



IAPSM - PUBLIC HEALTH INFOGRAPHICS (IPHI)



Graphic-e-Health



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Issue: 3



December
2024



THEME ANTI-MICROBIAL RESISTANCE

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ANTIMICROBIAL RESISTANCE



A GROWING THREAT

Antimicrobials?

Substance used to treat a wide variety of infectious disease in humans and animals.

They-

- Kill micro-organisms
- Stop micro-organism from growing and multiplying.

Educate
Advocate
Act now

Antimicrobial resistance (AMR)

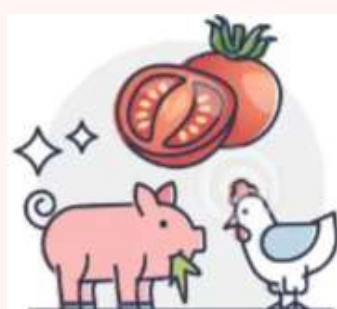
occurs when bacteria, viruses, fungi, and parasites no longer respond to antimicrobial medicines.



ANTIBIOTICS ARE GIVEN TO PATIENTS
DRUG-RESISTANCE BACTERIA DEVELOPING IN THE GUT



ANTIBIOTICS



ANTIBIOTICS GIVEN TO ANIMALS AND CROPS



PATIENT ATTENDS HOSPITAL



DRUG-RESISTANT BACTERIA SPREADS TO OTHER PATIENTS



ANTIBIOTIC RESISTANCE



ANIMALS DEVELOP DRUG-RESISTANCE BACTERIA



DRUG-RESISTANCE BACTERIA REACHES HUMAN THROUGH FOOD



DRUG-RESISTANCE BACTERIA SPREADS TO THE GENERAL PUBLIC

Over prescribing of antibiotics

Over use of antibiotics in livestock and fish farming

Lack of hygiene and poor sanitation

C A U S E S

Patients not finishing their treatment

Poor infection control in hospitals and clinics

Lack of new antibiotics being developed

The ABCD of Antibiotics

Ask- are the antibiotics necessary? What can I do to feel better.

Bacteria- Antibiotics don't kill viruses. They only kill bacteria.

Complete the course- Take all your antibiotics exactly as prescribed.

Do not pressure your health care for antibiotics

"PROTECT MEDICINE TODAY TO DEFEAT SUPERBUGS TOMORROW."

Dr. NILUFAR MONDAL,
PG1 GMC, Bhopal

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SOURCES
[https://www.publichealthnotes.com/antimicrobial-resistance-amr/World AMR Awareness Week 2024](https://www.publichealthnotes.com/antimicrobial-resistance-amr/World%20AMR%20Awareness%20Week%202024)



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THE HIDDEN APOCALYPSE

ANTIMICROBIAL

RESISTANCE



1 WHAT IS AMR?

AMR is when microorganisms like bacteria, viruses, and fungi outsmart the very drugs designed to kill them.

The result?

Infections that refuse to be cured, pushing us closer to a post-antibiotic apocalypse.



2 WHY AMR IS RISING?

OVERUSE OF ANTIBIOTICS

Misuse fuels resistance.

POOR HYGIENE IN HOSPITALS

Hospitals breed superbugs.

ANTIBIOTICS IN LIVESTOCK

Livestock misuse creates resistant bacteria.

GLOBAL TRAVEL

Superbugs spread worldwide.

NO NEW DRUG DISCOVERY

Pharma lags on new antibiotics.



3 HOW DO MICROBES OUTSMART US?

DESTRUCTION OF DRUGS

Microbes produce enzymes like beta-lactamases to disable antibiotics.

INVISIBLE TARGETS

Structural tweaks help bacteria evade drugs.

EFFLUX PUMPS

Bacteria eject antibiotics efficiently.

BIOFILM FORTRESS

Resistant bacteria shield themselves from drugs.



4 MEET THE SUPERVILLAINS E.S.K.A.P.E PATHOGENS

These are the “Avengers” of resistance, highly resistant

1. [Enterococcus faecium](#)
2. [Staphylococcus aureus](#)
3. [Klebsiella pneumoniae](#)
4. [Acinetobacter baumannii](#)
5. [Pseudomonas aeruginosa](#)
6. [Enterobacter species](#)

5 CAN WE STOP AMR?

SMARTER PRESCRIPTIONS

End careless antibiotic use.

HYGIENE REVOLUTION

Cleanliness curbs superbugs.

TRACK THE ENEMY

Monitor resistant bacteria.

