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Mechanism of antibiotic resistance

Madhu Sharma Pt.BDS PGIMS, Rohtak, Harvana, India Infectious diseases are worlds biggest killer of children and young adults as they account for more than 13 million deaths every year. These have plagued mankind throughtout history. When the modern era of Chemotherapy of infection started in 1930's with the use of sulphonamides, these diseases appeared to be conquered. The antibiotics were then called as "WONDER/MIRACLE DRUGS", as they reduced mortality and mortality from infections. But, due to widespread use of these drugs microbes have adapted to them, making them less effective. Patients infected with these resistant microbes have high mortality rates and lesser available options for treatment. Multidrug resistance has become the therapeutic anathema of the present times.

Resistance to antimicrobials is a natural inevitable biological phenomenon which can be amplified or accelerated by a variety of factors and practices that facilitate selective pressure. There are various ways by which an organism demonstrates antimicrobial resistance like intrinsic and acquired drug resistance. Bacteria may combine multiple mechanisms against one or more antimicrobials and so become resistant to several different antibiotics at the same time. Mutation of resident genes can be spread from cell to cell by mobile genetic elements such as plasmids, transposons and bacteriophages. The resistant factors can then spread far and wide in bacterial populations.

Therefore, understanding the mechanism of antibiotic resistance is must as its impact is tremendous. It must be managed at all cost using a multi-pronged approach.