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Commentary

Challenges of infectious agents: A clinical microbiology anticipatory

Rauch Daniel*

Department of Microbiology and Immunology, Vanderbilt University School of Medicine, Tennessee, USA.

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DESCRIPTION

Characterizing the infectious agent that caused a patient's infection to assisting to identify pandemic disease outbreaks are just a few of the duties that fall under the purview of the clinical microbiology laboratory. Every one of these processes is collaborating more closely with informatics (Bergqvist F et al., 1975). Utilizing informatics technologies efficiently can improve the precision, timeliness, and thoroughness of microbiology testing while reducing laboratory burden, which can result in an optimized workflow and lower costs. With the development of complete laboratory automation, intricate instrument interfaces, electronic health records, clinical decision support systems, and the practical use of microbial genome sequencing, informatics is poised to become more and more important in clinical microbiology (Brossette SE et al., 2008). Because of their versatility and breadth, clinical microbiology informatics technologies are now fundamental to modern clinical and laboratory practice. Future patient and public health care will be further improved by ongoing technological developments and the creation of these informatics tools.

Characterizing the infectious agent that caused a patient's infection to assisting in the early detection of pandemics are just a few of the duties performed by the neighborhood clinical microbiology laboratory. These procedures are getting trickier and trickier (Campos JM, 2003). Every laboratory is required to maintain high standards while becoming more productive. The clinical microbiology laboratory is under pressure to increase production, identify more microorganisms, report complex and evolving drug-related data, automate processes, combine conventional lab data with molecular results, and take part in public health reporting and outbreak detection. The majority of these demands can be met with the help of informatics, which also offers special opportunities to advance the clinical microbiology laboratory and enable the lab to work more efficiently (Forsum Uet al., 2007).

*Corresponding author. Rauch Daniel, E-mail: danielr@gmail.com

The use of data and information tools in the "science and service dealing with detection, identification, and antimicrobial susceptibility is testing" of clinically important bacteria. It is crucial to clarify that the field of informatics encompasses not only technology but also the individuals who use, implement, and maintain information systems, as well as the workflow procedures that are impacted by this technology (Paxton A, 2012).

The LIS's quality and its interface with doctors must be guaranteed, just like all other components of the clinical microbiology laboratory. Before introducing a new microbiological test, a number of LIS and HIS components must be functional. The clinical microbiology laboratory's main goal is to assist in the appropriate selection of an antibiotic therapy regimen for a patient, and two crucial factors should be taken into account while trying to choose the best antimicrobial treatment for a probable illness. Whether or not an infection is genuinely present is the first variable. The effectiveness of a medicine as a treatment depends on whether or not an infection is present, which is the second crucial factor (Trevino S, 2000). The laboratory and doctors can determine these factors most effectively with the aid of several informatics technologies.

Before knowing the results of the antimicrobial susceptibility test for the specific isolate infecting the patient, the antibiogram is useful in easing the selection of an appropriate medication for an infecting organism. The local microbiology laboratory's susceptibility data are organized by the antibiogram, which is a useful tool, but choosing which antimicrobials are possibly clinically effective depends on more factors than just the possibility of antimicrobial susceptibility.

A growing amount of data must be produced, analyzed, and interpreted in the clinical microbiology laboratory. For data to be assessed and presented effectively and efficiently, informatics technologies must be utilised to enhance laboratory workflow and processes. Informatics tools can assist microbiologists in a number of ways, including helping them keep better track of specimen work-ups in the lab, automate their workloads, identify clinically relevant microorganism characteristics,

remotely share digital images for teleconsultation, quickly distribute accurate and appropriate results, perform more thorough and rapid disease surveillance, and improve patient and public health.

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