PUBLIC EDUCATION

Educate on responsible use

INNOVATION OF NEW DRUGS

Develop new drugs and vaccines.



Created by

Irene Haque

2nd Year MBBS

JIS School of Medical Science and Research

West Bengal

Sources

<https://www.who.int/health-topics/antimicrobial-resistance>

<https://www.cdc.gov/antimicrobial-resistance/>

<https://pmc.ncbi.nlm.nih.gov/news-events/antibiotic-resistance>



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Anti Microbial Resistance



WHAT IS ANTIMICROBIAL RESISTANCE???

AMR happens when harmful bacteria, viruses, fungi, or parasites stop responding to the drugs designed to treat infections



HOW AMR DEVELOPS ???

Antibiotics kill weak bacteria, but resistant bacteria survive and multiply



CAUSES OF AMR



Lack of new antibiotics



Over-prescribing of antibiotics



Poor sanitation



Overused antibiotics in livestock farming and crop production



Poor infection control in hospitals



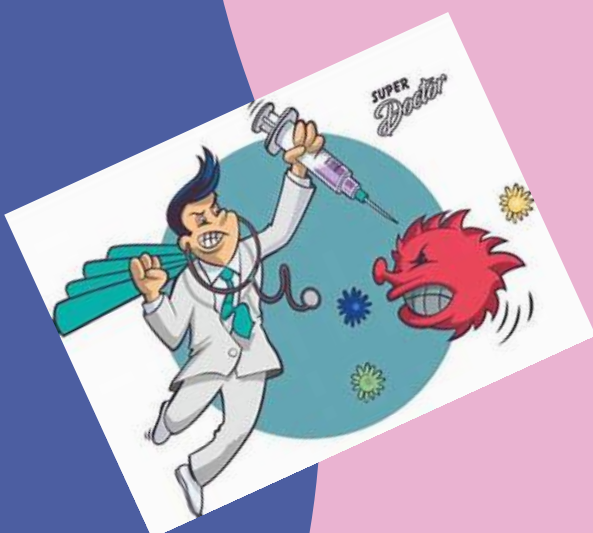
Incomplete treatments

What Can We Do?

- Proper Use of Antibiotics
- Hygiene Practices
- Support Research



Together, we can stop the spread of antimicrobial resistance



Sources: Michael Cfl, Dominey-Howes D, Iqbal M. The antimicrobial resistance crisis: causes, consequences, and management. Front Public Health. 2014 Sep 16;2:145. doi: 10.3389/fpubh.2014.00145. PMID: 25279369; PMCID: PMC4165128.

Created by Dr Veena G Dev
Senior Resident
All India Institute of Medical Sciences
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Team – IPHI

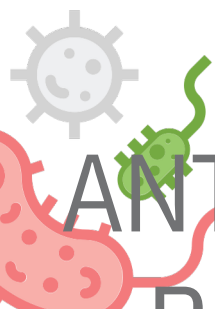


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ANTIMICROBIAL RESISTANCE

A GLOBAL HEALTH THREAT

Bacteria are evolving....

Are we ready for it ?



1

What is AMR ?

It is the ability of microorganisms to persist or grow in the presence of drugs designed to inhibit/kill them.

4.95
Million

Deaths associated with AMR every year

How it occurs?



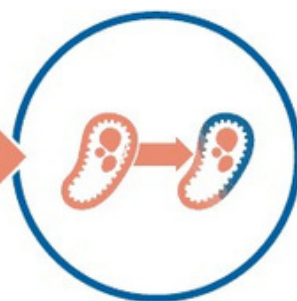
Some bacteria are resistant to antibiotics that we give



Those are not killed by the antibiotic we gave persists



Those resistant bacteria now have preferred conditions to multiply



They now can transfer their drug resistance to other bacteria

2

Causes of AMR



OVER PRESCRIBING ANTIBIOTICS



LACK OF NEW ANTIBIOTICS BEING DEVELOPED



LACK OF HYGIENE AND POOR SANITATION



OVER USE OF ANTIBIOTICS IN LIVESTOCKS & FISH FARMING



PATIENT NOT FINISHING THEIR TREATMENT PROPERLY

3

Do's & Don'ts



Use antibiotics as prescribed.

Take it without skipping the dose.

Take it for bacterial infection only.

Don't skip follow-up visits.

Don't take self medications.

Don't share antibiotics with others.

Don't stop taking it early even if you feel better.

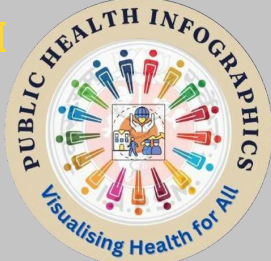
Together, we can fight AMR !

