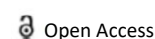




## COMMENTARY ARTICLE



# Medical Microbiology: Causes and Transmission of Infectious Diseases

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### ARTICLE HISTORY

Received: 04-Apr-2022, Manuscript No. JCMEDU-22-59931;  
Editor assigned: 06-Apr-2022, PreQC No. JCMEDU-22-59931 (PQ);  
Reviewed: 20-Apr-2022, QC No. JCMEDU-22-59931;  
Revised: 25-Apr-2022, Manuscript No. JCMEDU-22-59931 (R);  
Published: 2-May-2022.

## Description

Medical microbiology is a branch of medicine concerned with infectious illness prevention, diagnosis, and treatment. It's a large branch of microbiology that's used in medicine. In addition, this field of study looks at a variety of clinical applications of microbes for health improvement. Bacteria, fungi, parasites, and viruses are the four categories of microorganisms that cause infectious disease, as well as one type of infectious protein known as prion [1].

Pathogens' characteristics, modes of transmission, infection, and growth mechanisms are studied by a medical microbiologist. For employment as a clinical/medical microbiologist in a hospital or medical research centre, a Master's degree in microbiology and a Ph.D. in any of the life sciences are normally necessary (Biochemistry, Micro, Biotech, Genetics, etc.) [2]. Medical microbiologists routinely consult with doctors, identifying bacteria and making treatment recommendations. This information can be used to build a treatment. Identifying possible community health threats, monitoring the evolution of potentially virulent or resistant microbial strains, educating the public, and assisting in the establishment of health practises are some of the other roles. They could also help with disease outbreaks and epidemics prevention and control. Some medical microbiologists study non-pathogenic species to determine whether their characteristics may be used to develop antibiotics or other treatments.

Although the clinical aspect of medical microbiology primarily focuses on the presence and growth of microbial infections in individuals, their effects on the human body, and the methods for treating those infections, epidemiology, the study of the patterns, causes, and effects of health and disease conditions in populations, is an important part of the field. In this way, the entire field as an applied science can be conceptually divided into

academic and clinical sub-specialties, even though there is a fluid continuum between public health microbiology and clinical microbiology, just as the state of the art in clinical laboratories is dependent on continuous improvements in academic medicine and research laboratories.

## Infectious illness causes and transmission

Infections can be caused by bacteria, viruses, fungus, or parasites. Exogenous (i.e., acquired from the environment, animals, or other humans) or endogenous (i.e., influenza) pathogens cause disease (from normal flora e.g. Candidiasis) [3]. The point at which a microbe enters the body is referred to as the portal of entry. These include the respiratory tract, gastrointestinal tract, genitourinary tract, skin, and mucous membranes. How a microbe goes from its natural home to the host is usually what determines the microbe's entry gateway.

A variety of methods exist for transmitting disease from one person to another [4]. The following are some of them: Touching an infected host, including sexual contact, is referred to as direct contact. Indirect contact entails coming into contact with a polluted surface.

Viruses, like other diseases, enter the body by a variety of methods, but unlike other pathogens, viruses must also infect the host's cells. Once the virus has gained access to the host's cells, it must transfer its genetic material (RNA or DNA) into the cell [5]. The types of genes involved in viral replication differ a lot. The bulk of DNA viruses assemble in the nucleus, whereas RNA viruses assemble only in the cytoplasm.

For a virus to survive, the methods through which it infects, multiplies, and persists in host cells are crucial. Some diseases, such as measles, have a technique of disseminating to a large number of hosts. Because diverse types of viral infection are normally treated by the body's own immune response, the virus must spread to new hosts before being eliminated by immunological

resistance or host death [6]. Some infectious pathogens, such as the Feline Leukaemia Virus, can defy immune responses and remain in a single host for long periods of time while still being able to spread to new hosts [7].

Medical microbiology includes the diagnosis and treatment of illnesses as well as the research of beneficial microbes. Microbes have been discovered to help treat infectious disorders and promote healthy health. As proven by Alexander Fleming's discovery of penicillin and the generation of innovative medications from the bacterial species *Streptomyces*, among other instances, microbes can be exploited to manufacture remedies [8]. Microorganisms can act as probiotics, providing health benefits to the host such as enhanced gastrointestinal health or pathogen suppression.

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