

Every hydrogen atom in your body is around 13.5 billion-years-old

Hydrogen was the first chemical element that appeared at the beginning of the universe's existence. All the hydrogen, in the world, has existed since that time, and new hydrogen has not appeared. This means that the age of every atom of hydrogen in the world, including those in the human body, is around 13.5 billion-years-old. A little later, as a result of nuclear synthesis, some hydrogen atoms became atoms of helium, carbon and so on. But around 75% of the mass of the 'visible universe' still consists of hydrogen.



The 'antibiotic resistance' is a big menace, which has increased due to bad practices in 'prescribing' and 'easy availability' across the pharmacy counter. The World Health Organization (WHO), in 2017, created a classification system for antimicrobial drugs to counter this bad practice.

'F'ailing Antibiotics

#HEALTH WEALTH



India's booming pharmaceutical industry is a major contributor to the problem of 'antimicrobial resistance.' Pharmaceuticals are an important export business for India, as well as the domestic market. Industry has become adept and unscrupulous at marketing. Competition in the antibiotics space has led to pressure to sell.

Competition in the antibiotics space has led to aggressive pressure to sell antibiotics. The incentives there are to 'oversell' antibiotics and not just any antibiotic. It's to oversell the newest antibiotics, which really shouldn't be available to the public, anyhow.

The WHO's system, AwaRe, places all available antimicrobials into three categories: 'Access, Watch and Reserve.' Access is for highly targeted compounds that are relatively unlikely to contribute to antimicrobial resistance. So, these should be the most accessible and widely used.

#TRAVEL

Pet-friendly Journey

Indian Railways is one of the best transports to carry your pets to longer distance



For pet owners, the joy of travel is often tinged with the worry of leaving their furry companions behind. But there is no need to fret, as not many are aware of the pet-friendly policy introduced by the Indian Railways Catering and Tourism Corporation (IRCTC), which allows you to bring your beloved dog or cat along, on your train journeys! This policy eliminates the stress of finding pet sitters or boarding facilities and allows you to embark on your next trip with your pet by your side, creating a more enjoyable and stress-free experience for everyone involved.



Indian Railways is one of the best transports to carry your pets to longer distance. It is very convenient for animals since it also takes several breaks during the journey and is well-ventilated.

