JAC-Antimicrobial Resistance

Antimicrobial resistance during the COVID-19 pandemic: the missing patient perspective

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While the use of antibiotics for secondary infections in COVID-19 has been described in scientific literature and guidelines have been issued for their appropriate use, the importance of listening to patients in a systematic manner has often been overlooked. To highlight this issue, we spoke with patients about their experiences with antibiotics as treatment for COVID-19 and their understanding of antimicrobial resistance (AMR). We found that there is a general lack of awareness of the risks of AMR, and even when patients are knowledgeable, fear of COVID-19 and pressure from healthcare providers often override considerations for appropriate use. We present case examples of three patients' experiences and provide recommendations for health systems, healthcare providers, and patients or caregivers on actions they can each take to reduce the risk of AMR during and beyond the COVID-19 pandemic. We also share ways that the patient community can be empowered to provide their voices to decision-making on both COVID-19 treatment protocols and prescriptions of antibiotics.

Introduction

While inappropriate use of antibiotics has been a known global public health threat for a decade, the COVID-19 pandemic is aggravating this problem. Even as COVID-19's impact on antimicrobial resistance (AMR) is debated among medical experts and healthcare professionals (HCPs),[1,2] the patient's voice has gone largely unheard. We spoke with three COVID-19 patients who were prescribed antibiotics for presumed secondary bacterial infections to share their views on antibiotics—both before learning the risks of AMR and after. We also tested and validated specific recommendations with these patients for actions that health systems and HCPs could adopt to improve AMR awareness and the patient experience.

We identified patients through COVID-19 patient support groups including LongCovidSOS, Survivor Corps and Body Politic. They reviewed the latest literature on AMR and COVID-19 and shared with us their experiences and views in one-on-one interviews conducted in October 2020. All participating patients provided informed consent. Patients could choose compensation or donation to an organization of their choice. They were asked about whether and which antibiotics they were prescribed upon diagnosis of COVID-19; their awareness of the benefits and risks of antibiotics and their impact on COVID-19; adverse reactions; and specific recommendations for health systems, healthcare providers and other patients.

The problem: limited awareness of AMR among patients and little dialogue with HCPs

An early indicator of the low levels of AMR awareness among the global patient community occurred when we contacted several COVID-19 patient organizations with a combined membership of over 100 000 patients for this study and received confirmation that only three individuals were willing to discuss antibiotics. Of these, two had a scientific background and prior history of antibiotic use, and one had taken antibiotics as a precautionary measure for COVID-19 symptoms and recently learned about AMR after searching online for information about the prescribed medicine.

Patients indicated that they learned the risks and benefits of using antibiotics only after taking them. They noted that their HCPs provided little information; in fact, physicians sometimes disregarded antibiotic stewardship measures and prescribed antibiotics first-line without confirming bacterial infections, possibly in attempts to ensure patient satisfaction.

Upon her COVID-19 diagnosis, Patient 1 (aged 54 years, Ireland; hospitalized for COVID-19 in March 2020) was prescribed azithromycin: 'as a prophylactic by a doctor specializing in respiratory medicine (due to my asthma). It did not help. They wanted me to continue but I wanted off it. I had been reading about antibiotic resistance'. Similarly, Patient 2 (aged 47 years, UK; first symptoms March 2020 and clinically diagnosed with post-COVID syndrome or long COVID in August 2020) who suffered persistent and ongoing

COVID-19 symptoms, was offered antibiotics several times. While accepting them at first, as she was seriously ill and did not want to take any chances, she asked for justification of subsequent prescriptions: 'Do I really need these? Is this going to affect my health? It was so early in the pandemic; it was telehealth. I think the antibiotics made it worse—it cleared out my guts; it got rid of most of the bacteria, so I think the virus started invading even there too'.

Patient 3 (aged 49 years, USA; diagnosed with COVID-19 in April 2020), a previously healthy patient with little prior antibiotic use, described receiving by telehealth a 7 day dose of amoxicillin despite no confirmation of bacterial infection: 'I didn't ask for it. You couldn't get a doctor appointment; telehealth was the only option'.

