

Artificial intelligence can help predict the bacteria responsible for pneumonia in emergency rooms

24 July 2020

A team of researchers showed that artificial intelligence (AI) could help predict the type of bacteria that caused the infection in patients with pneumonia. The research is presented at ASM Microbe Online, the annual meeting of the American Society for Microbiology.

"This research highlights the potential of AI as a supplementary tool for physicians in identifying causal pathogens of pneumonia, even before sputum culture results are available," said Joowhan Sung, M.D., hospitalist at MedStar Southern Maryland Hospital. "We demonstrated that physicians could be assisted by AI to decide appropriate antibiotics."

In the study, investigators showed that AI could use the information available in the emergency room and predict if the patient has MRSA or pseudomonas so that physicians can immediately prescribe specific antibiotics targeting specific [bacteria](#).

Infection caused by [antibiotic-resistant bacteria](#) is difficult to treat and can be life-threatening. According to the CDC, "more than 2.8 million [antibiotic-resistant infections](#) occur, and more than 35,000 people die as a result".

Pneumonia caused by bacteria such as Methicillin-resistant Staphylococcus Aureus (MRSA) or pseudomonas can be fatal, as they are resistant to commonly prescribed antibiotics. Although there are effective antibiotics against these infections, the test, sputum culture, takes at least 48 hours to incubate and identify these bacteria from the sputum, while these patients might deteriorate within hours.

The investigators presented an analysis of more than 50,000 intensive care unit (ICU) admissions

data from Beth Israel Deaconess Medical Center (BIDMC) in Boston, Massachusetts. The researchers analyzed records of patients who were admitted with pneumonia and trained an AI, "neural network" agent using the dataset. The AI agent showed promising results in predicting bacteria that caused the [infection](#).

"Similar techniques can be applied to future research on [pneumonia](#) amid the current pandemic, such as capturing bacterial co-infection in those with known COVID-19, which could be fatal if undetected," said Sung.

Jun Hyek Jang, M.S., senior researcher at AvoMD, Inc. and Joongheum Park, M.D., hospitalist at Beth Israel Deaconess Medical Center, also contributed to this work. This research received no external funding.

ASM Microbe Online brings you the dynamic, cutting-edge science of ASM Microbe 2020, the annual meeting of the American Society for Microbiology. Explore the latest research in the microbial sciences with ePosters, hear from experts in the field during live keynotes and access track-related content with a curated selection of on-demand sessions.

Provided by American Society for Microbiology

APA citation: Artificial intelligence can help predict the bacteria responsible for pneumonia in emergency rooms (2020, July 24) retrieved 12 October 2022 from <https://medicalxpress.com/news/2020-07-artificial-intelligence-bacteria-responsible-pneumonia.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.