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The problem of growing antimicrobial resistance in pathogens

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Alexander Fleming, Ernst Chain and Howard Florey shared the Nobel Prize in 1945 for the discovery of Penicillin, the first broad-spectrum antibiotic. In Fleming's Nobel acceptance speech, he warned the future generation about the need for moral use of this drug, asking people to be careful with its use, though its overdose does not cause poisoning in patients, its under dosage could cause serious problems. 75 years after this discovery, the dangers of its rampant and unprescribed use are coming to light. Many diseases that were earlier thought to be treatable, once again pose a threat to daily lives, such as tuberculosis, syphilis and typhoid. In recent years, there has been a marked increase in such outbreaks around the world, like the seventh cholera pandemic in Africa and the emergence of an extensively drug-resistant strain of Salmonella typhi causing a typhoid outbreak in Pakistan in 2016. These increasing outbreaks of drug-resistant pathogens make it necessary to focus on the development of either new or alternative drugs to treat these diseases. In order to keep up with these rapidly evolving microbes and their ways to evade detection, the demand for newer technologies has multiplied several folds. The increase in antimicrobial resistance has greatly accelerated the need for new antibiotics that the bacteria are not resistant against. Due to the continuous decline in the rate of antibiotic discovery over the years, no new classes of antimicrobials have been developed recently. The ones being discovered now belong to the same classes identified decades ago. This is concerning because resistance to one antibiotic can extend to others in the same class. As the antimicrobial pipelines begin to dwindle and bacteria continue to evolve, the situation becomes alarming making the adequate and proper use of these important drugs. As a result, people need to have a general awareness about antimicrobial resistance to the drug to overcome the problem.

Keywords: Drug-resistant pathogens, Antimicrobial resistance, Alternative drugs, Antibiotics

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