

1. What do you understand by Highest Priority Critically Important Antimicrobials (HPCIAAs). Also, discuss role of livestock rearing in antibiotic resistance among humans. (250 words)

Answer:

Background:-

- The World Health Organization has classified certain antimicrobial classes as Highest priority critically important antimicrobials for human medicine in the so called WHO list of critically important antimicrobials for human medicine recently.
- A report out of the United Kingdom found that, worldwide, antibiotic-resistant bacteria could kill more people per year by 2050 than cancer kills today.

Highest Priority Critically Important Antimicrobials (HPCIAAs) :-

- In the latest version of the CIA list the “Highest Priority Critically Important Antimicrobials” are :- Quinolones, 3rd and higher generation Cephalosporins, Macrolides and Ketolides, glycopeptides, and Polymyxins.
- These have been classified by the World Health Organization (WHO), as they are of the only few available therapies for some of the most serious bacterial infections in human health.

Antibiotics in livestock rearing why are they used :-

- The issue of antibiotic use in livestock is particularly for non-therapeutic use such as mass disease prevention or growth promotion of poultry, pigs etc.
- Studies conducted by the Centre for Science and Environment has shown the use of important antimicrobials, including critically important ones in poultry and aquaculture.

Why rampant usage of antibiotics continues in livestock rearing industries:-

- Unregulated sale of the drugs for human or animal use accessed without prescription or diagnosis has led to unchecked consumption and misuse.
 - Of tested birds destined for meat consumption, 87% had the super germs based on a study published in the journal Environmental Health Perspectives.
- Farms supplying India's biggest poultry-meat companies routinely use medicines classified by the World Health Organization (WHO) as “critically important” as a way of staving off disease or to make them gain weight faster, so that more can be grown each year for greater profit.
 - One drug typically given this way is Colistin which is used to treat patients critically ill with infections that have become resistant to nearly all other drugs.
- In India, the poultry industry is booming. The amount of chicken produced doubled between 2003 and 2013. Chicken is popular because it can be eaten by people of all religions and affordable. Experts predict the rising demand for protein

will cause a surge in antibiotic use in livestock. India's consumption of antibiotics in chickens is predicted to rise fivefold by 2030 compared to 2010.

• **Lax regulation:-**

- India does not have an effective integrated policy to control the use of antibiotics in livestock and poultry with a viewpoint of containing antibiotic resistance
- 2007: The Bureau of Indian Standards (BIS) recommends not using systemic antibiotics in poultry feed. The recommendation is voluntary and does not extend to gut-acting antibiotics, which BIS planned to cover by 2012
- 2011: The Food Safety and Standards Authority of India (FSSAI) sets maximum residue limits for four antibiotics in sea food and prohibits the use of certain others in seafood processing units. It does not prescribe standards for domestic poultry industry. The national policy on containment of antimicrobial resistance is finalised but does not focus on antibiotic resistance emanating from the large-scale use of antibiotics in animals
- 2013: The Directorate General of Health Services issues a circular, asking state drug controllers to ensure that the withdrawal period of drugs meant for poultry and livestock are mentioned on packet. While it talks about regulating drugs, antibiotics as feed supplement remain out of its purview.
- In 2014 the Agriculture Ministry sent an advisory letter to all State governments asking them to review the use of antibiotic growth promoters. However, the directive was non-binding, and none have introduced legislation to date.
- Even the guidelines of the Central Pollution Control Board (CPCB) on poultry waste management do not adequately address ABR.
- In India, at least five animal pharmaceutical companies are openly advertising products containing Colistin as growth promoters.
 - Chickens are fed antibiotics so that they gain weight and grow fast.
 - Centre for Science and Environment (CSE) has found residues of antibiotics in 40 per cent of the chicken samples it tested.
 - In Europe, Colistin is available to farmers only if prescribed by a vet for the treatment of sick animals. In India there is no such thing.
- India, level of awareness regarding antibiotic resistance is very low.
- Antibiotics are also coming from China as the imports are not regulated
- Poultry farmers also ignore the mandatory withdrawal period, time gap between the use of antibiotics and when it is slaughtered that helps ensure that high levels of antibiotic residues do not pass on to humans.
- While many poultry farmers are aware of other options or antibiotic-free growth promoter feed supplements, their high cost is prohibitive for smaller players. Bigger farmers are less keen because there is no incentive to make antibiotic-free chickens.

Effects of antibiotic resistance on humans :-

- Public health experts have suspected that such rampant use of antibiotics could be a reason for increasing antibiotic resistance in India.
- These mutated robust strains bypass toxic effects of antibiotics, making them ineffective. They can easily spread among the flock and contaminate the food chain. They can also alter the genetic material of other bacteria, often pathogenic ones, making them resistant to several drugs and resulting in a global pandemic.
- Antibiotic residues present in the meat can directly unleash an assault on microbes in humans.
- The mutated robust microbe strain can invade the body and cause diseases that are difficult to treat. Even mild infections require stronger dosage.
- These drug-resistant bacteria could nullify the gains of modern medicine by compromising the success of organ transplants, high-end surgeries and cancer chemotherapy.
- With drugs losing their effectiveness, the world would need newer antibiotics. Unfortunately, no new class of antibiotic has hit the market since late 1980s.
- Annual healthcare cost due to antibiotic resistance is estimated to be as high as \$20 billion, with an additional productivity loss of up to \$35 billion in the US.
- Treating fatal diseases like sepsis, pneumonia and tuberculosis (TB) are becoming tough because microbes that cause these diseases are increasingly becoming resistant to fluoroquinolones.
- Farmhands who handle the birds often wear open-toe shoes, providing a conduit of entry for resistant bacteria and resistance genes into the community and hospitals, where further person-to-person transmission is possible.

Way ahead:-

- Ban the use of antibiotics for growth promotion and mass disease prevention. It should only be used to cure the sick animals based on prescription of veterinarians
- Antibiotics should not be allowed in feed and feed. The government should set standards for animal feed and regulate the business
- Encourage development, production and use of alternative antibiotic-free growth promoters, such as herbal supplements
- All animal antibiotics should be traceable from manufacturing site to user. Implement stringent control on import of antibiotics and feed supplements
- Good farm management practices should be followed to control infection and stress among the flock.
- Veterinarians should be trained and educated on judicious use of antibiotics and infection prevention. The government should ensure that veterinarians do not get incentives for prescribing more antibiotics

- There is a need to introduce a labelling system wherein poultry raised without use of antibiotics should be labelled through reliable certified schemes to facilitate consumer choice.
- It is necessary to create an integrated surveillance system to monitor antibiotics use and antibiotics resistance trends in humans, animals and food chain. A national-level database should be developed and kept in the public domain.
- Citizens should be educated about what they are eating, what does their food contain, and what are the consequences.

PRACTICE QUESTIONS

Answer the following Questions

1. Anti Sterlite protests in Thoothukkudi is the signal of civil society's anger against our policy apathy towards environmental issues. Critically analyse. (250 words)
2. Use of antibiotics in poultry poses health risks to all and should be strictly banned. Critically analyse. (250 words)