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ISSN 2348-0416
USA CODEN: JASRHB

Journal of Applied Science And Research, 2018, 6 (2):51-55

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AN ARTICLE ON ANTIBIOTIC RESISTANCE

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ABSTRACT

Antibiotic resistance is evolving dangerously high levels in all around the world. New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases. The growing list of infections are harder to treat with less effective antibiotics.. The scenario is made worse with use of over counter drugs,lack of standard treatment guidelines . Ignoring the problem may lead to a post antibiotic in which common infections and even minor injuries can be fatal .

Keywords : Antibiotics ,Antibiotic Resistance ,Drug Resistance ,World Health Organization (WHO)

INTRODUCTION

The word Antibiotics is derived from ancient Greek word **antibiotiká** .It is also called as antibacterials.Antibiotics are a type of antimicrobial drug used in the treatment and prevention of bacterial infections. They may either kill or inhibit the growth of bacteria

Antibiotics are prescribed for illnesses caused by bacteria, and prescriptions are written to cover the time needed to help the body fight all the harmful bacteria.if the course is not completed, the bacteria that have not yet been killed can restart an infection .Taking partial doses can select for the bacteria that are resistant..

MATERIAL AND METHODS

ANTIBIOTIC RESISTANCE

It is a specific type of drug resistance Antimicrobial resistance is a resistance of microorganisms to an antimicrobial medicine to which it was previously sensitive. Antibiotic resistance evolves naturally via natural selection through random utation, but it could also be engineered by applying an evolutionary stress on a population. Once such a gene is generated, bacteria can then transfer the genetic information in a horizontal fashion (between individuals) by plasmid exchange. If a bacterium carries several resistance genes, it is called multiresistant or, informally, a superbug.

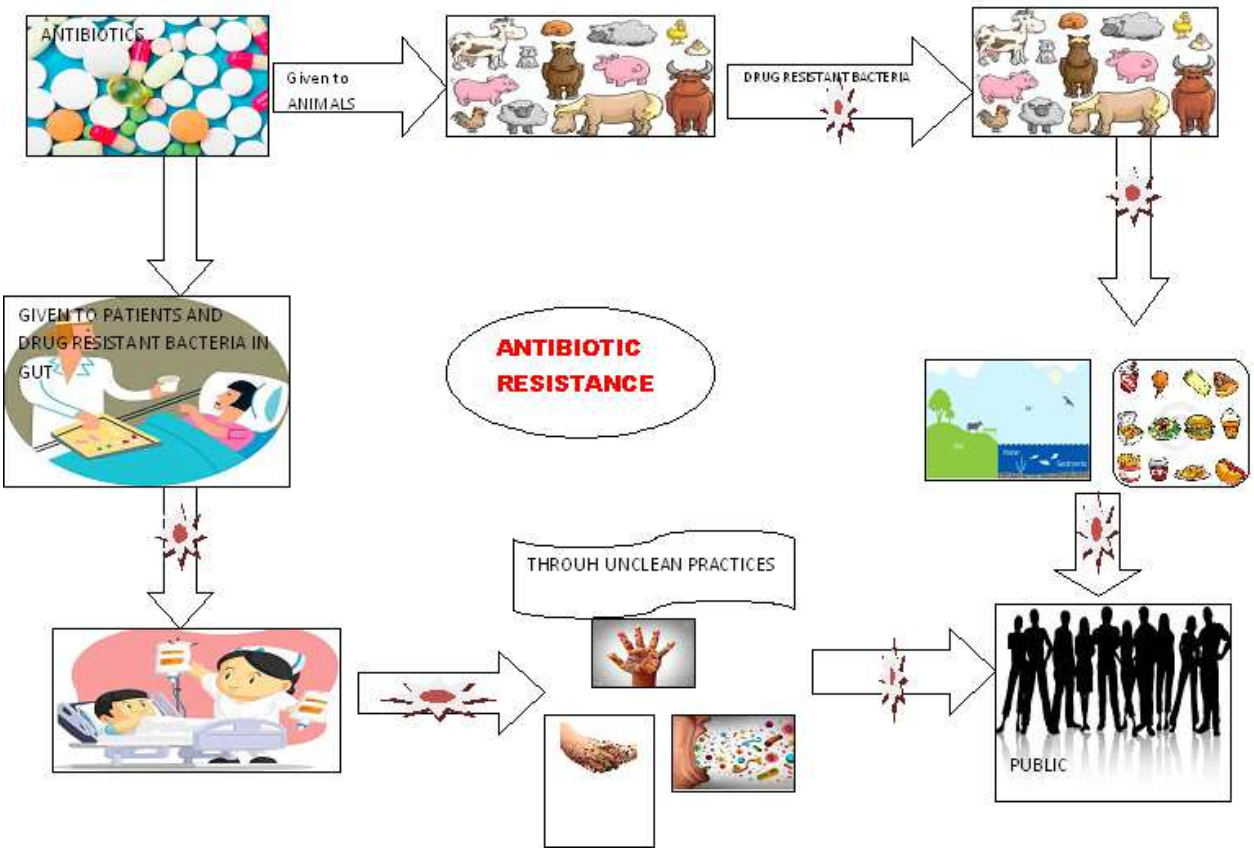
HISTORY OF ANTIBIOTIC RESISTANCE.

