PIONEERING DIAGNOSTICS

EXCLUSIVE

LEARNING LOUNGE EXCLUSIVE:

Improved Antimicrobial Stewardship Needed in Latin America

Featured Expert: Norma Hernández, Sr. Director Medical Affairs; bioMérieux LATAM

Summary:

In mid-2023, *The Lancet* published a systematic analysis of antimicrobial resistance (AMR) in the Americas, providing evidence of the heightened impact of AMR in the region of Latin America.[1]

Quantifying this burden through microbial surveillance, resistance patterns, and clinical cases/outcomes, begins to close the gap between identifying AMR as a burden and giving stakeholders data to support addressing localized challenges with defined pathways of action.

bioMérieux: Question #1

In the referenced study submitted by Antimicrobial Resistance Collaborators, they found that the leading pathogen-drug combination in 2019 responsible for AMR-*attributable* deaths was methicillin-resistant *S. aureus*, and the leading cause of AMR-*associated* deaths was aminopenicillin-resistant *E. coli*.[1] Can you speak to some of the contributing factors that have given rise to pathogens such as these in Latin America?

Norma Hernández: For Latin America, there are important factors that contribute to the high level of AMR, especially to *E. coli* with ESBL (extended spectrum beta-lactamase). Antimicrobials are found in environments outside of the hospital setting and this contributes to the emergence of new resistant strains. Gram-negative pathogens are transmitted easily among individuals in various community settings via water, sanitation, inadequate hygiene, and food pathways—and Latin America fulfills all the criteria required to accelerate the spread of drug resistance.

As in other world regions, antimicrobial overuse and misuse may also drive bacterial resistance in Latin America. Early recognition of patients with a heightened risk for infection with multidrug-resistant bacteria is necessary to provide appropriate empirical treatment and institute measures to control or limit disease transmission. The accuracy of empiric treatment relies on understanding local susceptibility patterns within each institution and maintenance of longitudinal surveillance programs, however, equitable access to diagnostic tools and technology is often limited.

bioMérieux: Question #2

Studies such as the previously mentioned, bring greater visibility to the higher rate of AMR-related deaths in Latin America compared to its regional counterparts. What are some strategies you believe could accelerate actions to curtail the AMR crisis in Latin America?

Norma Hernández: First, it is important to increase overall awareness of AMR. In the Latin American region, there is a greater focus on cardiovascular diseases and cancer than on AMR. Health authorities from Latin American countries must understand the burden of AMR and that many patients are dying or have complications because of an infection with a multidrug-resistant bacteria.

Next, we must recognize that 30%–50% of the population of Latin American countries rely on public healthcare, but funding for these services, which is derived from federal taxation, is inadequate.[2] Increased microbiology capacity is needed to improve access to results at the point of care, including accurate detection of resistance for timely antimicrobial actions. Most public hospitals operate with extremely limited budgets and lack the resources to support a robust microbiology laboratory and establish an antimicrobial stewardship program (ASP).

Presenting AMR as an economic burden may help capture expanded visibility of the issue with some stakeholders. There was an interesting study on the economic impact within six countries of Latin America, including the largest, Brazil and Mexico. The study used a bespoke economic model and a series of model validation interviews to estimate direct costs to health systems in 2019 due to healthcare acquired infections (HAI) caused by select resistant bacteria. They estimated direct costs to range from US $386.7M to US $1.5B depending on the excess length of hospital stay.[3]

bioMérieux: Question #3

It is well-known that there are low physician and pharmacist-to-population ratios in Central and South American countries, but what other staffing or operations are impacting the activation of antimicrobial stewardship programs (ASP)?

Norma Hernández: The number of persons participating in ASP activities in hospitals/institutions in Latin America was evaluated in a study conducted by Hegewisch-Taylor, Dreser, et al. The study showed the allocation of human resources for stewardship was considered a limitation in Latin American countries; however, most institutions did report having one or more participating staff members.[4] While distinguishing among the types of health professionals involved was not always possible, it is a reality in Latin American countries that not enough infectious disease professionals

are available to guide these programs. For some institutions, they may not even have a clinical pharmacist to support physicians in correctly prescribing antimicrobials.

