

How does Antibiotic Resistance Effect Me?

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✓ Human from ape- evolution 6 million years

✓ Bugs to superbugs- evolution 60 years

Discovery of penicillin- 1928

Identification of first superbug- 1994

Two points

- Bacteria naturally acquire resistance to drugs over time
- Broad spectrum Antibiotics- action?

Classroom as a unit

- What happens when one of us has a bacterial infection like typhoid?
- Bacterial infections and sewage spills
- Sewage spills and spread of Antibiotic Resistant strains in the environment

Environment pollution and Antibiotic Resistant strains





Home > The Sunday Standard

New drug-resistant gene found in water polluted with pharma waste

Hyderabad is now home to a new resistance gene, named as 'blaRSA2', that can render useless even Carbapenems, the type of antibiotics which are used as last-resort medicines to treat patients



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The George Institute
for Global Health

The Patancheru- Musi river Story-

[Environ Int.](#) 2018 Mar;112:279-286. doi: 10.1016/j.envint.2017.12.036. Epub 2018 Jan 6.

Functional metagenomics reveals a novel carbapenem-hydrolyzing mobile beta-lactamase from Indian river sediments contaminated with antibiotic production waste.

[Marathe NP](#), [Janzon A](#), [Kotsakis SD](#), [Flach CF](#), [Razavi M](#), [Berglund F](#), [Kristiansson E](#), [Larsson DGJ](#).

The Ganges Story-

[Appl Environ Microbiol.](#) 2003 Apr;69(4):2389-94.

Molecular characterization of *Vibrio cholerae* O139 bengal isolated from water and the aquatic plant *Eichhornia crassipes* in the River Ganga, Varanasi, India.

[Bhanumathi R](#), [Sabeena F](#), [Isac SR](#), [Shukla BN](#), [Singh DV](#).

Use of Antibiotics in animals and Antibiotic Resistant strains



[Sci Rep.](#) 2017 Mar 8;7:43797. doi: 10.1038/srep43797.

Novel methicillin resistance gene *mecD* in clinical *Micrococcus caseolyticus* strains from bovine and canine sources. [Schwendener S](#)¹, [Cotting K](#)¹, [Perreten V](#)¹.

▲▲▲ Classify
by Criterion 1, 2

Antimicrobials are given to
food producing animals



Antimicrobials*



Infections from drug resistant
bacteria can be more severe and
difficult to treat than those from
drug susceptible bacteria



