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## Drug-resistant Super-bug Spreading in Hospitals

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The scientists from Australia have warned of a superbug, resistant to all known antibiotics, that can cause “severe” infections or even death, is spreading undetected through hospital wards across the world.

- The research said that bacteria is spreading rapidly because of the practice of using multiple antibiotics to treat bacterial infections in patients admitted in Intensive Care Unit.
- The bacteria spreading is known as Staphylococcus Epidermidis, is related to MRSA superbug.
- It's found naturally on human skin and most commonly infects the elderly or patients who have had prosthetic materials implanted, such as catheters and joint replacements.
- There is a need for better understanding of how infections spread.

### What is MRSA?

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- MRSA stands for Methicillin-Resistant Staphylococcus Aureus (MRSA).
- Methicillin, a form of penicillin was introduced to treat the penicillin-resistant S. aureus bacteria. Methicillin was one of most common types of antibiotics used to treat S. aureus infections; but, in 1961, British scientists identified the first strains of S. aureus bacteria that have developed resistance to methicillin and it was named as MRSA.

### What is Antimicrobial Resistance(AMR)?

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- Antimicrobial resistance happens when microorganisms (such as bacteria, fungi, viruses, and parasites) change when they are exposed to antimicrobial drugs (such as antibiotics, antifungals, antivirals, antimalarials, and anthelmintics).
- AMR threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses, and fungi and is an increasingly serious threat to the global public.

- Without effective antibiotics, the success of major surgery and cancer chemotherapy would be compromised. The cost of health care for patients with resistant infections is higher than care for patients with non-resistant infections due to longer duration of illness, additional tests and use of more expensive drugs.

## Why AMR occurs?

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Antimicrobial resistance occurs naturally over time, usually through genetic changes in microbes. However, the misuse and overuse of antimicrobials (mostly antibiotics) is accelerating this process.

## Spread of AMR Microbes

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Drug-resistant Microbes can spread between people and animals, including from food of animal origin, and from person to person:

- Poor infection control
- Inadequate sanitary conditions
- Inappropriate food-handling

## WHO Initiatives for Preventing AMR Spread

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WHO provides assistance to countries in developing the action plan to deal with 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. By 2023, the partnership aims to develop and deliver up to four new treatments, through improvement of existing antibiotics and acceleration of the entry of new antibiotic drugs.
- 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.

## The Government of India's Initiatives to Combat Anti-Microbial Resistance:

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- National Action Plan to Combat Anti-Microbial Resistance
  - The ambitious and comprehensive plan highlights the need for tackling AMR across multiple sectors such as human health, animal husbandry, agriculture and environment .
- India's Red-Line Campaign
  - To prevent the misuse of anti-biotics, Government of India came up with "Red-Line Campaign" to spread awareness about the misuse of antibiotics.
  - India's Red Line campaign began marking prescription-only antibiotics with a red line to curb their irrational use and create awareness on the dangers of taking antibiotics without being prescribed.
  - Under it, all prescription only antibiotics will be marked with a vertical red line on the packets. The red line antibiotics packets should be consumed on doctor's advice and the patients need to complete the full course prescribed by the doctor.

### **What is Superbug?**

- Superbugs are bacteria which have developed resistance to most of the antibiotics available to the human.
- Examples of Superbug: NDM-1 Superbug (New Delhi Metallo-beta-lactamase-1)