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1 Antimicrobial Resistance (Source: Down To Earth)

The resistance developed by pathogens like bacteria, viruses, fungi, and parasites against the medicines used to control their growth i.e. Antibiotics.

Why we need to be concerned

- It is a major global public health threat because antibiotics are the last resort against many infections.
- Poverty and inequality are considered to be major driver for its spread.
- 1.14 million to 1.27 million deaths annually are as a result of antibiotic resistance.
- AMR could result in US$ 1 trillion additional healthcare costs by 2050.

Exam pointers

- AMR is a natural process that happens over time through genetic changes in pathogens.
- Misuse and overuse of antimicrobials are considered to be the chief cause of spread .
- MDR Tb is an example of AMR disease that is considered to be a major challenge.
- Antimicrobials are used to prevent and treat infectious diseases in humans, animals and plants.

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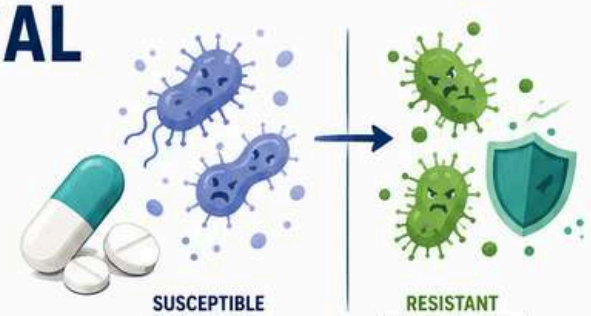
ANTIMICROBIAL RESISTANCE

When germs outsmart medicines, infections get harder to treat.

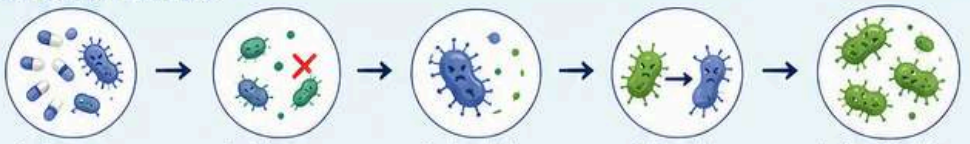
Antimicrobial Resistance (AMR) occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to medicines.



SUSCEPTIBLE
Medicine works

RESISTANT
Medicine doesn't work

HOW DOES IT HAPPEN?



1. **Overuse**
Using antibiotics or antimicrobials when not needed.

2. **Misuse**
Wrong medicine, dose or duration.

3. **Survival**
Strong germs survive and resistant ones are not killed.

4. **Spread**
Resistant germs spread to other people, animals and the environment.

5. **More Resistance**
Over time, infections become harder and costlier to treat.

WHERE DOES IT HAPPEN?

HEALTHCARE SETTINGS
Hospitals, clinics, long-term care facilities

ANIMALS
Overuse in livestock and pets can lead to resistant germs.

ENVIRONMENT
Germs spread through water, soil, air and waste.

COMMUNITY & TRAVEL
Resistant germs can spread across communities and borders.

WHY DOES IT MATTER?

700,000+
deaths every year globally due to AMR.

Infections last longer, cause more severe illness and increase the risk of death.

More hospital stays, more tests and more expensive treatments.

AMR threatens progress in modern medicine, including surgery, cancer treatment and organ transplants.

EXAMPLES OF RESISTANT INFECTIONS

MRSA
Resistant to many antibiotics

MDR-TB
Resistant to first-line TB drugs

CRE
Resistant to many common antibiotics

Drug-resistant Malaria
Resistant to anti-malarial medicines

Drug-resistant Fungi
Resistant to antifungal drugs

WHAT CAN WE DO?

1. USE RESPONSIBLY
Only use antimicrobials when prescribed by a qualified healthcare professional.
- Follow the right dose
- Complete the full course
- Never share medicines

2. PREVENT INFECTIONS
Good hygiene and vaccination reduce the need for medicines.
- Wash hands
- Keep vaccinations up to date
- Practice good hygiene and sanitation

3. DIAGNOSE ACCURATELY
Right tests help doctors choose the right treatment and avoid unnecessary antimicrobials.
- Use laboratory tests
- Identify the right germ
- Target the right drug

4. IMPROVE ANIMAL CARE
Use antimicrobials in animals only when necessary and under veterinary guidance.
- Good animal health
- Vaccinate animals
- Follow guidelines

5. PROTECT THE ENVIRONMENT
Proper waste management, clean water and reduced pollution limit the spread of resistant germs.
- Treat wastewater
- Reduce pollution
- Use resources wisely

6. SPREAD AWARENESS
Everyone has a role in fighting AMR.
- Stay informed
- Follow advice
- Encourage others

REMEMBER
Antimicrobials are a precious resource.
Handle with care today,
so they work tomorrow.