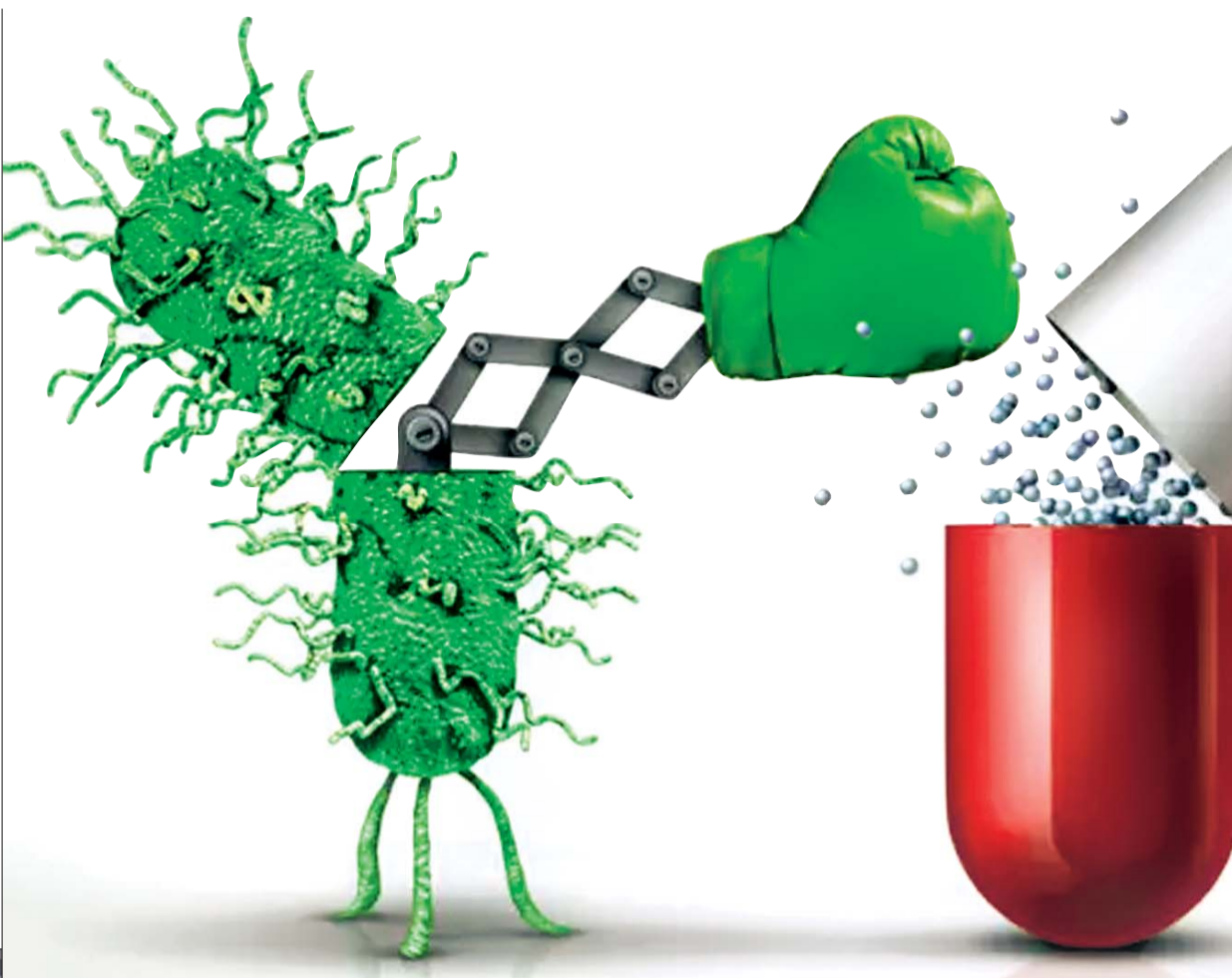
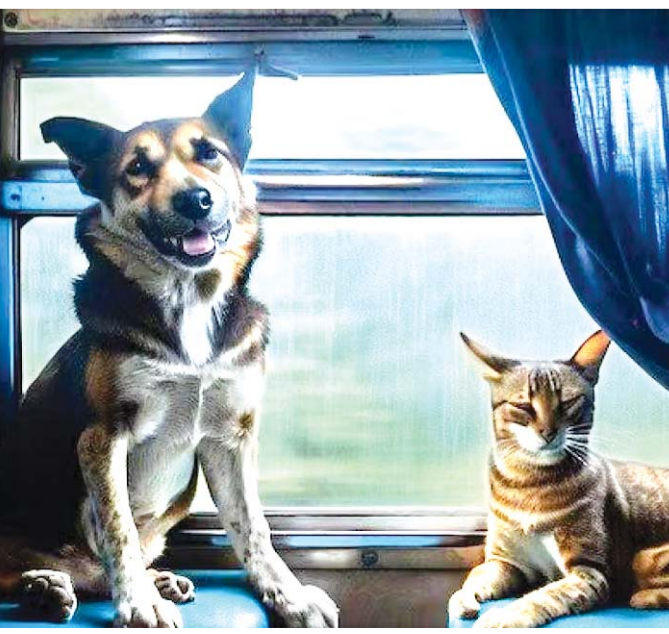
- Obtain a fitness certificate from a licensed veterinarian, within 24-48 hours, before travel.
- Be prepared to provide food, water, and a comfortable carrier or leash for your pet during the journey.
- **Eligible pets:** Currently, only dogs and cats are allowed to travel on trains.
- **Travel options:** There are two options for transporting your pet.
- **AC First Class or First Class Coupe:** You can book the entire compartment exclusively for yourself and your pet, paying the applicable charges for these classes.
- **Luggage-cum-Brake Van:** You can book your pet in a carrier or a dog box, subject to availability, under the supervision of the Train Manager (Guard).

Booking for your pet

- For AC First Class or First Class Coupe: Make your booking through IRCTC and inform the Divisional Railway Manager (DRM) or General Manager (GM) office about your request for a dedicated compartment.
- For Luggage-cum-Brake Van: Inquire about the availability of carries or dog boxes from the concerned Parcel office and book your pet at the luggage office, at least three hours before the train's departure.

Additional requirements

- Ensure your pet has all necessary vaccinations and carry the relevant certificates.



