COVID-19 will further exacerbate global antimicrobial resistance

Esabelle Lo Yan Yam, MSc (Health Policy) [1*]

[1]College of Health and Medicine, Australian National University

*Correspondence: Esabelle Lo Yan Yam, Address: The Australian National University, Canberra ACT 2600 Australia, Email Address: Esabelle.yam@anu.edu.au

On 1 June 2020, the World Health Organisation (WHO) Director-General, Tedros Adhanom Ghebreyesus, called the threat of antimicrobial resistance (AMR) "one of the most urgent challenges of our time", further exacerbated by the COVID-19 pandemic.[1] A review showed that 72% of 2010 patients diagnosed with COVID-19 received antibacterial therapy, even though only 8% of cases were reported with bacterial or fungal coinfection in studies reporting bacterial coinfection in COVID-19 cases.[2] Similar to other viral diseases such as dengue, COVID-19 patients present with undifferentiated fever and respiratory conditions that may be empirically treated as bacterial upper respiratory infections (URTI).[3] Inappropriate use of antibiotics may be worsened, or even considered reasonable when patients' conditions deteriorate around day 8-12 of the illness.[2] Furthermore, COVID-19 patients who are critically ill often require prolonged hospitalisation associated with nosocomial bacterial infections where antibiotics are needed.

The use of antibiotics in the COVID-19 pandemic will inevitably exacerbate AMR, and could ultimately lead to more deaths and morbidity as an unintended consequence of this already tragic pandemic. Although AMR was already spreading rapidly before the emergence of COVID-19 [4], the impact of the pandemic may be more pronounced in low-and-middle-income countries (LMICs) due to the lack of antimicrobial stewardship, limited clinical microbiology capacity, and poorly regulated access to antibiotics amongst the many other challenges faced by health systems in LMICs.[5] The prevalence of resistant bacterial strains is higher in mobile populations such as travellers, migrants and refugees, who may be carriers for months after returning home.[6,7] Amongst them are groups of vulnerable people who are disproportionately at risks to COVID-19, putting them at higher risks of complications if they experience secondary bacterial infections.[8] They also carry with them the risks of spreading the resistant bacterial strains to people they would come in contact with during the treatment, such as healthcare workers.

WHO issued guidance to discourage antibiotic therapy or prophylaxis for patients with mild COVID-19 symptoms, or patients with suspected or confirmed moderate COVID-19 illness unless there is a clinical indication of a bacterial infection.[9] A multipronged strategy is necessary to support WHO's effort in mitigating the impact of COVID-19 on the increasing trend in global AMR. First, prospective studies on COVID-19 coinfections and superinfections are needed to inform appropriate antimicrobial treatment and stewardship strategies. Second, transparent monitoring and reporting of antibiotic resistance patterns in COVID-19 intensive care units should be urgently established to help guide the proper use of antibiotics. Third, a globally coordinated effort in establishing a framework of governance, surveillance and reporting of AMR is needed to strengthen the fight against AMR during and in the aftermath of COVID-19.[5] One lesson that COVID-19 has taught the world is that global efforts, political commitment at the national level, and collaborations across the

innovation ecosystem are essential to tackle major public health challenges. The world needs such level of dedication to reverse the trajectory of AMR, by ensuring that research continues to develop antimicrobial drug pipeline, sustainable investment in health systems, and strengthening of antimicrobial stewardship.

Competing interests

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