PIONEERING DIAGNOSTICS

EXCLUSIVE

LEARNING LOUNGE EXCLUSIVE: THE FUTURE OF INFECTIOUS DISEASE AND DATA SHARING

Editorial by : Matthew Mikell
IT and Cloud Solutions, bioMérieux

Antimicrobial susceptibility testing (AST) is an important task of the clinical microbiology laboratory to determine the sensitivity of bacteria as well as the most effective antibiotic dosage. While knowing the right antibiotic treatment for the right patient at the right time is vital, proactively and more broadly sharing local AST data can improve stewardship programs around the nation and the globe.

Studies suggest that less than 5% of all data collected from both businesses and consumers is actually analyzed.[1] Clinicians and their hospitals may not be set up for best-practice sharing or real-time evidence when considering different treatment practices. The frequent and automated collection, consolidation, and collaboration upon AST data is what stewardship programs are lacking. It is common to find that clinicians and hospitals are publishing antibiograms from spreadsheets with patient data that is 12 months old. To fully appreciate the challenge, one need only review the AMR national frameworks from South Africa, the United Kingdom, and Australia whereby 60+ pages of strategies used the word 'Technology' only twice.

Live Local, Think Global

In the United States, infections caused by multidrug resistant organisms (MDRO) rack up healthcare costs of over $20 billion per year.[2] While some regional or hospital networks allow labs to pool resources, benchmark data, and share successful AST strategies, many stand-alone or community hospitals have no context or tools to track which patients may have a predisposition toward antibiotic resistance. Fostering relationships between hospitals, states, and nations can help spot resistance trends before they develop into something more dangerous and widespread. Bringing all of this information into a shared and open cloud platform for macro and micro analysis could deliver real-time tracking data to individual and regional hospitals.

Lab professionals serving a smaller, localized population may have no idea if their AST data is an outlier or part of a growing resistance trend. There are few institutions that can invest the resources in collecting years of data to analyze macro and micro trends and even fewer who make this a regular process. As a result of poor data and analysis tools, these trends are often discovered long after they've passed by. Today, most lab professionals are busy working for their data, not having the data work for them.

Start Today

Despite resource challenges that hospitals today face, technological advances provide more opportunities for healthcare facilities to participate. Concepts such as cloud, big data, and AI have converged to make AST analysis accessible, affordable, and equitable to institutions of all locations and sizes. Antimicrobial stewardship programs (ASP) could be shared and open across institutions and borders. This enables hospital programs to take ownership of stewardship even if nationalized data sharing is unavailable.

The following are five ways stewardship programs can adopt analytic solutions to get the most value from their existing AST data:

1) **Cloud Computing:** An environment where everyone and no-one has control; the shared environment allows for stewardship partnership without the limits of location or government. The platform can be available and accessed globally using a web browser.

2) **Scalable Participation:** Hospitals can join the platform for a modest annual fee based upon number of beds. Small, medium, or large hospitals get a price commensurate to their size and data they contribute.

3) **Give to Get:** To participate in the platform, you have to add in your data. While this can be a bothersome obstacle to the partnership, everyone has to be invested in the platform to get something in return.

4) **Artificial Intelligence:** Coalescing and understanding AST around the world implies new levels of data volume and velocity (real-time). With machine learning algorithms, AI can automatically analyze data and uncover hidden trends, patterns, and faster insights.

5) **Coder Challenge:** Provide compensation and platform access for 'good tech' actors or humanitarians who bring new coding skills and analytic insights to old AMR problems.

References

1. IDC Report: Less Than 5% of All Data Analyzed. https://www.anodot.com/blog/idc-digital-universe-report/

2. Johnston, K. J., Thorpe, K. E., Jacob, J. T., & Murphy, D. J. (2019). The incremental cost of infections associated with multidrug-resistant organisms in the inpatient hospital setting—A national estimate. Health services research, 54(4), 782–792. https://doi.org/10.1111/1475-6773.13135

Explore bioMérieux's Learning Lounge
for information and insights on the latest diagnostic advancements
in patient care for Antimicrobial Resistance, Sepsis, and COVID-19
lounge.biomerieuxconnection.com

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