DOWN TO EARTH

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Infant Mortality Rate

It may bring some relief that the Infant Mortality Rate (IMR) in India has fallen from 50 to 32 per 1,000 live births over the past decade, but the wide variation in numbers across the country offsets the achievement.

Reported variation -

- Data released recently by the office of the Registrar General of India in its Sample Registration System bulletin shows that the numbers vary dramatically among states and between rural and urban areas. Nagaland, for instance, reported the lowest IMR of 4, while Madhya Pradesh reported the maximum IMR of 48.
- The bulletin has divided states and Union Territories into three categories—**bigger, smaller and Union Territories**. States and Union Territories with a population of more than 10 million as per Census 2011 are in the "bigger" category. While three "bigger" states—Delhi, Maharashtra and Tamil Nadu—have IMR within 20 (13, 19 and 15 respectively), in four states, IMR has crossed 40 —Assam has 41, Chhattisgarh 41, Madhya Pradesh 48 and Odisha has 40.
- The variation is wide even among smaller states - 37 in Arunachal Pradesh and four in Nagaland. Similarly, among Union Territories, IMR varies between 16 and nine in Andaman and Nicobar Islands and Daman and Diu.

Urban v/s rural divide -

- It is no surprise that **IMR is higher in rural areas than in urban areas**. **In rural India, one in every 28 infants die** with the first year of their life, while the figure is one in **43 for urban areas**, the bulletin states. **Delhi, Tripura and Puducherry** are the only places that have **higher IMR in urban areas than in rural areas**.
- In Madhya Pradesh, IMR ranges from as high as 52 in rural areas - the highest anywhere in the country - to 36 in urban areas. Similarly, Uttar Pradesh has 46 IMR in rural areas but 35 in urban areas.
- Among smaller states, rural and urban IMR fluctuates from 35 to 17 in Meghalaya. In Dadra and Nagar Haveli, IMR in rural areas is 19, but nine in urban areas.

Conclusion -

In the past decade, IMR has witnessed a decline of 35 per cent in rural areas and 32 per cent in urban areas. Yet, one in 31 infants dies within the first year of birth, irrespective of urban or rural. This speaks volumes of the country's healthcare conditions.

Sea level rise

Unless global emissions are reduced immediately, sea levels will rise much faster than believed. A survey conducted by a conglomeration of 106 specialists shows that by 2100, sea levels will rise by more than a metre.

Impact -

Coastal cities, therefore, must prepare for an impact that will hit sooner than predicted by the United Nations. By 2300, sea levels could rise by 5 metres.

What does the studies say?

- The United Nations Intergovernmental Panel on Climate Change predicts 1.1 metre rise by 2100 in the worst case scenario.
- The new study, however, estimates that with rising emissions and global heating of 4.5oC above pre-industrial levels, the surface of the world's oceans in 2100 will be between 0.6 and 1.3 metres higher than today. This would engulf areas home to millions of people.

Precaution -

- If human beings succeed in cutting carbon dioxide emissions, and halting temperature increase to below 2oC, the rise would be a more manageable 0.5 metre.

- The study highlights the growing concerns of the world's two biggest ice sheets, in Antarctica and Greenland, that are melting faster than most computer models had predicted.

A new storm surge

The devastation caused by the first super-cyclone (Amphan) to form over Bay of Bengal in the past two decades is as severe as the 1999 super cyclone. In the Sundarbans alone, it has washed away about 90 km of embankments that guarded two-thirds of islands in the South 24 Parganas district. Seawater has swept 10 km inland, inundating 50,000 ha of land.
Since 1999, Amphan is the third super cyclone to occur in the North Indian Ocean region, which includes the Bay of Bengal, Arabian Sea and the northern part of the Indian Ocean. The other two super cyclones were Kyarr in 2019 and Gonu in 2007.

Cause of worry -

- What worries weather scientists most is the pace at which Amphan intensified. From a very severe cyclone with wind speeds of 140 km per hour, it went on to gain energy and became a super cyclone with 260 km per hour wind speed in a span of just 18 hours.
- On the night of May 18, the Joint Typhoon Centre of the US recorded wind speed of 270 km per hour and called it the strongest storm recorded in the Bay of Bengal in over a decade.