Rakesh, a young IT executive, woke up with high fever, scratchy throat and a hacking cough. He knew that it would be impossible to see a doctor during his heavy schedule for the day. Therefore, he went to the Pharmacy in front of his apartment building and asked the pharmacist to give him some pills for his problems. Since he had been regular at the shop, the pharmacist gave him an antibiotic and analgesic/antipyretic for his immediate use without a prescription. He even said that the medicines were identical to the prescription of Dr. Baid, which had been given for similar complaints, the other day. In Chennai, a 2019 study found that 48% of pharmacies sold antibiotics 'without a doctor's note,' often influenced by pharmaceutical companies. This 'unregulated access' fuels self-medication and incomplete treatment courses, further accelerating development of resistance. This is true for the rest of India, too.

The Pharmacist had no right to give antibiotics over-the-counter (OTC). The law prohibited it. But the implementation was just not done. Rakesh took the medicines and responded to it within the next two days. The antibiotic, supplied for five days, remained on his bedside table when he went to work on the third day. After that he stopped taking them. A week later, his symptoms reoccurred. He, then, started the medicines again. This time he did not get better after three days. He went to the neighbouring doctor, who then suggested a 'different set of antibiotics' for the next five days. He did not respond to the medication and was advised admission to a tertiary hospital for intravenous antibiotics. Fortunately, the hospital had a 'strict protocol' for antibiotic use. All his blood tests were sent and a third-generation antibiotic was used in the interim period until the results were available. His fever subsided but all

other symptoms persisted. The culture report showed that the infection was a Methicillin-Resistant Staphylococcus Aureus (MRSA) bacteria. Fortunately, his infection was susceptible to a higher and newer antibiotic, which was then given in addition. The hospital stay was more than two weeks and the bill was monumental.

Did Rakesh really have to go through all this? Where did the error occur? Ideally, Rakesh should have seen the doctor at first. This is not always possible, convenience/expense? The pharmacist should not have given the antibiotics without a doctor's prescription. This is a very common practice in India. The Tamil Nadu government, acknowledging the issue, launched a 'Medicine with Bill' campaign in 2019, making it 'mandatory' for pharmacies to provide bills with 'details of prescription and dispensed medicines.' This was mandated in Rajasthan in 2023. Stricter enforcement of prescription-only sales regulations and mandatory pharmacist training, can significantly curb over-the-counter

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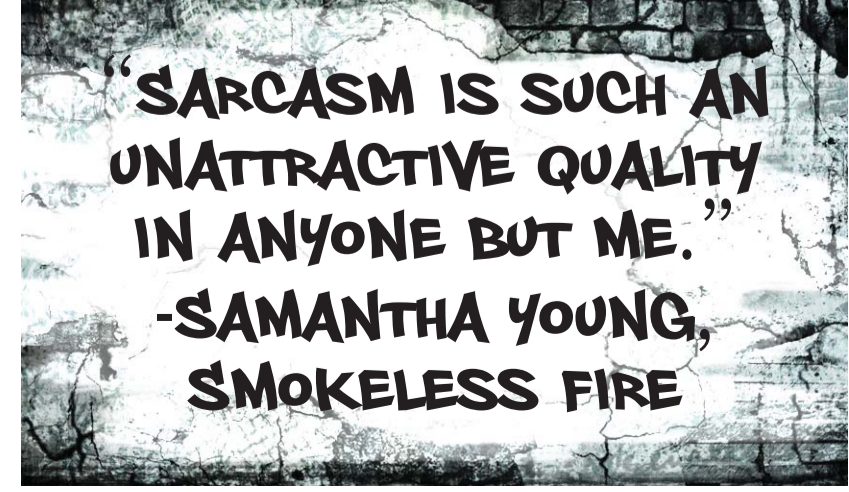
(OTC) antibiotic sales. Rakesh should have continued antibiotics for the full five-day course and stopped only on doctor's advice. Apathy and callousness about following instructions is a part of the present-day generation mental makeup.

The same antibiotic was not to be taken intermittently. This is the commonest cause of antibiotic resistance. The first doctor needed to get a culture done before prescribing a 'new set' of antibiotics. Not practical as cultures reports take 48 hrs. The tertiary hospital finally did it the right way and was able to pull him out of the infection at great cost and time.

