# Anti-microbial resistance -Mass-bathing in the Ganga

## Why in news?

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A government-commissioned study has reported that mass-bathing in the Ganga during pilgrimages might be contributing to anti-microbial resistance (AMR).

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## What is AMR?

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- Antimicrobial resistance is the ability of a microorganism like bacteria, viruses and some parasites to stop an antimicrobial from working against it .
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- The resistance **reduces or eliminates the effectiveness of these drugs**, chemicals, or other agents designed to cure or prevent infections.
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- Resultantly, standard **treatments become ineffective**, infections persist and may spread to others.
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- Microbes resistant to multiple antimicrobials are called multidrug resistant (MDR) or sometimes 'superbugs'.
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## What are the findings of the study?

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- In 2014, India was the highest consumer of antibiotics, followed by China and the United States.
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- Resultantly, India has some of the highest antibiotic resistance rates among bacteria that commonly cause infections in the community and healthcare facilities.
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- The water and sediments were sampled at seven sites along the Ganga in

different seasons.
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- The report highlights how the rivers and groundwater have been contaminated by drug-resistant bacteria.
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- And this is subsequently augmenting the vulnerability of people using that water.
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- It states that levels of resistance genes were found to be about 60 times greater during the pilgrimage months than at other times of the year.
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- Other than ‘cultural factors’ such as bathing, the drivers of AMR included excessive use of antibiotics in the livestock industry and unchecked discharge of effluents by the pharmaceutical industry.
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## How does it spread in water?

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- When antibiotics are used in humans or animals approximately 80 - 90% of the ingested antibiotics are not broken down.
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- They eventually pass through the body intact and enter the environment as waste.
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- Thus, they retain their ability to affect bacteria and promote antibiotic resistance even after they enter the soil or water as a waste product.
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- Any bacteria that acquire resistance genes have the ability to resist one or more antibiotics.
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- Bacteria can transfer this resistant genetic material, including genes encoding resistance to antibiotics.
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- Antimicrobials, particularly, antibiotics are called societal drugs as antibiotic resistance can pass from bacterium to bacterium.
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- Resultantly, the resistant bacterial infections can pass from person to person.
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- Thus, antibiotic use and antibiotic resistance can eventually affect an entire community.
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## What should be done?

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- Improving waste management can address the spread of resistance-genes at key pilgrimage sites
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- However, this is only part of the problem.
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- In spite of the challenge, too little work had been done so far to understand the major drivers of anti-microbial resistance.
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- The recent mapping exercise indicates that AMR research studies in India were of limited scope in all areas and needed a comprehensive focus.
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**Source: The Hindu**

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