Why did it intensify?

- Weather scientists say this rapid intensification of Amphan might signal a warming Bay of Bengal. It was because of many favourable conditions over the Bay of Bengal like high sea surface temperatures, low vertical shear winds and enough moisture in the middle layers of the atmosphere, all of which aid in the development of a cyclone.
- Rapid intensification happens when there is an increase of maximum sustained winds of a cyclone by at least 55 km per hour within 24 hours. This phenomenon has been recorded and studied in the case of hurricanes but not as much in the case of cyclones.
- It is being said that the phenomenon might become more frequent in the Indian Ocean, especially considering its rapid and monotonic warming. Such rapid intensification was observed last year when cyclone Vayu formed in the Arabian Sea just after the onset of the south-west monsoon season.
- Weather scientists also predict that it is probable that due to the COVID-19 pandemic and reduced human and economic activity, the amount of aerosol (pollutants) in the atmosphere in South Asia plummeted. This reduced concentration of aerosols may have added to the already high sea surface temperatures in the Bay of Bengal, causing the rapid intensification of Amphan.

Conclusion -
Between 2011 and 2019, as many as 28 cyclones have developed, the highest in last four decades. Since cyclones form over warm sea surfaces (above 27oC) the analysis shows seas are now warm throughout the year, leading to an increased possibility of cyclone formation at any time of the year.

Immunity - Ultimate cure?

Immunity offers hope and reassurance. So, governments worldwide are desperate to identify those who have recovered and developed antibodies against SARS-COV-2. Some say this could serve as the basis for an "immunity passport" that would enable individuals to travel or to return to work assuming that they are protected against reinfection.
Chile is poised to become the first country to provide such certificates to recovered covid-19 patients, which will be valid for three months.

Germany experiment -

- In March, Germany tested its population for immunity against covid-19 using the rapid test kit. In Gangelt municipality, 14 per cent of the 500 people tested were found to have antibodies against SARS-COV-2. Swab tests showed 2 per cent were sick.

- Based on the findings, Germany planned to conduct serological tests across the country to issue immunity certificates so that people could resume work. But on May 5, it decided not to go ahead unless the study is cleared by its ethics council.

Ethical conundrum -

Potential discriminatory consequences of immunity passports might not be expressly addressed by existing legal regimes, because immunity from disease (or lack thereof) as a health status is a novel concept for legal protections.

Herd Immunity -

- The dictionary defines herd immunity as "*protection from a disease that happens if a large percentage of the population is immune to it*." Proponents believe once adequate immunity develops in a population, the spread of covid-19 would stop. Vaccines are usually used to create such herd immunity against infectious diseases like measles, mumps, polio and chickenpox.
- A research by Centre for Infectious Disease Research and Policy, USA says COVID-19 is not likely to be halted until 60 to 70 percent of the population is immune. However, studies on isolated populations show that no city has so far managed to achieve this magical state.

International statistics -

- In Spain, the fourth worst-hit nation in the pandemic, the government launched a rapid serology test on April 27 to gauge the exposure of people to SARS-COV-2. It found only 11.3 per cent and 7.1 per cent people have developed antibodies against covid-19 in Madrid and Barcelona, which have paid the highest price in fatalities.
- In the last week of April, New York city, the epicentre of the pandemic in the US, also launched an antibody study by testing 15,000 people at grocery stores and community centres across the state. Its findings show 12.3 per cent people now have covid-19 antibodies.
- A similar study by the city government of Boston, in Massachusetts state of the US, finds 9.9 per cent people have antibodies against covid-19.
- In UK, the covid-19 Surveillance Report shows that 14.8 per cent people in London had antibodies against covid-19.

So, shall we remove the lockdown altogether?

