

Antimicrobial stewardship necessary for effective COVID-19 patient care

Study confirms bacterial co-infections from COVID-19 are rare while antibiotic use is high.

- **Bacterial co-infections were rare among COVID-19 patients hospitalized during the first pandemic wave.**
- **Despite little evidence of bacterial infections, a high proportion of patients received antimicrobials.**
- **Researchers stress the importance of antimicrobial stewardship to prevent the rise of drug-resistant infections.**

Antimicrobial resistance is a major public health challenge. Ensuring that these life-saving medicines remain effective without contributing to the rise of drug-resistant infections is known as antimicrobial stewardship. One facet of this management includes restricting prescription of antimicrobial medicines before tests confirm a patient has a bacterial infection, especially during hospital admission. A recent study published in [The Lancet Microbe](#) investigated the use of antimicrobials among COVID-19 patients hospitalized in the UK.

Bacterial co-infections are common in severe respiratory viral infections, such as [influenza](#), and are often associated with increased morbidity and mortality. Antimicrobial therapy is frequently prescribed in the effective treatment of these co-infections.

Current [UK guidelines](#) caution against empirical antimicrobial therapy without specific evidence of a bacterial infection. However, numerous [ongoing studies](#) have reported a low prevalence of confirmed bacterial co-infection with a high proportion of COVID-19 patients receiving antimicrobials.

Study methods and results

As part of an ongoing study through the International Severe Acute Respiratory and Emerging Infections Consortium, researchers analyzed inpatient data across 260 hospitals in England, Scotland, and Wales. Nearly 50,000 patients diagnosed with COVID-19 were admitted to these hospitals during the first pandemic wave from February 6 to June 8, 2020.

Around 20% (8,649) of these patients were evaluated for microbiological infections upon admission. The microbiological tests included blood tests and analysis of sputum and deep lung samples. Approximately 13% (1,107) of those tested showed COVID-19-related respiratory or bloodstream bacterial infections. In contrast, bacterial co-infections are much more common in [severe influenza cases](#), occurring in 23% of patients.

Among the COVID-19 patients with available data, around 37% had received antimicrobials for this episode before hospital admission. Researchers noted that despite the lack of evidence of bacterial infections, 85% of patients received antimicrobials during their hospital stay.

Broad-spectrum agents such as carbapenems (a class of antimicrobials reserved for the treatment of severe or high-risk bacterial infections) were used frequently and accounted for 3.8% of all

prescriptions. Carbapenem-sparing, gram-negative active alternatives were less frequently prescribed (0.2 to 1.5%).

Co-author Dr. Antonia Ho said, “In making any assessment of the use of antimicrobials in the treatment of COVID-19 patients, it is essential to acknowledge that clinicians in the UK, and worldwide, have been battling a global medical emergency. Given the unprecedented challenges posed by the pandemic, particularly during its early stages when admitted patients were very sick, effective treatments were limited, and the role of possible co-infections unknown, it is unsurprising that doctors would prescribe antimicrobials. However, we now know that bacterial co-infection is uncommon in patients with community-acquired COVID-19.”

Researchers acknowledge several limitations to this study. One challenge is dealing with the retrospective aspect, especially when attempting to distinguish between a true infection and other plausible explanations. It was often impossible to differentiate new infections for those with chronic lung disease since previous microbiology results were not available. In addition, receiving antimicrobial medicines before sampling could have led to an inaccurate count of true bacterial infection.

Stewardship actions for the future

Study findings suggest that adopting an antimicrobial stewardship for COVID-19 patients will help slow the antimicrobial resistance crisis. “Since antimicrobial resistance remains one of the biggest public health challenges of our time, measures to combat it are essential to help ensure that these life-saving medicines remain an effective treatment for infection in years to come,” said Dr. Ho.

The authors recommend several stewardship actions be prioritized for incorporation into COVID-19 patient care. These actions include restricting antimicrobial prescriptions without a confirmed diagnosis, tailoring the choice of antimicrobial to likely pathogens and local resistance patterns, and encouraging clinicians to discontinue antimicrobials if co-infection is deemed unlikely and tests confirm that patients do not have a bacterial infection.

Co-author Dr. Clark Russell said, “Our findings add much-needed depth to our understanding of how antimicrobials have been used in the treatment of patients with COVID-19, and how antimicrobial usage could be optimized. Prioritizing and incorporating existing antimicrobial stewardship principles into care plans could help to prevent a rise of drug-resistant infections becoming a longer-term sequel of the pandemic. Our study looked at only the first pandemic wave in the UK, so it is important that future studies assess antimicrobial usage later in the pandemic both in the UK and other parts of the world.”