Antimicrobial
Resistance
(AMR)
along the food chain



Drug resistant
bacteria develop
in animals



...and can be
transferred to
people by eating
food

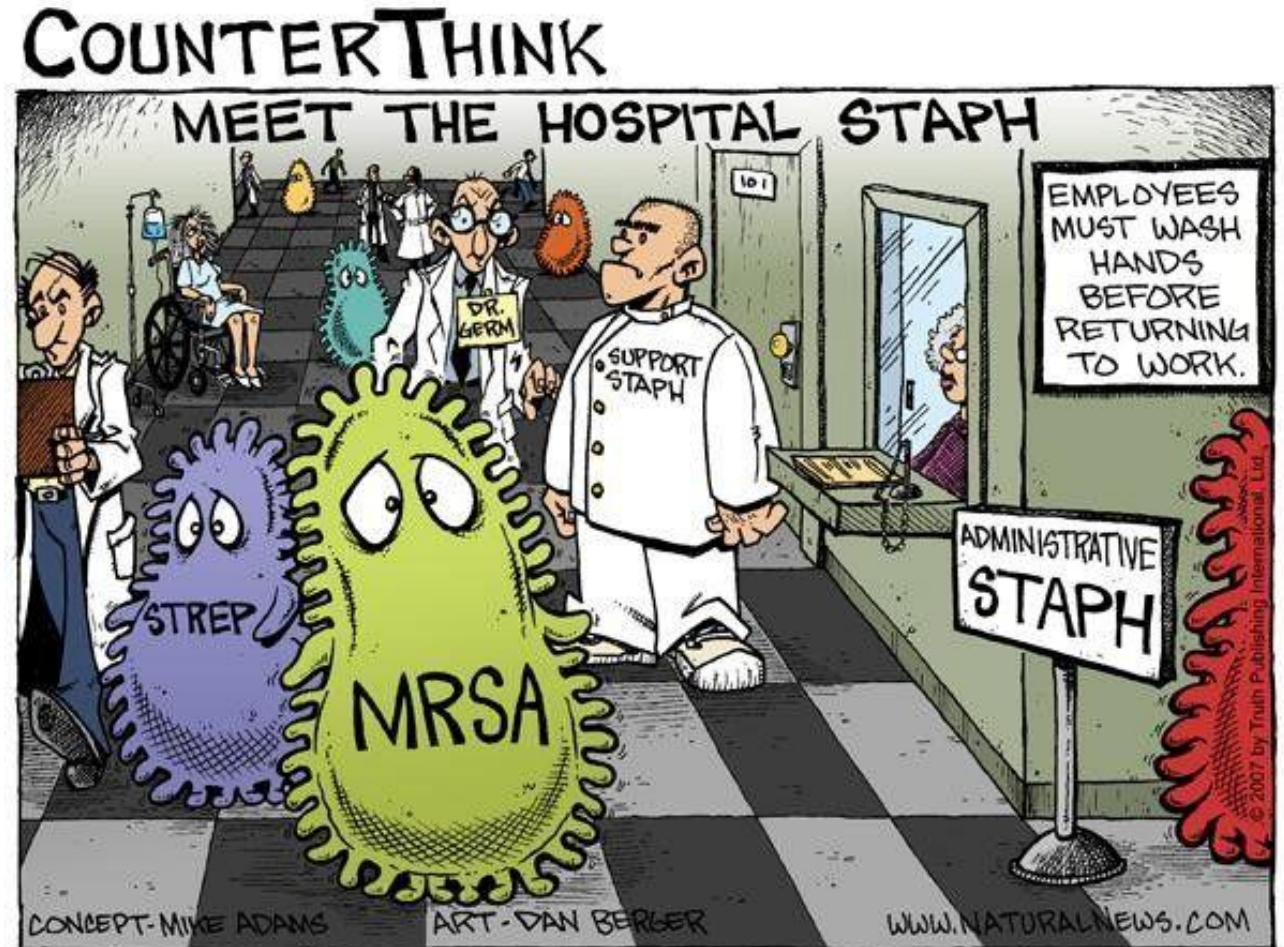


Hospitals and Antibiotic Resistance

Hospital acquired infections-
nosocomial infections

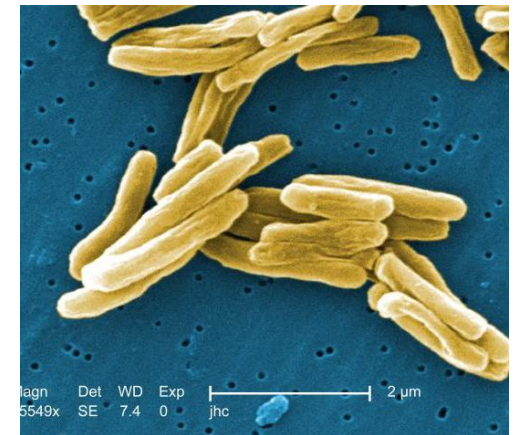
- Urinary tract infections
- Respiratory infections
- Surgical site infections
- Bloodstream infections

Maternal sepsis



Mycobacterium tuberculosis

- Infects lungs and then other organs
- First line of drugs- Antibiotics- low cost- free in government clinics
- MDR tb
- Second line of drugs- expensive- not available in government clinics
- SYMPTOMS-
 - ✓ A bad cough that lasts 3 weeks or longer
 - ✓ Pain in the chest
 - ✓ Coughing up blood or sputum (mucus from deep inside the lungs)



How do I manage Antibiotic Resistance by myself and in others around me?

- Follow the Antibiotic course (strictly)
- Ask family members/friends to adhere to Antibiotic course
- Say NO to purchasing Antibiotics without a prescription
- Follow hygienic practices like handwashing, flushing toilet at all times
- Reach out to a responsible adult when there is a sewage leakage in the neighbourhood
- Make sure that food derived from animal products are cooked properly at home

Designing Awareness Posters

- For schools, as part of science projects, as YouTube videos?

ACTIVITY

COUGH FOR OVER 2 WEEKS COULD BE TB MEET A DOCTOR NOW

Other Symptoms of Tuberculosis (TB):

- Fever
- Night Sweat
- Loss of Appetite
- Weight-loss

Visit your nearest government health facility for high quality free diagnosis and treatment