The role of Latin American pharmacists remains confined mostly to drug distribution and functioning as members of an ASP or infection prevention control (IPC) committee. They do not often have an active role in making recommendations about antibiotic selection or dosing. Some countries in Latin America and the Caribbean (e.g., Barbados, Brazil, Costa Rica, and Colombia) have implemented standards or have passed laws regarding the role of clinical pharmacists in hospital ASPs, however, this remains unaddressed in most countries of the region.

bioMérieux: Question #4

How could the implementation of a hospital/laboratory-based surveillance system help guide stewardship improvements at a local/regional level?

Norma Hernández: One of the first and sometimes most important actions of a stewardship program or stewardship committee is the creation of empiric treatment guidelines for the most common infections. This is not possible if hospitals do not do surveillance. Because ESBL-producing bacteria now cause many infections in the community setting of Latin American countries, healthcare providers are increasingly reliant on multilevel microbial surveillance to inform treatment decisions, identify major problems, and guide adequate control measures – however, access to information technology (IT) remains a common concern across many low- and middle-income (LMIC) countries. Real-time data regarding antimicrobial susceptibility and genotypic patterns must be available to healthcare professionals. Every hospital needs epidemiological reports with their own susceptibility and resistance patterns from the country and the region, so they can track localized resistance patterns and act on that data to diminish AMR-associated and attributed mortality.

bioMérieux: Question #5

Do you believe collaboration with the microbiology lab and better application of diagnostic solutions could accelerate antimicrobial stewardship efforts in Latin America?

Norma Hernández: Clinical microbiologists can make relevant contributions to antimicrobial stewardship programs (ASP) through cumulative antimicrobial susceptibility test reports, enhanced susceptibility reports with footnotes and comments, sampling and transportation advice, rapid diagnostic tests availability, provider education, and development of surveillance systems.

In a Manual for Public Health Decision-Makers from the Pan American Health Organization (PAHO) regarding the implementation of ASP in Latin America, there is a dedicated chapter to the microbiology lab and diagnostic stewardship. An example they suggest is that the microbiology labs should apply molecular diagnostics to patient care, with MALDI-TOF and syndromic testing being cutting-edge technologies in diagnostic microbiology. And, depending on local epidemiology and case complexity, implementing diagnostic panels for the most common syndromes could be

considered.[5] Developing guidelines to request testing, interpret results, and address prompt turnaround—together with a stewardship program, is the key to cost effectiveness.

bioMérieux: Question #6

In your opinion, what do you consider the greatest opportunity for healthcare professionals and policymakers to prevent the further rise of resistant pathogens in Latin America?

