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Subject: Medical microbiology

Assignment

Q#1: what is the importance of medical Microbiology?

Medical Microbiology:

Medical microbiologists provide services to aid the diagnosis and management of infectious diseases and help ensure the safety of those at risk of acquiring infectious diseases, both in hospitals and the community. Although this role is laboratory-based, the microbiologist's role is increasingly clinical.

Importance of medical Microbiology:

Microbiologists provide advice regarding the interpretation of results and the appropriateness of further investigations and antibiotic treatment.

Microbiologists have a hands-on role supervising the running of the diagnostic laboratory, and ensuring the delivery of prompt and accurate test results for patients. In cases where antimicrobial drugs are required, medical microbiologists provide advice concerning the choice of such drugs and the duration of treatment.

The side effects of treatment, along the potential risk of encouraging further infections (some of which may be antibiotic-resistant) must be considered, along with any medical problems or allergies the patient might have.

Medical microbiologists also play a key role in controlling the spread of infectious diseases. Microbiologists work with hospital infection control teams to reduce the spread of infections in hospitals (including hospital 'super bugs' such as MRSA and Clostridium Difficile).

They also contribute to the protection of public health by monitoring the patterns of infectious diseases and reporting new or unusual occurrences of infections. In their infection control activities, microbiologists work with nurses and other healthcare professionals, hospital estates departments and management.

Q#2: Briefly explain what type of diagnostic test we perform in Clinical or microbiology labs?

LABORATORY DIAGNOSIS:

Laboratory tests may identify organisms directly (eg, visually, using a microscope, growing the organism in culture) or indirectly (eg, identifying antibodies to the organism). General types of

tests include

1. Microscopy

2. Culture

3. Immunologic tests (agglutination tests such as latex agglutination, enzyme immunoassays, Western blot, precipitation tests, and complement fixation tests)

4. Nucleic acid–based identification methods

5. Non-nucleic acid–based identification methods

Culture is normally the gold standard for identification of organisms, but results may not be available for days or weeks, and not all pathogens can be cultured, making alternative tests useful. When a pathogen is cultured and identified, the laboratory can also assess its susceptibility to antimicrobial drugs. Sometimes molecular methods can be used to detect specific resistance genes.

Some tests (eg, Gram stain, routine aerobic culture) can detect a large variety of pathogens and are commonly done for many suspected infectious illnesses. However, because some pathogens are missed on these tests, clinicians must be aware of the limitations of each test for each suspected pathogen. In such cases, clinicians should request tests specific for the suspected pathogen (eg, special stains or culture media) or advise the laboratory of the suspected organism(s) so that it may select more specific tests.