

Superbugs

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Superbugs means a strain of bacteria resistant to almost all antibiotics. It was a prediction that, days are coming where bacteria will be resistant to all available antibiotics. Now it is not a prediction it is a reality. Many bacteria are now resistant to all antibiotics. As for an example, TB organisms in many cases are resistant to all available anti TB drugs. Methicillin resistance staph aureus, some gonococcal infections are found antibiotic resistant. In ICU, NICU, PICU many organisms are not responding to antibiotics, thus killing the patient silently. If this situation continues, superbugs will be life-threatening to every individual.

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 term antibiotic resistance (AR or ABR) is a subset of AMR, as it applies only to bacteria becoming resistant to antibiotics. Resistant microbes are more difficult to treat, requiring alternative medications or higher doses of antimicrobials. These approaches may be more expensive, more toxic or both. Microbes resistant to multiple antimicrobials are called multidrug resistant (MDR). Those considered extensively drug resistant (XDR) or totally drug-resistant (TDR) are sometimes called "superbugs".^{1,2,3}

To some extent we are responsible for this situation. Indiscriminate & injudicious use of antibiotics for a simple infection has produced this condition. Rational use of antibiotics means use of right antibiotic, in right indication, in right dose, in right duration, through a right route, to be prescribed by a right person. Unfortunately in our country antibiotics are being served by the pharmacy man without any prescription, so we are in worst situation.

Do not use antibiotics to treat viral infections, such as influenza, the common cold, a runny nose or a sore throat. Ask your doctor for other ways to feel better. Use antibiotics only when a doctor prescribes them. When you are

prescribed antibiotics, take the full course even if you are feeling better. Ensure that members of your family do the same. Never share antibiotics with others or use leftover prescriptions. Remember, each time you take an antibiotic when it is not necessary, the effectiveness of the antibiotic decreases and it might not work in the next time you really need it.⁴

Resistance arises through one of three mechanisms: natural resistance in certain types of bacteria, genetic mutation, or by one species acquiring resistance from another. 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.

Rising drug resistance is caused mainly by use of antimicrobials in humans and other animals, and spread of resistant strains between the two.

Preventive measures include only using antibiotics when needed, thereby stopping misuse of antibiotics or antimicrobials. Narrow-spectrum antibiotics are preferred over broad-spectrum antibiotics.^{5,6,7,8}

A World Health Organization (WHO) report released April 2014 stated, "this serious threat is no longer a prediction for the future, it is happening right now in every region of the world and has the potential to affect anyone,

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of any age, in any country. Antibiotic resistance—when bacteria change, so antibiotics no longer work in people who need them to treat infections—is now a major threat to public health.^{9,10}

To prevent this superbugs we should be more cautious & careful while using antibiotics, no more misuse of antibiotics, handwash, alternate medications for minor illness, life style modification, better nutrition, vaccination, no antibiotics without prescription of a registered doctor. Let us hope for the best.

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