Created by:

DR. MEGAULINGA KANNAN M

Junior Resident
Government Medical College
Latur

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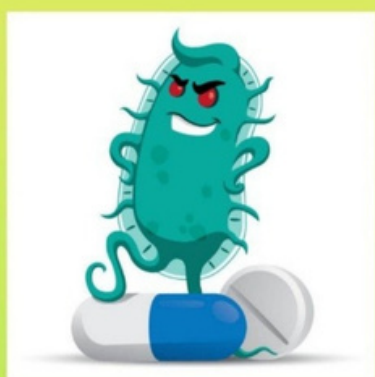
Dr. Krupal Joshi

Source:

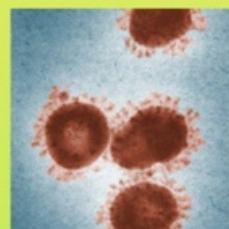
<https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>



Antimicrobial Resistance- New Global Health Threat-



Antimicrobial resistance (AMR) is a growing global health threat where bacteria, viruses, fungi, and parasites no longer respond to medications.



Why ???

Here are the reasons



1

Overuse of Antibiotics

Unnecessary antibiotic use for viral infections or minor ailments contributes to the development of resistant bacteria.



Inappropriate Use

Taking antibiotics without completing the full course or using the wrong dosage can lead to antibiotic resistance.

2

3

Lack of Access

Limited access to clean water and sanitation in developing countries can increase the risk of infections and antibiotic resistance.



Agricultural Use

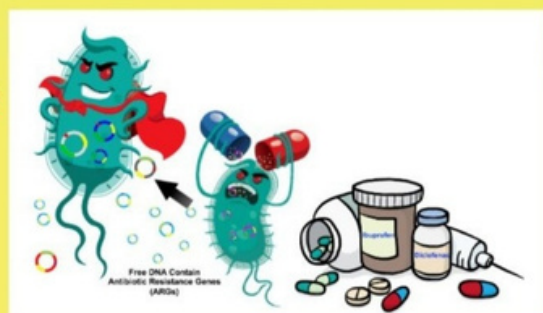
Antibiotics used in livestock farming contribute to the spread of antibiotic resistance to humans through the food chain.

4

5

AMR Impact

Antimicrobial resistance poses a significant threat to global health, leading to longer hospital stays, increased healthcare costs, and potentially higher death rates.



Let's Stop It before It's Too Late

" EDUCATE , ADVOCATE , ACT NOW "

IPHI Team

Dr Rahul Kamble
Pg resident ,
Department of
Community Medicine
, Latur ,
Maharashtra.

Source of
Information:
<https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>



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STOP SELF MEDICATING



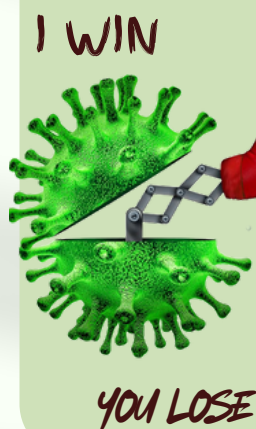
ANTIMICROBIAL RESISTANCE CAN AFFECT US ALL

ANTIBIOTICS ARE LOSING
THEIR POWER

I AM A **SUPERBUG**
Resistant. Relentless.
Risky



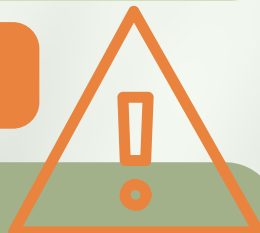
What is Antimicrobial Resistance (AMR)?



Antimicrobial Resistance (AMR) occurs when **bacteria, viruses, fungi** and **parasites** change over time and no longer respond to medicines making infections harder to treat and increasing the risk of disease spread, severe illness and death.

PROBLEM

A **top 10 global health** threat to humanity



Prolonged illness leads to extended hospital stays, **costly treatments**, and financial burden

#ANTIMICROBIALS MATTER

Antibiotics are losing their effectiveness because of overuse and misuse

WORLD **AMR** AWARENESS WEEK
18 - 24 NOVEMBER
2024
EDUCATE. ADVOCATE.
ACT NOW.