Antibiotics	Introduced to clinical practice	Resistance identified in
Pencillin	1943	1943
Streptomycin	1947	1947
Tetracycline	1948	1956
Erythromycin	1952	1956
Gentamycin	1956	1997
Vancomycin	1963	1970

CAUSES OF ANTIBIOTIC RESISTANCE

- Irrational use of antibiotics
- Lack of research
- Lack of infection control
- Weak surveillance system
- Lack of commitment
- Poor drug control

SPREAD ANTIBIOTIC REAIATAN



PRESENT SITUATION

Antibiotic resistance is present in every country.

Patients with infections caused by drug-resistant bacteria are at increased risk of worse clinical outcomes and death, and consume more health-care resources than patients infected with non-resistant strains of the same bacteria.

- **Resistance in *Klebsiella pneumoniae*** – common intestinal bacteria that can cause life-threatening infections – to a last resort treatment (carbapenem antibiotics) has spread to all regions of the world. *K. Pneumoniae* is a major cause of hospital-acquired infections such as pneumonia, bloodstream infections, and infections in newborns and intensive-care unit patients. In some countries, because of resistance, carbapenem antibiotics do not work in more than half of people treated for *K. Pneumoniae* infections.
- **Resistance in *E. Coli*** to one of the most widely used medicines for the treatment of urinary tract infections (fluoroquinolone antibiotics) is very widespread..
- **Resistance to first-line drugs to treat infections caused by *Staphlylococcus aureus***—a common cause of severe infections in health facilities and the community—is widespread. People with MRSA (methicillin-resistant *Staphylococcus aureus*) are estimated to be 64% more likely to die than people with a non-resistant form of the infection.

- **Resistance in tuberculosis (TB)** WHO estimates that in 2016 there were 490 000 new cases of multidrug-resistant tuberculosis (MDR-TB), a form of tuberculosis that is resistant to the two most powerful anti-TB drugs.

- **Resistance in malaria** As of July 2016, resistance to the first-line treatment for P. Falciparum malaria (artemisinin-based combination therapies, also known as acts) has been confirmed in 5 countries of the Greater Mekong subregion (Cambodia, the Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam). A "WHO Strategy for Malaria Elimination in the Greater Mekong subregion (2015-2030)" was endorsed by all 5 countries, as well as China
- **Resistance in HIV** In 2010, an estimated 7% of people starting antiretroviral therapy (ART) in developing countries had drug-resistant HIV. In developed countries, the same figure was 10–20%. Some countries have recently reported levels at or above 15% amongst those starting HIV treatment, and up to 40% among people re-starting treatment. This requires urgent attention. Since September 2015, WHO has recommended that everyone living with HIV start on antiretroviral treatment . Greater use of ART is expected to further increase ART resistance in all regions of the world. WHO is currently developing a new "*Global Action Plan for HIV Drug Resistance (2017-2021)*"..

- **Resistance in influenza**. So far, virtually all influenza A viruses circulating in humans were resistant to one category of antiviral drugs – M2 Inhibitors (amantadine and rimantadine). However, the frequency of resistance to the neuraminidase inhibitor oseltamivir remains low (1-2%).

WHO RESPONSE TO THE PROBLEM

Tackling antibiotic resistance is a high priority for WHO. A global action plan on antimicrobial resistance, including antibiotic resistance, was endorsed at the World Health Assembly in May 2015. The global action plan aims to ensure prevention and treatment of infectious diseases with safe and effective medicines.

The "Global action plan on antimicrobial resistance" has 5 strategic objectives:

- To improve awareness and understanding of antimicrobial resistance.
- To strengthen surveillance and research.
- To reduce the incidence of infection.
- To optimize the use of antimicrobial medicines.
- To ensure sustainable investment in countering antimicrobial resistance.

A political declaration endorsed by Heads of State at the United Nations General Assembly in New York in September 2016 signaled the world's commitment to taking a broad, coordinated approach to address the root causes of antimicrobial resistance across multiple sectors, especially human health, animal health and agriculture. WHO is supporting Member States to develop national action plans on antimicrobial resistance, based on the global action plan.

WHO has been leading multiple initiatives to address antimicrobial resistance:

World Antibiotic Awareness Week

Held every November since 2015 with the theme "Antibiotics: Handle with care.

The Global Antimicrobial Resistance Surveillance System (GLASS)

The WHO-supported system supports a standardized approach to the collection, analysis and sharing of data related to antimicrobial resistance at a global level to inform decision-making, drive local, national and regional action.

Global Antibiotic Research and Development Partnership (GARDP)

A joint initiative of WHO and Drugs for Neglected Diseases initiative (dndi), GARDP encourages research and development through public-private partnerships.

Interagency Coordination Group on Antimicrobial Resistance (IACG)

The United Nations Secretary-General has established IACG to improve coordination between international organizations and to ensure effective global action against this threat to health security..

GUIDELINES TO PREVENT AND CONTROL ANTIBIOTIC RESISTANCE

- Knowledge regarding the infection control
- Formulation of antibiotic policy
- Proper identification of antibiotic sensitivity patterns
- Create , review and maintain policies for antibiotic use
- Limit the use of topical antibiotics

CONCLUSION

Antimicrobial resistance is on the rise globally, mainly due to greater access to drugs developing and developed countries. Estimates are that 700,000 to several million deaths result per year.[l]Each year in the world wide, at least 2 million people become infected with bacteria that are resistant to antibiotics and at least 23,000 people die as a result. There are public calls for global collective action to address the threat include proposals for international treaties on antimicrobial resistance. Worldwide antibiotic resistance is not fully mapped, but poorer countries with weak healthcare systems are more affected.

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