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### **Averting Antibiotic Apocalypse in J&K State**

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Antimicrobial resistance is rising to dangerously high levels at state as well as national level. New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases. A growing list of infections such as pneumonia, tuberculosis, blood poisoning and gonorrhoea are becoming harder, and sometimes impossible, to treat as antimicrobials become less effective. Emergence and growth of superbugs is endangering human lives by making existing antibiotics worthless. In the year 2008 a bacterial strain "New Delhi Metallo-beta-lactamase" (NDM1), named after an enzyme that renders bacteria resistant to a broad spectrum of antibiotics, crossed the shores and spread resistance in the U.K. as well. It was in 2011 that the Union government came up with a National Policy for Containment of Antimicrobial Resistance in India, seeking to reverse what seemed to be a spiralling healthcare concern. However no such policy has been framed or implemented in the state of Jammu and Kashmir as on date.

In almost every nook and corner of our state antimicrobials can be bought for human or animal use without a prescription in spite of the fact that a new schedule H1 under Drugs and Cosmetics Rules of 1945 has been created to restrict the Over the Counter (OTC) sale of antimicrobials vide gazette notification of the Government of India that came into force from March 1, 2014. This makes the emergence and spread of resistance only worse. Similarly, in absence of standard treatment guidelines, antimicrobials are often over-prescribed by health workers and veterinarians as well as over-used by the patients. Self-medication of antibiotics by patients is also highly prevalent in our state where patients resort to antibiotic use either on the basis of earlier use by self or by others. This needs to be reduced through proper education and awareness campaigns.

In times of sickness, people in our part of the world prefer to consult an unqualified pharmacist, a compounder or a Medical Assistant rather than a qualified physician and in turn get dispensed with heavy doses of antibiotics, sans any prescriptions, most often consisting of irrational combinations of newest generation antimicrobials. This only adds to the catastrophe of antimicrobial resistance. Even some of the qualified physicians of the state, in a bid to bring instant symptomatic relief to their patients, rampantly prescribe antimicrobials not only to adults but to paediatric patients too without conducting any culture sensitivity tests. Very few culture sensitivity tests are conducted upon hospitalized patients at primary, secondary as well as tertiary care hospitals before prescribing antibiotics. Situation in private sector is as bad or may be even worse than the government sector. Rational antimicrobial prescribing in accordance with established norms and international guidelines is not precisely followed in either sector.

Current scenario of antimicrobial prescribing and use is likely to bring us sooner than any other part of the world at the doorstep of antibiotic apocalypse unless we take adequate measures to avert the impending crisis. Without urgent action, we are heading towards a post-antibiotic era, in which common infections and minor injuries will be sufficient enough to kill. Therefore there is need to frame "Hospital Antibiotic Policy" for each and every tertiary care hospital of our state; to prepare standard treatment guidelines, SOPs and algorithms for treating various microbial infections and to constitute infection control committees in all hospitals who would function in accordance with discrete infection control procedures that include both prevention and control measures.

Even if new medicines are developed in near future, without behavioural changes, antimicrobial resistance will continue to remain a major threat. Therefore behavioural

changes must include actions to reduce the spread of infections through vaccination, hand washing, practising safer sex, and good food hygiene. Antimicrobial resistance is accelerated by the misuse and overuse of antimicrobials, as well as poor infection prevention and control. Therefore steps need to be taken at all levels of society to reduce the impact and limit the spread of resistance.

People in Kashmir seem to be conventionally inclined towards usage of high cost antibiotics belonging to latest generation due to the perception that they treat infections faster and better. In order to prevent and control the spread of antibiotic resistance, individual patients need to use antibiotics only when prescribed by a certified health professional; never demand antibiotics if health worker doesn't feel the need to prescribe them; always follow health worker's advice when using antibiotics, never share or use leftover antibiotics; prevent infections by regularly washing hands; preparing food hygienically; avoiding close contact with sick people; practising safer sex and keeping vaccinations up to date. Stronger hygiene and infection prevention measures, including vaccination, can limit the spread of resistant microorganisms and reduce antimicrobial misuse and overuse.

Policy makers need to frame a robust action plan to tackle antibiotic resistance; improve surveillance of antibiotic-resistant infections; strengthen policies, programmes, and implementation of infection prevention and control measures; regulate and promote the appropriate use and disposal of quality medicines and make necessary information available on the impact of antibiotic resistance. Regulators need to ensure sale of antimicrobials strictly in accordance with prescriptions. Sale and purchase records need to be checked on regular basis by them to ensure that they are not sold over-the-counter without prescriptions. Regular prescription audits should be conducted in all hospitals across all the three levels of care.

Antibiotics are frequently used to stimulate growth or prevent infections in poultry farms, cowsheds and slaughterhouses. Sustainable animal husbandry practices can reduce the risk of resistant bacteria spreading through the food chain to humans. In addition to better prescribing practices, the concerned authorities must restrict patients' and the agricultural industry's inappropriate and unregulated use of antimicrobial agents. The use of sub-therapeutic doses of antibiotics in animal feed and/or water to promote growth and improve feed efficiency particularly in poultry farms has not perhaps been officially banned as yet in J&K which is leading to the continuation of this malpractice and eventually these drugged chicken are promoting antimicrobial resistance.

Health professionals including doctors, qualified pharmacists and nurses can help a great deal to prevent and control the spread of antibiotic resistance by ensuring that their hands, instruments, and environments are clean; by prescribing and dispensing antibiotics only when they are needed, that too in accordance with current guidelines; by reporting antibiotic-resistant infections to surveillance teams; by counselling their patients about how to take antibiotics correctly, and about antibiotic resistance and the dangers of misuse; by educating their patients about preventing infections (for example, vaccination, hand washing, safer sex, and covering nose and mouth when sneezing).

Making antimicrobial resistance a core component of professional education, training, certification, continuing education and development in the health and veterinary sectors and agricultural practice will help to ensure proper understanding and awareness among professionals. With J&K already being labelled as one of the highest consumers of medicines countrywide, irrational prescribing, illegal dispensing and unscientific use of antimicrobials is destined to make us notorious world leaders in antimicrobial resistance too just the way we are leading in corruption on the Transparency International's Corruption Perception Index. Therefore adequate measures need to be taken well in time by the government through its health ministry, the prescribers, the pharmacists, the drug regulators, hospital administrators, civil society members as well as by individuals to avert this apocalypse, for it is better to be late than never.

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