CAUSES

OVER
PRESCRIBING
OF ANTIBIOTICS

LACK OF
HYGEINE
AND POOR
SANITATION

POOR
INFECTION
CONTROL IN
HOSPITALS
AND CLINICS

OVER-USE OF
ANTIBIOTICS IN
LIVESTOCKS AND
FISH FARMING

PATIENT NOT
FINISHING THEIR
TREATMENT

CREATED BY :
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SOURCE OF INFORMATION :
[HTTPS://WWW.WHO.INT/NEWS-ROOM/FACT-SHEETS/DETAIL/ANTIMICROBIAL-RESISTANCE](https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance)

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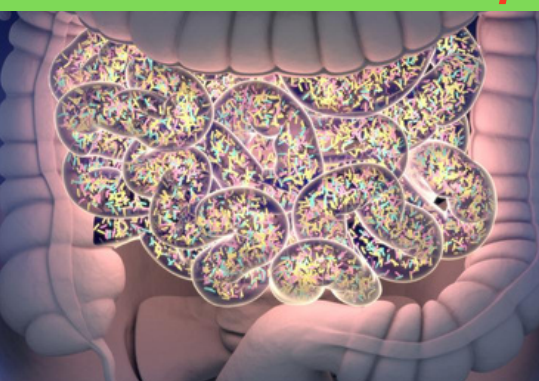
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“The Gut Microbiome: A Key Player in Antimicrobial Resistance”

“How Your Gut Shapes the Battle Against Resistant Bacteria”



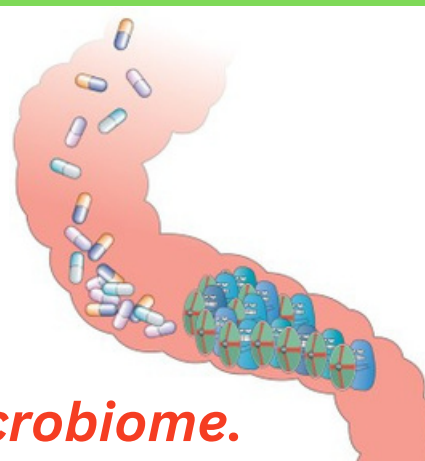
The gut microbiome is a diverse community of microorganisms that support digestion, immunity, and overall health.

70% of the immune system resides in the gut.

1 The Gut Microbiome & AMR

The gut microbiome harbors resistance genes, spreading them to pathogens via horizontal gene transfer. Antibiotic misuse disrupts gut balance, fostering resistant bacteria.

80% of resistance genes are in the gut microbiome.



2 Protective Role of Beneficial Bacteria

"Beneficial bacteria maintain balance by competing with harmful bacteria and producing antimicrobial compounds that inhibit resistant pathogens."

Balanced gut flora decreases infections from pathogens like Salmonella and E. coli.

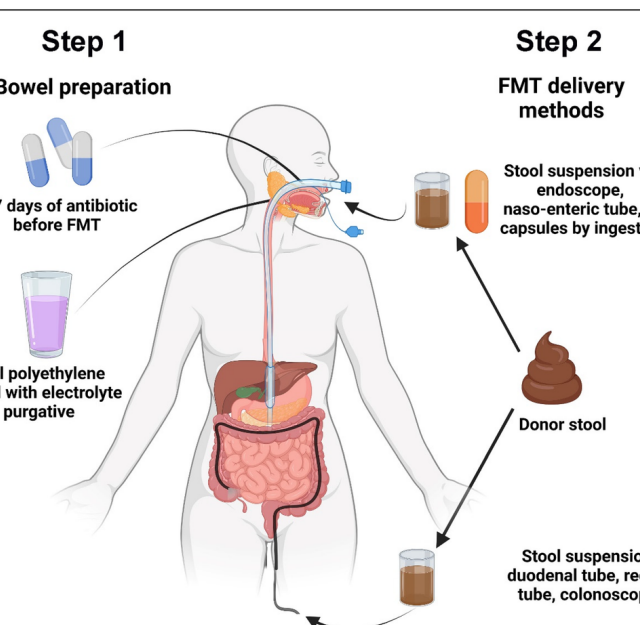
3 Role of Probiotics and Prebiotics

Probiotics: Beneficial bacteria like Lactobacillus and Bifidobacterium restore gut balance and reduce resistance.

Prebiotics: Non-digestible fibers in foods like bananas and oats nourish beneficial bacteria.



“Probiotic use reduces *C. difficile infections by up to 50%.”



4 Potential Strategies to Combat AMR

“Microbiome-based therapies, like Fecal Microbiota Transplantation (FMT), target resistant infections and restore gut health.” Dietary interventions promoting microbiome diversity can enhance resilience to AMR.

“FMT has been effective in treating C. difficile infections resistant to antibiotics.”