TOGETHER, WE CAN STOP AMR.

HEALTHY PEOPLE | HEALTHY ANIMALS | HEALTHY ENVIRONMENT | A HEALTHIER FUTURE FOR ALL

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2 Ancient Universities in India (Source: The Indian Express)

University	Location	Description
Odantapuri	Bihar	• Made under the patronage of Pala Dynasty King Gopala I. • It was a Buddhist mahavihara which Bakhtiyar Khilji destroyed.
Vikramshila	Bihar	• It was established by King Dharampala of the Pala Dynasty, primarily as a Buddhist learning centre. • The Vajrayana sect of Buddhism flourished here and Tantric teachings were taught.
Jaggadala	Gujarat	• It was an important centre of learning for the Hinayana Buddhism. • It was visited by the Chinese scholar, Hseun Tsang. • It was supported by the grants of rulers of the Maitraka Dynasty of Gujarat.
Nalanda	Bihar	• Patronage by the Gupta dynasty, Harshavardhana, and Pala dynasty. • It was a major site for Mahayana Buddhist teachings. • The teachings in the university deeply influenced Tibetan Buddhism. • Famous scholars of Nalanda are Nagarjuna (Madhyamika Shunyavad) and Aryabhatta, the astronomer. • Hsuan Tsang spent two years at the university and Chinese scholar I-Tsing, spent 10 years at Nalanda in the late 7th century CE.

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Takshashila	Pakistan	• It is believed that Chanakya composed the Arthashastra at this place. • Both Buddhist and Hindu theologies were taught here. • Noted teachers and students from Takshashila include Chanakya, Charak, Panini, Jivaka, and Prasenajit.
Manyakheta	Karnataka	• Rose to prominence under the Rashtrakuta rule. • Scholars of Jainism, Buddhism, and Hinduism studied here.
Pushpagiri Vihara and Lalitagiri	Odisha	• Kalinga kings established it around the 3rd century CE near the Udayagiri hills. • It was mainly a Buddhist learning centre.
Nagarjunakonda	Andhra Pradesh	• It was a major Buddhist centre with scholars from Sri Lanka, China, etc. coming for higher education.

3 Aravalli Range (Source: The Hindu)

- They are aligned in a north - east to south - west direction.
- They run for about 800 km between Delhi and Ahmedabad in Gujarat, with the width and height decreasing from Gujarat to Delhi.
- They were formed during the Aravalli–Delhi Orogeny involving the collision of microplates, which later became part of the Indian plate.

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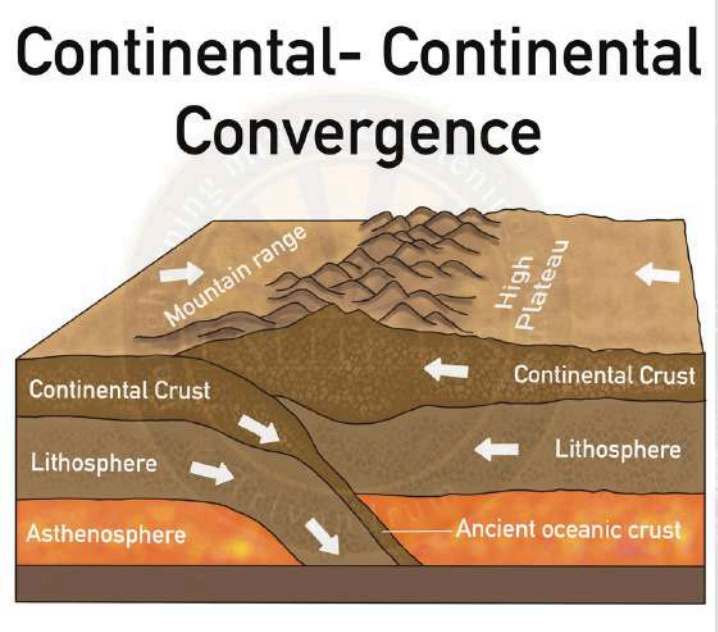

- They continue up to Haridwar and are buried under the alluvial Ganga plains.
- The Aravallis have an average elevation in the range of 400-600m.
  - Mt. Gurushikhar (1722m) is the highest point of the Aravallis.The The
- Aravallis share the western border with the Thar desert and the eastern border with the Mewar plateau.

Significance

- Serves as a natural barrier against desertification and sandstorms.
- Source of important rivers such as the Chambal, Sabarmati, and Luni.
- Provide essential resources like fuelwood, fodder, fruits, and commercial products.
- Helps in regulating precipitation through evapotranspiration.