

## VA-LRTI Infections in COVID-19



COVID-19 continues to create a strain on healthcare systems around the world. Approximately 10-30% of COVID-19 patients admitted to the hospital need ICUs, and 15-20% of these patients require ventilatory support. The available data shows an increased risk of ventilator-associated pneumonia (VAP) and ventilator-associated lower respiratory tract infections (VA-LRTI) in critically ill COVID-19 patients. VA-LRTIs can result in a prolonged length of hospital stay and increased mortality.

In a new study, researchers investigated the occurrence of VA-LRTI in mechanically ventilated COVID-19 patients during the first ten months of the pandemic. They compared them to mechanically ventilated non-COVID patients during and before the pandemic.

Patients 18 years or older with mechanical ventilation were included in the analysis. The cohort consisted of 20,223 ICU episodes (479 COVID-19), with a VA-LRTI incidence proportion of 30% in COVID-19 and 18% in non-COVID-19 among patients ventilated greater than or equal to 48 hours. The median length of ventilator treatment was ten days for patients with COVID-19.

Patients with COVID-19 were younger, more often male, with lower CCI scores, greater incidence of diabetes, hypertension, and chronic respiratory disease. However, COVID-19 patients less often had malignancy and immunosuppression. Also, COVID-19 patients received more antibiotics and steroids before ICU admission and presented with a better SAPS III but worse  $P_{aO_2}/F_{iO_2}$ . Among non-COVID-19 episodes, the most common diagnoses were cardiac arrest, nonintracranial injuries, nontraumatic intracranial haemorrhage, sepsis, and intracranial injuries. COVID-19 patients had a median length of stay in the ICU of 14 days compared with two days for non-COVID-19 patients. ICU mortality was 26%, and 30-day mortality was 24% in the COVID-19 cohort compared with 11% ICU mortality and 15% 30-day mortality in non-COVID-19 patients.

When comparing COVID-19 episodes with the most common non-COVID-19 diagnoses and influenza, COVID-19 had the longest median ventilator treatment duration of 10 days, followed by five days for ARDS, four days for severe sepsis, and four days for bacterial pneumonia.

In the first wave, 381 episodes were registered in the COVID-19 cohort, and 93 episodes were registered in the second wave. The length of mechanical ventilation was shorter during the second wave than the first wave. Mortality within 24 hours of extubation was higher during the second wave than the first wave. Among the non-COVID-19 patients, 567 ventilator episodes were registered during the first wave, and 324 episodes were registered during the second wave. No major differences were observed for age, sex, ICU length of stay, LRT culture, and 30-day mortality between the two COVID-19 waves.

The incidence of VA-LRTI was 29% among COVID-19 patients ventilated greater than or equal to 48 hours during the first wave and 38% during the second wave. For non-COVID-19, the VA-LRTI incidence proportion was 19% during the first wave and 21% during the second wave. The VA-LRTI incidence per 1000 ventilator days at risk was 28 for the COVID-19 cohort during the first wave and 52 for the second wave. In non-COVID-19 patients, the incidence of VA-LRTI was 37 in the first wave and 52 during the second wave.

Overall, these findings show that COVID-19 is associated with a long duration of mechanical ventilation treatment and a high occurrence of VA-LRTI.

Source: [Critical Care Medicine](#)

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