Irregular or incomplete treatment may lead to Drug Resistant TB

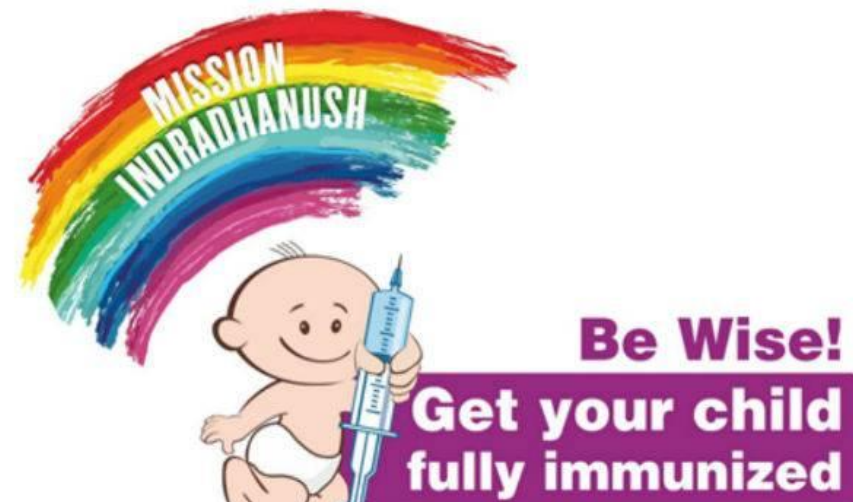
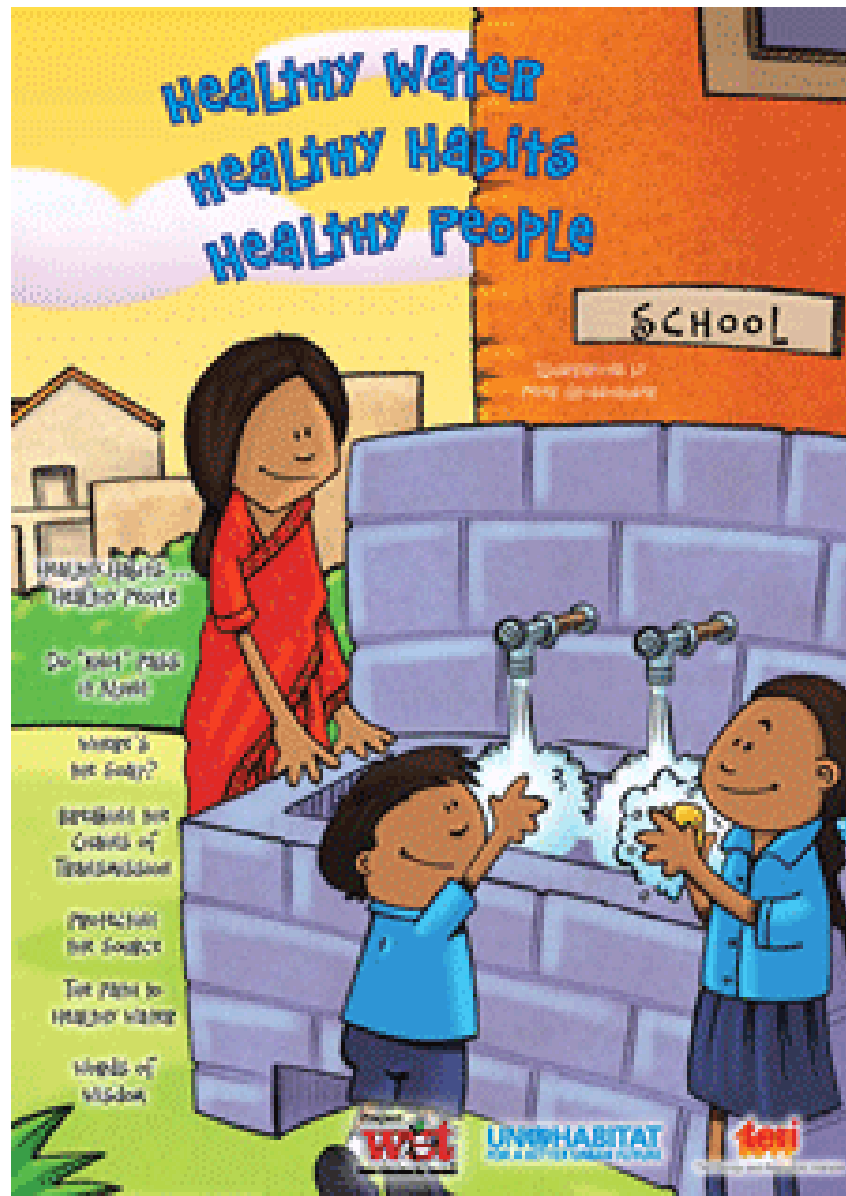
- TB germs spread through the air
cover your mouth while coughing



TB HAREGA, DESH JEETEGA

Central TB Division ■ Directorate General Health Services ■ Ministry of Health and Family Welfare ■ Government of India





Anir Kuponshan poster hindi 6 : 10" (W) X 14" (H)

