



LEARNING LOUNGE EXCLUSIVE

The Power of Point-of-Care (POC) Testing in Respiratory Illnesses: Lessons from COVID-19 and the Fight Against AMR

Respiratory illnesses have long posed a major global health threat, and the COVID-19 pandemic brought their impact into sharp focus. In just 24 months, the virus claimed more than 5.7 million lives globally, with most deaths resulting from respiratory complications.¹ This crisis reinforced the urgent need for fast and accurate diagnostic testing to facilitate informed therapy decisions, improve patient outcomes, and help shape public health strategies. At the same time, clinical testing delays contributed to higher transmission rates and slower medical time-to-response, further straining an already overwhelmed global healthcare system.

An unforeseen consequence of the pandemic was a surge in antimicrobial resistance (AMR). As hospitals struggled to manage rising COVID-19 cases, broad-spectrum antibiotics were frequently prescribed, even for viral infections, leading to increased antibiotic overuse and misuse. In turn, this has accelerated the emergence of drug-resistant bacteria, making common infections harder to treat. Addressing this challenge requires innovative diagnostic testing solutions and strong adoption of antimicrobial stewardship (AMS) practices across healthcare systems to ensure that antibiotics are used responsibly — for the right patients, in the right dosage, and for the right duration.

Faster Testing, Better Outcomes

Point-of-care (POC) patient testing is changing how respiratory infections are diagnosed and managed by delivering results in minutes — far faster than traditional laboratory testing, which can take hours or even days. Unlike conventional methods that involve sample collection, transportation to a centralized lab, and complex processing, POC diagnostic testing provides almost immediate on-site results, helping clinicians make informed treatment decisions faster.²

The COVID-19 pandemic demonstrated the importance of diagnostics to the general public, with rapid antigen test (RAT) kits empowering individuals to confirm infections at home or in local testing centers, thereby lessening the burden on regional healthcare facilities. These tests highlighted how decentralized, accessible testing can help curb the spread of respiratory illnesses and improve patient outcomes.³



Thanks to advancements in microfluidics, miniaturization, and data processing, modern POC tests are now as sensitive and reliable as traditional lab-based methods, while being arguably more efficient and accessible.³

Key benefits of POC diagnostic testing include:²

- **Optimized therapy:** Quicker results allow clinicians to diagnose and begin appropriate treatment sooner, reducing disease severity and limiting further spread.
- **Improved patient experience:** Eliminating long wait times and unnecessary hospital admissions makes patient healthcare more convenient and less stressful.
- **Increased efficiency in healthcare settings:** Faster clinical diagnostics help reduce bottlenecks in emergency departments and outpatient clinics, leading to better resource management.
- **Enhanced safety and accessibility:** Many POC tests require only a small blood sample, benefiting newborns, critically ill patients, and those at risk of excessive blood loss.

The Role of POC Testing in Fighting AMR

AMR is a growing global health threat, with experts predicting 10 million deaths per year by 2050 if antibiotic resistance continues unaddressed.⁴ Slowing this trend is now a top priority for global, regional, and local health organizations, and wider access to POC diagnostics is a key part of the solution.

Traditional AMR detection relies on genotypic or phenotypic testing, which requires specialized lab equipment and trained personnel, making it expensive and inaccessible in low-income countries and limited-resource areas. POC testing provides a cost-effective, decentralized alternative, enabling faster detection of antibiotic-resistant infections.⁵

POC testing plays a critical role in fighting AMR by supporting antimicrobial stewardship efforts that:^{3,5}

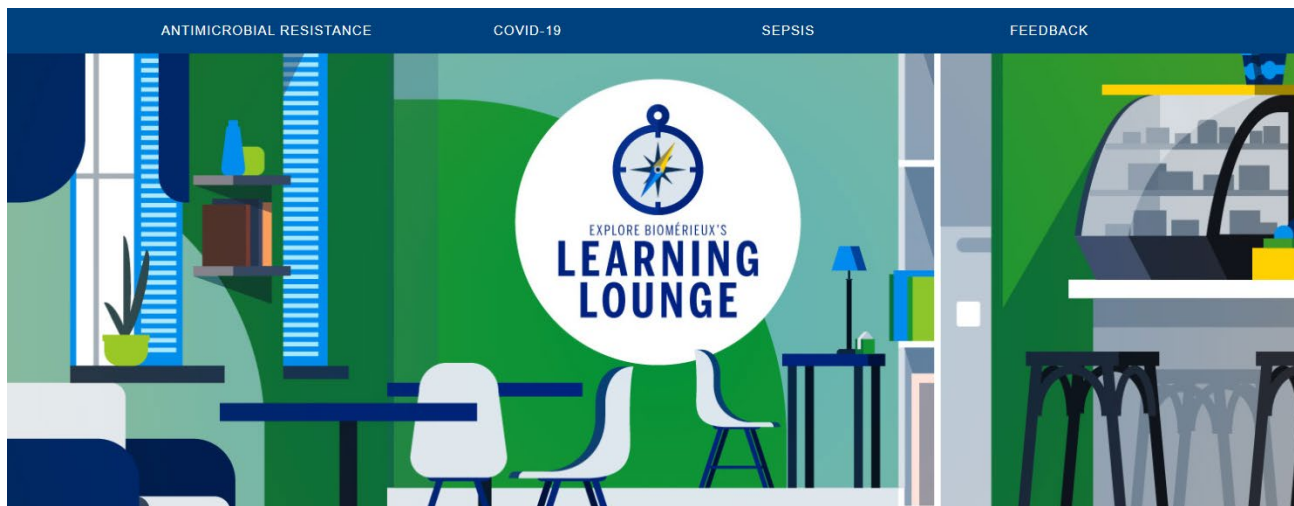
- **Encourage responsible antibiotic use:** By distinguishing bacterial from viral and fungal infections, POC tests help ensure antibiotics are only prescribed when necessary, reducing overuse and misuse.
- **Preserve existing antibiotics:** Fewer unnecessary prescriptions mean fewer opportunities for bacteria to develop resistance, helping preserve existing treatments.
- **Enhance surveillance:** Widespread adoption of POC testing allows for better tracking of resistant infections and potential outbreak monitoring, enabling proactive public health interventions.
- **Support low-resource areas:** Compact, cost-effective POC diagnostic testing solutions expand access to AMR detection in regions without advanced clinical laboratory infrastructures.

Conclusion

If there's one lesson we learned from COVID-19, it's that fast, accurate, and accessible testing is critical to help keep the global population healthy. At the same time, combining POC testing with antimicrobial stewardship (AMS) strategies can help slow the rise of antibiotic resistance while ensuring patients receive the right treatment at the right time and for the right duration. Looking ahead, continued investment in innovative POC diagnostic solutions is essential to building a stronger, more resilient global healthcare system — one that's prepared for whatever comes next.

References

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