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Editorial

A review of microbiology practice in tertiary care teaching hospital

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Microbiology field is continuously evolving, starting from being practiced as part of pathology till the performing independent critical role in COVID-19 pandemic in India. However, in this journey many challenges have been faced by microbiologist who struggle to keep up with the evolving landscape of microbiology. Clinical Microbiology has prime concerned with - prevention, diagnosis and treatment of infectious diseases which defers from general microbiology which deals with only study of microorganisms.¹

A well developed microbiology laboratory in tertiary care centre is involved in early detection and reporting of infectious disease ranges from simple microscopy to more advanced RT-PCR testing.² Although being part of laboratory set up, microbiology division is different from pathology and biochemistry in terms of lack of automation, longer time for reporting, collection and processing of samples, biosafety precautions, adhering to different guidelines for each infectious diseases. A microbiologist in tertiary care teaching institute is involved in teaching activities of medical students and laboratory activities such as bacteriology, serology, microscopy, ELISA, Media preparation, parasitological examination, mycology, molecular testing, core areas infection control program, etc. Different challenges are being faced by microbiologist in their daily practices. The outcome of microbiology practices is most effective when there is integrated, layered team work of clinicians, microbiologist,

technical staff and hospital administration is possible. Most common loopholes in these practices include prescribing inappropriate tests, unavailability of clinical history failure to interpret microbiology report, lack of follow up, etc. Joint commission report says that these type of medical errors is responsible for 40,000 to 80,000 adverse outcomes in patients per year across the globe.³

As the clinical microbiology covers wide range of infectious diseases; it is difficult to apply single protocol for diagnostic approach. It always defers from one pathogen to another. Also for each infectious disease, there is a unique guideline at state, national and international level which must be followed by microbiology laboratory strictly. These guidelines consist of applying ideal method for diagnosis and interpretation, recruitment of competent staff, data reporting and data monitoring in different format for each pathogen. Adherence to these protocols require sound knowledge and consumes quality time of microbiologist.

The unique feature in clinical bacteriology is preparing the required culture media at own rather than ordering all the material readymade from outside. Performing quality control tests and maintenance of quality assurance of bacteriology laboratory also requires dedicated and competent team of microbiologist and technicians. From a single clinical specimen many tests are being performed e.g. microscopy, primary and secondary culture, biochemical identification, antibiotic susceptibility tests, etc. over the period of 24-48hrs for simple culture to 6-7 days in case of blood culture reporting. In case of tuberculosis and

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fungal culture, follow up can be extent up to month also. Clinical staff and hospital administration should be aware about these facts while prescribing tests for diagnosis. Also reporting of some laboratory result is not much easy as for hematology and biochemistry e.g. HIV, WIDAL, RPR, etc. Timing of sample collection is also important for accurate diagnosis to avoid false results. So clinical history and collection timing is always required from clinical side while sending a specimen for diagnosis of infectious disease. Routine meeting and discussion between microbiologist and clinical staff is required at regular interval to cover the possible gap that might be arrived.

Hospital infection control is an important aspect of clinical microbiology work. Also it is also mandatory for each medical college to implement the infection control program and antibiotic stewardship as per National Medical Commission norms.⁴ Control of spread of infection within hospital premises among healthcare worker, patients and visitors is prime concern now a days; although it should be keep in mind that this is the responsibility of every one including clinicians, nurses, administration staff, housekeeping staff and microbiologist. Still in many developing institutions especially in peripheral area, there is lack of awareness and interest of clinical and administration staff is observed; which is major challenge for microbiologist in delivering their best as infection control officer. Regular flow of clinical specimens from hospitalized patients is must for monitoring of infection control practices and antimicrobial resistance surveillance. Regular follow up and case to case discussion with clinicians regarding susceptible antibiotics, advise infection control precautions, monitoring response to therapy is helpful in establishment of partnership between clinical microbiologists and clinicians.⁵

Microbiology branch is sub optimized in terms of patient care. In Indian scenario, clinical microbiologists are largely confined to laboratory environment; the relationship with clinical medicine is not well developed. Real clinical microbiology can go beyond laboratory boundaries and perform critical role in infectious disease management. Role of microbiologist can be extend to taking rounds in medicine wards and ICUs, offering consultation in infectious disease related issues, choosing a empirical and directed antibiotics, monitoring infection control practices, supervising and

taking leadership in activities like cleanliness, choosing disinfectants, control of CSSD, sensitization of healthcare professionals regarding hand hygiene, etc.⁶

So in conclusion, Microbiology is branch delivering and exploring in various areas of patient care management with all the teaching activities of MBBS under graduates. Despite certain challenges pertaining to trained human resources, administration support, managing multiple activities at time Microbiology has delivered their best to the community in last decades in terms of management of various epidemics and pandemics. In future, we are expecting microbiologist to go beyond the laboratory premises and taking up the clinical responsibilities with positive approach of hospital administration and clinicians. There is major scope of redesigning the work schedule of microbiologist in clinical and patient care approach so that benefit of clinical microbiology practice can be maximized.

1. Conflict of Interest

None.

References

1. Clinical Microbiology in the 21st Century: Keeping the Pace. A report from the American Academy of Microbiology. Available from: http://colinmayfield.com/public/PDF_files/Clinical_Microbiology_in_the_21st_Century%5B1%5D.pdf.
2. Challenges of clinical microbiology in resource-restricted settings. Available from: <https://www.openaccessgovernment.org/resource-restricted-settings/129605>.
3. Rodziewicz TL, Houseman B, Hipskind JE. Medical Error Reduction and Prevention. Treasure Island, FL: StatPearls Publishing; 2021.
4. Available from: <https://www.nmc.org>.
5. Chugh TD, Duggal AK, Duggal SD. Patient Safety, Clinical Microbiology, and Collaborative Healthcare. *Ann Natl Acad Med Sci*. 2022;doi:10.1055/s-0042-1744390.
6. Sanjay B. Clinical microbiology: Should microbiology be a clinical or a laboratory speciality. *Indian J Pathol Microbiol*. 2010;53(2):217–21.

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