies and novel therapeutic approaches.

Epidemiology and public health surveillance

Several studies focus on understanding the prevalence and risk factors of infectious diseases in specific populations and regions. A field study in Sudan investigated the prevalence of malaria in Al-Manaqil city, while research in Nigeria surveyed common respiratory viruses (respiratory syncytial virus [RSV], influenza) in coronavirus disease 2019 (COVID-19)-negative individuals. The global impact of COVID-19 remained a key theme, with analyses of breakthrough infections and reinfections in healthcare workers during

the Omicron wave, epidemiological studies in Brazil, and evaluations of hematological parameters as prognostic markers in Iranian patients. Other public health efforts included assessing knowledge, attitudes, and practices (KAP) towards infectious diseases in a rural population and evaluating the impact of education on reducing blood culture contamination in a hospital setting.

Challenges of antimicrobial resistance (AMR)

A significant portion of the volume is dedicated to the growing threat of AMR. One article assesses the high prevalence of metallo- β -lactamase-producing organisms in clinical samples. Resistance patterns were also explored in specific pathogens, including Shiga toxin-producing *Escherichia coli* in Ethiopian children with diarrhea, *Salmonella* in India, and the susceptibility profiles of aerobic bacteria in pus samples. The fight against resistant organisms extends to investigating new compounds, such as a synthetic nitrofuranylpyranopyrimidinone with activity against

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methicillin-resistant *Staphylococcus aureus* (MRSA), and studying the synergistic effects of agents against carbapenem-resistant Enterobacteriaceae. A promising alternative strategy explored the use of bacteriophage-derived enzymes to combat resistant bacteria, particularly in the poultry industry.

Host-pathogen interactions and molecular mechanisms

The articles in this section examine the intricate relationship between pathogens and their hosts. At the molecular level, research assessed the effect of the antiviral drug remdesivir on the expression of caspase genes in COVID-19 patients and its impact on apoptosis. A significant area of focus is the potential link between specific *E. coli* strains harboring the genotoxin colibactin and biofilm-related genes, and the development of colorectal cancer and precancerous lesions. Other studies examined the immune escape and adaptation mechanisms of *Leishmania* parasites and explored host-pathogen interactions using emerging technologies.

Innovative diagnostics, therapeutics, and vaccines

The volume highlights advancements in tools to combat infections. In vaccinology, one article explores the potential of the bacterium *Lactococcus lactis* as a live vector for vaccines against parasitic diseases, while another focuses on designing nanocarrier systems to improve the stability and efficacy of nucleic acid vaccines. Diagnostic challenges were addressed through studies on identifying *Nocardia* using traditional and modern methods and analyzing microbial profiles in

bronchoalveolar lavage samples. The search for new therapeutics includes evaluating the antimicrobial and antibiofilm effects of herbal formulations and natural compounds like capsaicin against opportunistic fungi.

Clinical microbiology and case reports

Clinical studies provide insights into managing infections in vulnerable populations. These include research on respiratory infections caused by *Stenotrophomonas maltophilia* in cancer patients and a rare case report of septicemia caused by *Burkholderia gladioli*. The volume also features a comprehensive review comparing preservative efficacy testing standards across major pharmacopoeias (the United States, Europe, India, and Japan), with important implications for drug quality assurance. Finally, ongoing public health concerns were addressed with studies on the prevalence of West Nile virus and hepatitis B virus, as well as an assessment of healthcare workers' knowledge and attitudes towards hand hygiene.

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