5 Call to Action

1. Avoid unnecessary antibiotics.”
2. Incorporate probiotics and prebiotics into your diet.
3. Support microbiome-focused research.”

World Antimicrobial Awareness Week (WAAW) is observed every year from **November 18 to November 24.**



Antibiotic caution



Diet



Research



Gut Health Matters

"The gut microbiome, a source of resistance and defense, emphasizes mindful antibiotic use, probiotics, prebiotics, and diet to combat AMR."
“Protect your gut, protect your health, protect the future.”

Dr.Narmatha K
Postgraduate
SRM Medical College
Hospital and
Research Centre
Source:
WHO, AMR

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ROAD TO “LEPROSY-FREE” INDIA



SIGNIFICANCE OF NLEP EMBLEM

- ❖ Beauty and purity [lotus]
- ❖ Leprosy is **curable** and a leprosy patient can be a **useful** member of society [house]
- ❖ Hope and optimism [rising sun]

VISION OF NLEP

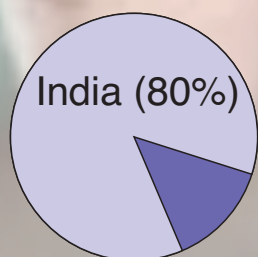
Leprosy free India with **zero** infection, **zero** disease, **zero** disability, **zero** stigma and **zero** discrimination

January 30 is celebrated worldwide as **neglected tropical disease day** and in India as **Anti-Leprosy day** to commemorate the martyrdom of Mahatma Gandhi

PAST

India achieved the goal of **elimination** of leprosy as a public health problem in the year 2005, defined as less than 1 case per 10,000 population at national level

PRESENT



Rest of the world (20%)

43%

Global leprosy burden - 2019

New case detection - 2021

Interruption in case detection has resulted in hidden cases and a probable increase in **grade 2 deformity**

FUTURE

An estimated **30 million** people in India are at risk and may require chemoprophylaxis to reduce incidence of leprosy by **70%** by **2030**

JOIN US TO ACHIEVE

Accelerate **case detection**

Provide **quality** patient services

Integration of services

Strengthen **leadership**

Develop **digital surveillance** system

Combat **stigma**

Towards leprosy mukth bharat

Created by:

Dr. Mohammed Kashif

(Junior resident, Department of Community Medicine, SRMC&RI, Chennai)

Source:

WHO - A road map for neglected tropical diseases 2021–2030

www.cltri.gov.in

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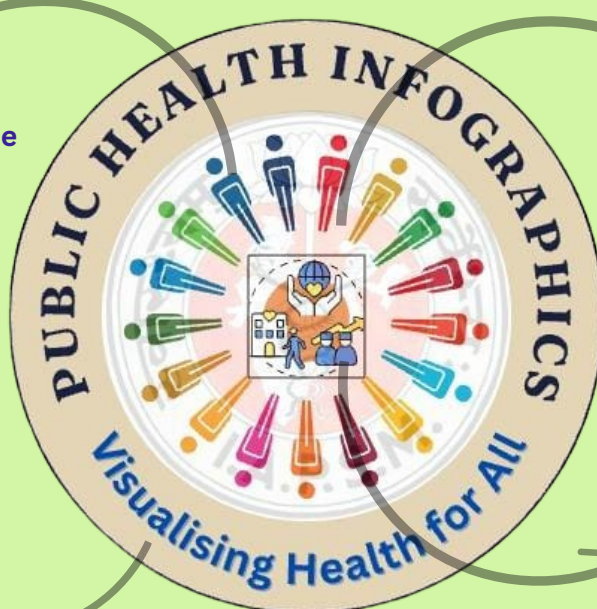
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Graphic-e-Health

Highlights how infographics can educate the public about the health system and its services

Tagline for this initiative



Represents use of infographics to enhance collaboration and communication between public health professionals and the community

Represents the role of infographics in making public health data clear and simplified



Dear IAPSM Members,

“ Thank you for taking the time to explore our latest Public Health Infographics Edition. It is gratifying to know that these visual resources contribute to enhancing public health knowledge within our IAPSM community.

Your continued support and engagement with the Public Health Infographics initiative are truly appreciated. Our aim is to consistently improve the quality and relevance of our content, ensuring it serves as a useful resource for all. If you have any suggestions, feedback, or ideas for future infographic topics, we encourage you to reach out to us at iapsminfographics.iphi@gmail.com. We welcome your insights and are eager to incorporate changes that can enrich your experience.

Together, let's make this initiative even more impactful for our community.”



Best Regards,
Team IAPSM Public Health Infographics

CONTACT US



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