



## LEARNING LOUNGE EXCLUSIVE: MICROBIOLOGY KNOWS NO BORDERS

### *What Lessons COVID-19 Can Teach Us About Antimicrobial Stewardship*

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*COVID-19 presented the worldwide community with an immediate public health challenge that required the collaboration of public and private sectors to collect data and survey the infectious disease landscape. The recent pandemic exemplifies the need for a global approach to monitoring and activation to fight public health threats like antimicrobial resistance (AMR). Working at the regional, national, and global levels to implement surveillance and share data is key to combatting the threat of AMR, a slow-moving pandemic that, like COVID-19, knows no borders.*

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### Takeaways From COVID-19 for Antimicrobial Stewardship

COVID-19 posed an immediate and visible threat to public health, spotlighting the value of consistent government communication and policy to address issues affecting the entire population. Stakeholders across government and healthcare sectors collaborated to develop and distribute COVID-19 tests and vaccines to slow the impact of the pandemic. Patients can also develop some immunity to bacterial infections through vaccination. Vaccines are available to protect patients from microbials such as pneumococcus, meningococcus, Haemophilus influenzae, B pertussis, C. diphtheriae, and C. tetani in order to bolster immunity against diseases caused by these bacterial organisms like meningitis, pneumonia, whooping cough, and tetanus.

Timely and actionable diagnostics are of the utmost importance in driving antimicrobial therapy changes. The scale-up of PCR testing in healthcare facilities (HCFs) in response to COVID-19 occurred rapidly, but preparing for the long-term fight against AMR will require more diagnostic resources. Having trained infectious disease (ID) experts equipped with diagnostic data can provide prospective and timely feedback and support antimicrobial therapy changes. Stewardship pharmacists have been crucial during the pandemic, but their efforts are often completely shifted to COVID-19 management, while normal but important antimicrobial stewardship efforts fall by the wayside. Therefore, not only do we need tools that provide rapid results, but we also need people trained in ID who can take immediate action on those results.

Researchers have been carefully tracking antimicrobial use during the pandemic for COVID-19 patients. Some studies suggest a great majority of COVID-19 patients received antibacterials, despite only an estimated 10% or less of patients having evidence of documented bacterial co-infections.<sup>1-5</sup>



Rapid diagnostics have the potential to facilitate the diagnosis or exclusion of bacterial co-infections in viral illness in order to encourage the discontinuation or optimization of antimicrobials.

## Improving Stewardship Needs to Be a Global Effort

Industry incentives are crucial in developing novel antimicrobials, but the innovation pipeline has been drying up because antimicrobial development has not traditionally been profitable. In the U.S., government acts like the GAIN Act and the proposed PASTEUR Act, aim to incentivize drug manufacturers to develop new agents. The problem truly lies with the responsibility of using existing antimicrobials responsibly, whether they be newly developed or existing therapies. Use, and especially improper use over time, contributed to AMR — from penicillin all the way to carbapenems. Therefore, a cultural shift in the medical field is required to truly combat antimicrobial resistance. Otherwise, new drugs will fall to the same actions.

In U.S. states like California, state public health departments have developed and enforced mandatory stewardship programs. Accrediting bodies like the Joint Commission and Centers for Medicare and Medicaid Services also require antimicrobial stewardship programs in accredited hospitals to receive federal funding. While there are currently no hard and fast agreed-upon metrics for antimicrobial consumption in the U.S., some national data is available for comparison between or within the same hospitals.

Every country and region faces unique challenges that local experts need to navigate. Deciding on what metrics to prioritize is the first step to align governing bodies to buy into the idea of incentivizing compliance with those metrics. Data from low- and middle-income countries (LMIC) is often under representative of the true scope of AMR challenges within a region because not everyone with an infectious disease has access to microbiology resources and testing. The Global Antimicrobial Resistance and Use Surveillance System (GLASS) by the WHO is a great start but may need to be supplemented with other approaches such as surveys and environmental testing to improve the accuracy of a holistic overview.

To fight AMR, health care providers, lab professionals, and public authorities will need to work together at a global level to increase surveillance and accountability. This is the key to combatting resistance — the appropriate use of antibiotics. COVID-19 showed the world the value of collaboration, data sharing, and rapid diagnostics, all of which will be critical to avoid the consequences of a public health disaster caused by AMR.

## References

1. Vaughn VM, Gandhi TN, Petty LA, et al. Empiric antibacterial therapy and community-onset bacterial coinfection in patients hospitalized with coronavirus disease 2019 (COVID-19): a multi-hospital cohort study. *Clin Infect Dis* 2021;72(10):e533-e541.
2. Staub MB, Beaulieu RM, Graves J, et al. Changes in antimicrobial utilization during the coronavirus disease 2019 (COVID-19) pandemic after implementation of a multispecialty clinical guidance team. *Infect Control Hosp Epidemiol* 2021;42:810-6.
3. Garcia-Vidal C, Sanjuan G, Moreno-Garcia E, et al. Incidence of co-infections and superinfections in hospitalized patients with COVID-19: a retrospective cohort study. *Clin Microbiol Infect* 2021;27(1):83-8.
4. Karami Z, Knoop BT, Dofferhoff ASM, et al. Few bacterial co-infections but frequent empiric antibiotic use in the early phase of hospitalized patients with COVID-19: results from a multicentre retrospective cohort study in The Netherlands. *Infect Dis* 2021;53(2):102-10.
5. Langford BJ, So M, Raybardhan S, et al. Bacterial co-infection and secondary infection in patients with COVID-19: a living rapid review and meta-analysis. *Clin Microbiol Infect* 2020;26(12):1622-9.



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