Patients diagnosed with COVID-19 were prescribed antibiotics based on clinical presentation or patient/caregiver request. Patients did not understand the consequences of antibiotic overuse, including damage to the human microbiome and creating untreatable 'superbugs', versus COVID-19 treatment. Patient 1 said: 'You're petrified because of what you hear in the news, and you're willing to try anything as you are afraid you'll end up on a ventilator or worse'. This was especially challenging for those with pre-existing conditions such as asthma, history of urinary tract infections or kidney damage. Patients felt that HCPs should take care when prescribing antibiotics—to not only proactively test for bacterial infections but also to explain the risks and benefits of antibiotics: 'I was aware of the limitations of antibiotics and the importance of not taking them unnecessarily. However, I have had UTI and kidney infections in the past. (Therefore) I was offered antibiotic several times (by more than one doctor). I felt pressure to take them' (Patient 2, aged 47 years, UK).

Patients agreed that if they had prior knowledge and awareness about AMR risks, they likely would have asked more questions. Patient 1 said: 'I would have challenged the antibiotic prescription. I would tell other patients out there to think twice before accepting antibiotics'. Patient 3 agreed: 'We need to challenge our doctors a little bit. Doctors need to do better. We as patients need to do better'.

Recommendations: proposed actions for HCPs and health systems

Ensuring that COVID-19 patients receive antibiotics only for confirmed secondary bacterial infections is critical in slowing the rate of AMR. While clinical guidelines and recommendations[3–7] on antimicrobial stewardship practices for HCPs exist, there has been little inclusion of patient perspectives in their development. Guidelines created specifically for patients and caregivers are limited.[8]

We propose that health systems and HCPs can improve awareness of AMR and shape the clinical experiences of those at risk of or diagnosed with COVID-19 by communicating openly with patients and caregivers throughout the diagnosis and care process. We also recommend that HCPs and front-line clinicians:

- practice evidence-based medicine, understanding that bacterial co-infection rates remain low among COVID-19 patients experiencing mild or moderate symptoms;
- verify presence of secondary bacterial infection(s) prior to treating with an antibiotic, using available diagnostic tests (e.g. rapid point-of-care tests);

- ensure the correct antibiotic is given for a confirmed bacterial infection according to clinical guidelines, and de-escalate antibiotics when infection ceases;
- use narrow-spectrum antibiotic(s) and avoid using broad-spectrum when possible, based on the WHO's AWaRe antibiotic categorization guidance;[9] and
- talk to each patient and caregiver about the risks and implications of inappropriate antibiotic use in a way that resonates—e.g. communicate the risks of *Clostridioides difficile* infection, or of not having an effective antibiotic available for a potential sepsis infection.

We further recommend that health systems should, at a minimum:

- establish antibiotic stewardship programmes if not already in place, and include the patient voice as an indispensable element (the CDC's 'Core Elements of Hospital Antibiotic Stewardship Programs'[10] provides a good starting point);
- monitor antibiotic resistance trends and provide feedback to prescribing physicians, so that they can make informed decisions and effectively treat their patients;
- collect data on bacterial co-infection rates and plan accordingly for future cases; and
- ensure treatment conforms with the latest national and international treatment guidelines.

Recommendations: proposed actions for patients and caregivers

Patients, caregivers, and the general population also have a key role to play in improving antibiotic stewardship and reducing AMR. We recommend that patients and the public:

- remember that antibiotics are life-saving medicines—but they only work for bacterial infections, not viral infections like COVID-19;
- carefully monitor their symptoms, and ask their HCP to confirm a bacterial infection prior to prescribing any antibiotic (and more importantly, to not request an antibiotic if their treating physician or practitioner does not deem it necessary);
- if prescribed an antibiotic, make sure to follow treatment guidance;
- take antibiotics only when prescribed by a licensed HCP—do not pick them up at the pharmacy even if they are available over the counter; and
- raise awareness and educate friends, families and broader communities about the risk of AMR, and join collective efforts to avoid unnecessary antibiotic use.

It is critical that patients, caregivers and the general public become aware and empowered to reduce AMR worldwide—both during and beyond the COVID-19 pandemic. Recent initiatives such as the AMR Patient Alliance[11] and its governing AMR Patient Consensus Statement[12] can be game-changers not only for patient empowerment on AMR actions but also for incorporating patient voices into global pandemic responses and AMR plans—

vitally important in a One Health approach and delivering on the Sustainable Development Goals.

Conclusions

As the global rollout of SARS-CoV-2 vaccines and therapeutics provides hope for tackling the COVID-19 pandemic, the global threat of AMR remains. Education and empowerment of patients, along with optimizing HCP behaviours and enhanced HCP-patient communications, can improve antibiotic stewardship and reduce AMR—preserving the efficacy of modern medicines for now and in the future.

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