

Gram-negative bacteria increase mortality, vasopressor use and ICU admission

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Alterations to the respiratory microbiome have been identified as a predisposing factor of interstitial lung diseases (ILD). In a study at CHEST 2018, researchers at Beaumont Health Systems studied the influence of bacterial virulence on clinical outcomes patients hospitalized with ILD patients. The authors found that the use of immunosuppressive medications or antifibrotics had no influence on the outcomes including development of resistant pathogens in patients. However, they also found that the presence of gram-negative bacteria, excluding *Pseudomonas*, was a risk factor for worse outcomes including higher mortality, ICU admission and vasopressor use in hospitalized patients with ILD.

Researchers conducted a retrospective analysis of 472 patients with ILD who were admitted to a large tertiary care academic center from Jan. 1st, 2010, to Dec. 31st, 2016. Patient data were extracted from electronic records using ICD-9 and ICD-10 billing codes for various ILD. The majority of the patients had either pulmonary fibrosis or sarcoidosis.

One hundred and seventy respiratory cultures were collected in this population. The majority of the respiratory isolates were gram-negative pathogens (39 percent *Pseudomonas* and 18 percent other gram-negative [organisms](#)); 27 percent were methicillin-resistant staphylococcus aureus (MRSA). Patients infected with gram-negative organisms (other than *Pseudomonas*) and MRSA had the highest 30-day mortality (39 percent and 32 percent respectively) compared with lower mortality for those infected with *Pseudomonas* and other gram positive organisms (7

percent and 14 percent respectively). Patients infected with gram-negative organisms other than *Pseudomonas* also had higher rates of vasopressin administration compared with those infected with other organisms. Rates of ICU admission also differed according to organism that was cultured. These associations persisted even after adjustment for the other variables including type of ILD, age, gender, comorbid conditions and smoking history. There was no association between the use of immunosuppressant medications or antifibrotics and the development of [resistant pathogens](#).

"The presence of [gram-negative bacteria](#) is a risk factor for adverse events," says Dr. Hira Iftikhar, lead researcher, "This bacteria could lead to a higher mortality rate, ICU admission and increased vasopressor use. A larger study should be conducted to establish the risk factors for the mortality in hospitalized ILD [patients](#) including results of respiratory cultures."

Further results from these two studies will be shared at CHEST Annual Meeting 2018 in San Antonio on Wednesday, Oct. 10, 2:45 p.m. to 3:00 p.m., at the Henry B. Gonzalez Convention Centre, Room 206B. The study abstracts can be viewed on the [journal CHEST website](#).

More information: HIRA IFTIKHAR et al, ROLE OF RESPIRATORY PATHOGENS IN DISEASE OUTCOMES IN HOSPITALIZED PATIENTS WITH INTERSTITIAL LUNG DISEASE, *Chest* (2018). [DOI: 10.1016/j.chest.2018.08.405](https://doi.org/10.1016/j.chest.2018.08.405)

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