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A Short Communication on Digital Microbiology

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Introduction

There is no doubt that digital technology will have a significant impact on how we live in the years to come, including algorithms for self-improvement, self-driving cars, drones, and other internet-connected products and bodies, such as smart phones. High expectations are created in the healthcare industry by digitalization and AI. An increased need to maximise quality and cut expenses is what's driving these expectations. The average percentage of health spending in 2017 as a percentage of GDP, or $3,857 per person year, was 8.8 percent, according to the Organisation for Economic Co-operation and Development (OECD).

In order to I use machine learning algorithms for optimization of the treatment indication and prognosis prediction and (ii) as information sources to monitor and document the quality and impact of medical interventions, there will be an increased demand for high-quality digital laboratory data, specifically also microbiological data in diagnostics. Healthcare expenses have increased significantly worldwide during the previous ten years, more than doubling. Therefore, a variety of stakeholders have high hopes for digitalization as the panacea to control or even reduce healthcare-related expenses. A recent assessment of general issues of medical digitalization might be found elsewhere. However, it remains to be seen whether and when digitalization will result in a considerable streamlining of procedures related to healthcare and an improvement in quality [1-3].

Microbiologists and other laboratory specialists have the chance to transition from being providers of services to innovators in patient assessment as a result of the growing demand for microbiological digital data. This will help to personalise diagnoses and treatments, enhance the quality of digital data, and support lower healthcare costs. Digital microbiology may have a significant impact on pathogen surveillance and public health. Microbiology laboratories must have a foundational understanding of digital medicine, encompassing vision, knowledge, and infrastructure on all facets of data processing, in order to support digitalization [4]. In order to better grasp the most crucial elements of digitalization, machine learning, and artificial intelligence in the pre-to-post analytical process of clinical microbiological diagnostics, this essay attempts to increase general comprehension.

Digitalization Opportunities

The risk of blood culture contamination can be determined based on the presence of a central venous line and the inflammatory response syndrome (SIRS). Future automated quality assessment reports for the microbiologist and physician may be made possible by the merging of LIS and electronic health record (EHR) data. The diagnostic stewardship component of the pre-analytical phase is also crucial. The idea of suggesting the optimal diagnostic strategy for a specific circumstance is incorporated into the concept of diagnostic stewardship. Digital twins, machine-learning-based algorithms in smartphone apps, and catboats are a few examples of digital solutions that can be used in this industry. When patients are exposed to SARS-CoV-227, catboats have recently been designed to support the diagnostic diagnosis and urge immediate measures [5].

Clinical microbiology's diagnostic procedure is broken down into pre-, analytical-, and post-analytical processes, forming a circle of material and information flow. Modern blood culture systems offer automatic blood culture weighing to calculate the amounts collected and send input to the laboratory information system (LIS). Detecting contaminated blood cultures caused by skin flora such Staphylococcus epidermis, other coagulase-negative staphylococci, and Cut bacterium acnes are other examples of pre-analytical quality [6].

Conclusion

Thus, such a programme might make advantage of prior user experience. For instance, a panel PCR directly from positive blood culture may speed up the species identification and lead to an adaptation of the antibiotic treatment given in a critically ill, immunosuppressed patient with sepsis, whereas in an otherwise healthy younger patient, standard culture-based identification may be sufficient.

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Conflict of Interest

There is no conflict of interest by author.

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