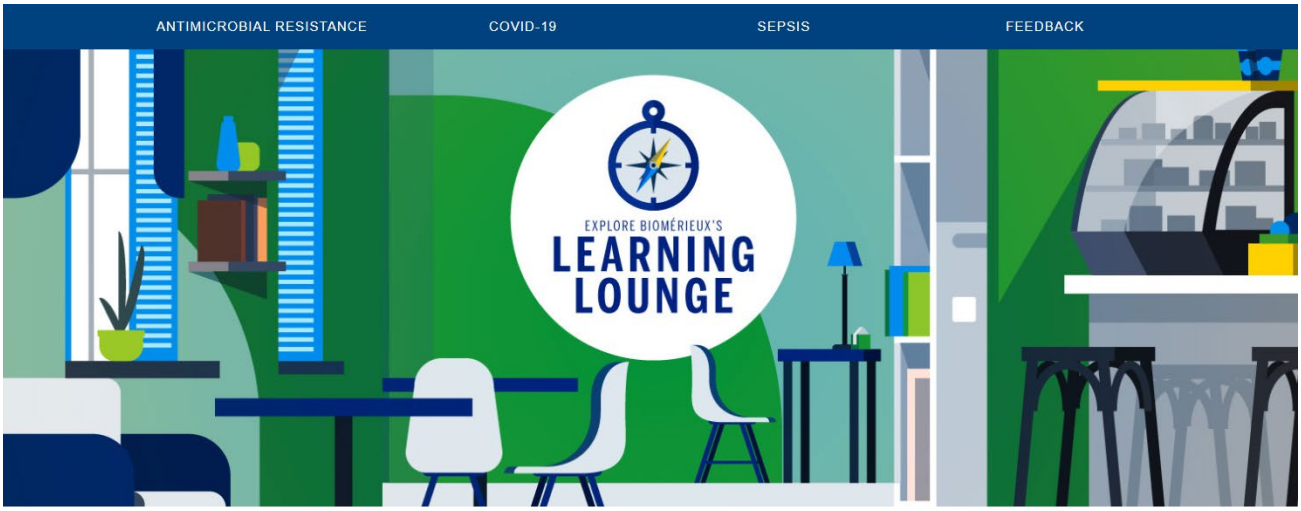
Norma Hernández: I believe the greatest opportunity in Latin America is to hold people more accountable to the guidelines that the World Health Organization (WHO) and Pan American Health Organization (PAHO) have provided, which aims to address the challenges and health system barriers people face in the prevention, diagnosis, and treatment of resistant bacterial infections. Most countries in Latin America do not have federal legislation or regulations that compel hospitals to implement stewardship programs or prioritize efforts to combat antimicrobial resistance (AMR). We need to put people and their needs at the center of the AMR response and guide policymakers in taking programmatic and comprehensive actions to mitigate AMR. It will also be important to follow the Global Research Agenda for Antimicrobial Resistance in Human Health published in June 2023 by the WHO, where they proposed 40 strategies to combat AMR, with a priority to focus more on diagnostics.[6] For Latin America there are specific efforts that are key to combatting AMR, including generation of awareness for the global burden, medical education that guides informed decision-making for optimized treatment, promotion and utilization of local and regional surveillance data, and empowering the microbiology lab.

Norma Hernández Senior Director, Medical Affairs; bioMérieux LATAM.

References:

1. Antimicrobial Resistance Collaborators. The burden of antimicrobial resistance in the Americas in 2019: a cross-country systematic analysis. *Lancet Reg Health Am*. 2023 Aug 8;25:100561. doi: 10.1016/j.lana.2023.100561.

2. Fabre V, Cosgrove SE, Secaira C, et al. Antimicrobial stewardship in Latin America: Past, present, and future. *Antimicrobial Stewardship & Healthcare Epidemiology*. 2022;2(1):e68. doi: 10.1017/ash.2022.47.
3. Economist Impact. Tackling antimicrobial resistance in healthcare: the significance of robust health and economic data. 2023. Available at https://impact.economist.com/perspectives/sites/default/files/tackling_antimicrobial_resistance_economist_impact_report.pdf. Accessed 2023 December 19.
4. Hegewisch-Taylor J, Dreser-Mansilla A, Romero-Mónico J, Levy-Hara G. Antimicrobial stewardship in hospitals in Latin America and the Caribbean: a scoping review. *Rev Panam Salud Publica*. 2020;44:e68. Published 2020 Sep 23. doi:10.26633/RPSP.2020.68
5. Pan American Health Organization. Florida International University. Recommendations for Implementing Antimicrobial Stewardship Programs in Latin America and the Caribbean: Manual for Public Health Decision-Makers. Washington, D.C.: PAHO, FIU; 2018. Available at https://iris.paho.org/handle/10665.2/49645. Accessed 2023 December 14.
6. World Health Organization. Global Research Agenda for Antimicrobial Resistance in Human Health, Policy Brief. 2023. Available at https://cdn.who.int/media/docs/default-source/antimicrobial-resistance/amr-spc-npm/who-global-research-agenda-for-amr-in-human-health---policy-brief.pdf?sfvrsn=f86aa073_4&download=true. Accessed 2023 Dec 20.



Explore bioMérieux's Learning Lounge

On-demand information and insights on the latest diagnostic advancements in patient care for Antimicrobial Resistance, Sepsis, and COVID-19.
lounge.biomerieuxconnection.com

Never Miss An Update

Subscribe to the **Learning Lounge Highlights** monthly email today!

BIOMÉRIEUX, INC.
100 Rodolphe Street, Durham, NC 27712 USA • Phone (800) 682-2666 • www.biomerieux-usa.com