

# Editorial Highlights on Bacterial Pathogenicity and Epidemiology (Special Issue)

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## Editorial Note

The Journal of Medical Microbiology and Diagnosis commemorates its decade long publication service in the field of Microbiology. With a successful International publications record, the journal has already begun compilation of the fifth issue in the 9th volume. In addition to the regular issues the journal has been publishing special issues, supplements and conference proceedings from time to time. In general, the journal covers all including Bacteriology, Clinical and Medical Diagnostics, Parasitology, Bacterial Infections. With good citation record, the journal is included in indexing databases conferring wide geographical outreach, such as Index Copernicus, Open J Gate, CAS Source Index along with simultaneous port-production digital media promotion policy. Ever since its inception in the year 2012 the journal has been consistently producing quality articles sourced from all across the world. The journal holds impeccable record of regular bimonthly issue release frequency with publication time lines.

A pathogen is a microorganism that is able to cause disease in a plant, animal or insect. Pathogenicity is the ability to produce disease in a host organism. Microbes express their pathogenicity by means of their virulence, a term which refers to the degree of pathogenicity of the microbe. A **pathogen** is a microorganism that is able to cause disease in a plant, animal or insect. **Pathogenicity** is the ability to produce disease in a host organism. Microbes express their pathogenicity by means of their **virulence**, a term which refers to the degree of pathogenicity of the microbe. Hence, the **determinants of virulence** of a pathogen are any of its genetic or biochemical or structural features that enable it to produce disease in a host.

The relationship between a host and a pathogen is dynamic, since each modifies the activities and functions of the other. The outcome of such a relationship depends on the virulence of the pathogen and the relative degree of resistance or susceptibility of the host, due mainly to the effectiveness of the host defense mechanisms.

### Host Susceptibility

Resistance to bacterial infections is enhanced by phagocytic cells and an intact immune system. Initial resistance is due to nonspecific mechanisms. Specific immunity develops over time. Susceptibility to some infections is higher in the very young and the very old and in immunosuppressed patients.

### Bacterial Infectivity

Bacterial infectivity results from a disturbance in the balance between bacterial virulence and host resistance. The "objective" of bacteria is to multiply rather than to cause disease; it is in the best interest of the bacteria not to kill the host.

### Host Resistance

Numerous physical and chemical attributes of the host protect against bacterial infection. These defenses include the antibacterial factors in secretions covering mucosal surfaces and rapid rate of replacement of skin and mucosal epithelial cells. Once the surface of the body is penetrated, bacteria encounter an environment virtually devoid of free iron needed for growth, which requires many of them to scavenge for this essential element. Bacteria invading tissues encounter phagocytic cells that recognize them as foreign, and through a complex signaling mechanism involving interleukins, eicosanoids, and complement, mediate an inflammatory response in which many lymphoid cells participate.

Factors that are produced by a microorganism and evoke disease are called virulence factors. Examples are toxins, surface coats that inhibit phagocytosis, and surface receptors that bind to host cells. Most frank (as opposed to opportunistic) bacterial pathogens have evolved specific virulence factors that allow them to multiply in their host or vector without being killed or expelled by the host's defenses. Many virulence factors are produced only by specific virulent strains of a microorganism. For example, only certain strains of *E. coli* secrete diarrhea-causing enterotoxins.

### References

1. Astiz ME, Rackow EC, Still JG. "Pretreatment of normal humans with monophosphoryl lipid A induces tolerance to endotoxin: A prospective, double-blind, randomized, controlled trial." *Crit Care Med.* (1995):23:9.
2. Foster TJ. "Plasmid-determined resistance to antimicrobial drugs and toxic metal ions in bacteria". *Microbiol Rev.* (1983):47:361.