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**QUESTION;**

List and explain 4 mechanism of antimicrobial resistance.

ANSWERS;

Antimicrobial resistance (AMR or AR) is the ability of a microbe to resist the effects of medication that once could successfully treat the microbe.

The three fundamental mechanisms of antimicrobial resistance are:

 (1) **Enzymatic degradation of antibacterial drugs;** enzymatic degradation and modification of antimicrobial resistance can occur via three general mechanisms: prevention of interaction of the drug with target, efflux of the antibiotic from the cell, and direct destruction or modification of the compound.

 (2**) Alteration of bacterial proteins that are antimicrobial targets**; Bacterial proteins are common targets of antimicrobials. The alteration of bacterial proteins has become a widely used drug resistance mechanism for bacteria. This is one of the three major mechanisms of resistance, along with reduction of drug permeability to its target and drug modification.

 (3) **Changes in membrane permeability to antibiotics**; Changes in the absolute number of pores or in qualitative function reduce the diffusion of antibiotics entering the cell. This mechanism of reduced permeability can lead to cross resistance to several families of antibiotics. It is difficult to determine the clinical incidence since such resistances are not always detected.

(4) **Natural resistance in certain types of bacteria;** All classes of microbes can develop resistance. Fungi develop antifungal resistance. Viruses develop antiviral resistance. Protozoa develop antiprotozoal resistance, and bacteria develop antibiotic resistance. Resistance can appear spontaneously because of random mutations. However, extended use of antimicrobials appears to encourage selection for mutations which can render antimicrobials ineffective