

Antibiotic Resistance in Pakistan

We are swimming in the sea of antibiotics. Overall, antibiotics are reported to be the second most frequently prescribed class of pharmaceuticals. There is an estimate that the global volume of antibiotic consumption was 40.2 (95% uncertainty interval 37.2-43.7) billion DDD in 2018, an increase of 46% since 2000. Between 2000 and 2015, Pakistan has seen a 65% increase in antibiotic consumption, from 800 million defined daily doses (DDD) to 1.3 billion DDD. The country's usage of antibiotics increased from 16.2 DDD to 19.6 DDD per 1,000 people per day.¹ Antibiotic resistance has reached frightening levels as a result of the widespread use of antibiotics. Antibiotic resistance has been referred to as a major global threat, and the World Health Organization (WHO) has also urged for changing the practices of prescribing and consuming antibiotics. According to research conducted in Pakistan, 96.9% of pharmacies and medical stores provided antibiotics without a prescription, which promoted antibiotic misuse, self-medication, and antimicrobial resistance. Certain socioeconomic and behavioral factors, especially in developing countries, have been connected to the improper use of antibiotics. Among them include a lack of funding for effective care, false information about their condition, and insufficient pharmacological knowledge (which resulted in self-medication for minor illness).

Furthermore, given the circumstances, some people who have previously obtained a prescription for a similar condition might not think it's critical to see a doctor for the present illness.² There are a number of reasons that an antibacterial prescription may be considered inappropriate. These include the absence of a bacterial infection or indication for prophylaxis, or a violation of one of or more of the following "Ds" of optimal antimicrobial therapy, that is the right drug, the right dose, the best route of delivery, attention to de-escalation, and the appropriate duration of administration. Inappropriate use is associated with poor patient outcomes, including adverse drug reactions, organ toxicity, super-infection, for instance due to *Clostridium difficile*, selection of antibiotic resistance, and in critical care patients, increased mortality. It also results in excess costs, not only drug acquisition costs but costs accruing from the management of complications, prolonged hospital stays, and costs associated with the emergence of antibiotic resistance. The emergence of resistance is increasingly problematic since the development of novel effective antibiotics is almost ground to a halt, antibiotics are a precious resource. Extensive drug resistant typhoid and multidrug resistant tuberculosis are the two best examples of inappropriate use of antibiotics in Pakistan.

Other reasons contributing to antimicrobial resistance are use of antibiotics in agriculture, livestock, poultry, fisheries and animal husbandry. Antibiotics are not only use in human to combat the infections but they are also use in livestock and fish industry to treat animal infections and to prevent infections.

Worldwide, it is estimated that 66% of all the antibiotics use is in livestock and fish industry. Unfortunately, like humans, the excessive misuse of antibiotics creates a reservoir of bacteria that could be resistant and rendering the antibiotic class useless. Antibiotics are also use to nurture growth in livestock.³

The use of antibiotics in the feed of livestock animal is largely unregulated in low-middle income countries, which is one of the important factors in antimicrobial resistance.

The indiscriminate and misuse of antibiotics is responsible for higher concentration of antibiotics in environment which can lead to antibiotic pollution. The resources from which antibiotics can release into the environment are human waste streams, veterinary waste, and pharmaceutical industrial waste.⁴

Strong legislation is essential to combating antimicrobial resistance, but we also need to implement mechanisms in place to reduce antibiotic overuse in both humans and animals. The strongest defense against antibiotic resistance is prevention. We can safeguard our family and ourselves from antibiotic resistance in a number of ways. This may be achieved by implementing good hand hygiene and respiratory etiquettes at home. Never use antibiotics without consulting a doctor, since not all illnesses need them. Utilize well prepared food and clean water. Healthcare professionals should prescribe antibiotics carefully, advise routine cultures and sensitivity, tailor antibiotics as per culture and sensitivity results and also implement effective infection prevention strategies in healthcare facilities. Use print, electronic, and social media to inform people about the risks associated with inappropriate use of antibiotics.

References

1. Global Increase and Geographic Convergence in Antibiotic Consumption between 2000 and 2015'.
2. Tawseef Ahmad, Faiz Ullah Khan, Muhammad Khan, Asad Ur Rahman, Sayyad Ali, Shujaat Ali Khan. Intensification in Antibiotic Consumption in Pakistan and Factors that Promote the use of Antibiotics: A Mini Literature Review. *Am J Biomed Sci & Res* 2021 - 14(6). AJBSR.MS.ID.002050. DOI: 10.34297/AJBSR.2021.14.002050.
3. <https://www.saveourantibiotics.org/the-issue/antibiotic-overuse-in-livestock-farming>
4. Manyi-Loh C, Mamphweli S, Meyer E, Okoh A. Antibiotic Use in Agriculture and Its Consequential Resistance in Environmental Sources: Potential Public Health Implications. *Molecules* 2018 Mar 30;23(4):795. doi: 10.3390/molecules23040795. PMID: 29601469; PMCID: PMC6017557.

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