While this is not the scenario all the time. The outcome could have been worse. Rakesh could have died. Drug resistance accounts for 4.1% of all the years of life lost

due to premature mortality in India, as against 2.2% globally. Essentially, drug resistance snatches away 40% more life years in India than it does worldwide. (According to Max Institute of Healthcare Management at the Indian School of Business). 'Infectious diseases' have declined as a cause of mortality in India, but are still a cause for concern. In 2019, bacterial infections were implicated in 1.75 million deaths across the country, according to the Global Research on Antimicrobial Resistance. That's 19% of the 9.92 million deaths, estimated to have occurred in that year. Of those who died due to a bacterial infection, 16.6% succumbed because the bacteria was resistant to the available arsenal of drugs. Further, 58.1% had a bug that was implicated in their death, but antimicrobial resistance may or may not have been a factor.

THE WALL



BABY BLUES



ZITS



#INSIGHT

How Fire Shaped Ancient Civilizations

The mastery of 'fire' transformed ancient civilizations. Even if humans may not have invented it, we found better ways to use it.

Anyone who has ever tried to start a campfire knows it's not that easy, even with matches. A person has to get the right kindling and tinder, place the match in a suitable spot, and nurture the flame so that it spreads. It's no wonder that different scouting groups award merit badges to campers who 'successfully foster the flames.'

It took a long time for ancient humans to master fire-making and adapt it to daily life. But once 'fire' became a consistent tool, it changed many aspects of early human civilization.

Cartoons always depict cavemen having an epiphany, in which they discover the wheel or start a fire for the first time. But there wasn't just one moment when a caveman picked up a hunk of pyrite, struck it against a rock, and marvelled at the resulting sparks. Instead, hominins lived with natural fire long before they were able to replicate and control it.

At that period, they started to conceptualize 'fire' and understand that stuff tastes better when it's not raw," says Francesco Berna, a professor of Archaeology at Simon Fraser University in Burnaby, British Columbia, who studies the Archaeology of Fire.

When Was Fire Invented? So, it wasn't that fire was invented and spread like, well... wildfire. It's more that humans lived with natural fire, developed tools for controlling flames, and adapted those tools over time.

There's archaeological evidence that archaic humans used 'fire' sporadically as far back as 1.6 million years ago. But it wasn't until around 350,000 years ago that 'fire' was widely used, with archaeological sites from that time being the first to reveal 'consistent evidence of fire.' It was then that spark turned to flame. From then on, fire would play an essential part in human history.

What Did Fire Mean To Early Humans? Although humans have long had access to fire, scientists have only shown greater interest in the archaeology of 'fire' in the past few decades. Archaeologists now debate

whether *Homo sapiens* evolved from earlier hominins. Thanks to the adaptation of fire and the improvements it brought to their diet, shelter, and daily well-being! But they do agree that once fire was widely adopted, archaic humans were benefited from advantages that their own ancestors did not.

How Fire Changed Ancient Life Fire brought many changes to daily life. It allowed people to occupy dark spaces such as caves and to stay safe from predators in open areas such as savannas.



Bonfires also brought more than light and warmth into the night. They attracted people and allowed for bonding and language development, as well. "It was very important as a social aggregator," Berna says. The adaptation of 'fire' also changed their ability to acquire food.

Before farming, archaic humans 'managed landscapes,' using fire to manipulate the terrain and remove wooded areas. "Reducing tall trees allowed more sunlight," Berna says, which encouraged growth of the desired plants for foraging.

As humans became farmers, fire also helped develop land for planting. "There were some early farmers who would use slash and burn," Berna adds. "They would grow crops in previously forested areas."

Fire and Early Hunting Of course, the benefits of fire weren't limited to foraging. Scientists currently have several ideas on how they think 'fire' helped archaic humans hunt.

"There are some hypotheses, and you can see some depictions of Neanderthals or *Homo sapiens* with a torch and pushing big game into traps, jumps, or mud. That may be one way," Berna says. "Most animals are afraid of fire."

But he thinks that it's more likely that early humans used 'fire' to modify the 'landscape' so that it was easier to hunt. "By burning down tall grass, you can have better vision," he adds.

"Not only that, hunters and gatherers used fires to stop grasslands from becoming too overgrown, allowing them to attract the animals they wanted to eat. It's also possible that flames helped humans remove foliage that wasn't desirable to their selected prey," Berna says, "increasing the presence of plants that their target species preferred."

Fire and Ancient Burial Practices The earliest evidence of cremation dates back to 40,000 years ago, in Australia. However, Berna says that scientists do not know whether those cremations were intentional or accidental. Consistent evidence of cremation doesn't occur until relatively late in human history, around the time when humans stopped being nomadic.

By Jerry Scott & Jim Borgman