- Sweden, which has not imposed lockdown, is hopeful that herd immunity would see it through the pandemic. When COVID-19 broke out there towards the end of February, the government issued guidelines banning gatherings of over 50 people. Restaurants, schools and parks remained open.
- It estimated that in Stockholm 60 per cent people would develop antibodies against the virus by May-June. But its Public Health Agency says only 7.3 per cent people have developed antibodies by the end of April.

Is 'herd immunity' the way forward?

- Naturally developed immunity following a sickness is dicey. Even if adults develop immunity against the disease—a study posted on medRxiv on March 30 says older patients develop more antibodies against covid-19 than the younger ones— it can circulate among children and infect those with weakened immune systems.
- Besides, there is no evidence to show how long the immunity would protect from COVID-19. Other viruses like the flu mutate over time. So antibodies from a previous infection provide protection for less than a year. In case of covid-19, many patients who tested negative after treatment are testing positive again. As per one theory, these people getting reinfected might have developed low immunity during the first round of infection. But there is no conclusive evidence on this.

Are vaccines the ultimate cure?

- It seems we have to live with the virus for some time even after a vaccine is ready. Vaccines do not provide 100 per cent immunity. Flu vaccine, for one, is 59 per cent effective in adults and 27 per cent in keeping a person out of a hospital.
- A 2012 review says BCG vaccine, primarily used against tuberculosis, was 60 per cent effective in the first five years after inoculation. The effectiveness decreased to 56 per cent between five and 10 years and to 46 per cent for up to 15 years. But vaccines against diphtheria are effective.

Indians - More immune than others -

- Some communities may have an advantage over others when it comes to immunity. This natural defence mechanism of the body trains itself and evolves as people get constantly exposed to pathogens.
- Being challenged daily with diseases like tuberculosis, malaria, dengue and chikungunya, Indians are more immune to infections compared to several other nationals.
- There is also evidence that Indians have evolved to gain more genes that protect them against viral infections.
- These genes enable natural killer (NK) cells, a type of white blood cells in our body that provide a first line of defence against viral infections. Two families of genes, KIR genes and HIA genes, play a part in this protective function. Indians have more KIR genes than the Chinese and caucasians.

What is the way forward?

- The way to go ahead would be to have a mix of testing, physical distancing, imposing quarantines and lockdowns, and ensuring sanitation and healthcare, but all implemented at the correct time and as per the need.
- To deal with the pandemic, the world needs to urgently innovate and change the way it deals with diseases. While the health infrastructure needs to be made robust, not only in one country but across the world, health care requires more than just tests and ventilators. It requires identifying what strategy works where and when as the battle is not going to be over anytime soon.

Dibru-Saikhowa National Park

The Dibru-Saikhowa National Park (in Assam) lies at the intersection of two the world's 34 biodiversity hotspots—**the Indo-Myanmar hotspot and the Eastern Himalaya hotspot**.

Details -

- Known as the only habitat of feral horses, Dibru Saikhowa, is an island attached to some of the best birding habitats of the world.
- The wetland attached to the Dibru river attracts **migratory species such as ruddy shelduck, bar-headed goose, falcated duck, ferruginous duck, northern pintail and the Eurasian wegion**.
- It also harbours **critically endangered bird species such as the Bengal florican, white winged duck, Greater adjutant stork, white-rumped vulture and slender-billed vulture**, as well as the very rare and endemic black-breasted parrotbill. Overall, Dibru-Saikhowa has recorded over 500 species of birds and 104 species of fish, including the endangered Gangetic river dolphins.
- The park is also home to tigers, elephants, wild buffaloes, leopards, hoolock gibbons, capped langurs, slow loris. Overall it has 40 mammal species, 105 butterfly species and 680 types of plants.

Our daily dose of antibiotics

In 2018, when Food Safety and Standards Authority of India (FSSAI) tested milk samples from organised and unorganised sectors across the country, it found 77 of them had antibiotic residues beyond permissible limits.

Mastitis -

- The biggest irritant for farmers is mastitis, a common disease in cattle. The animals contract it due to poor farming and milking hygiene. If an animal sits on an unclean floor immediately after being milked, microorganisms enter its body through the udder and cause the disease. Mastitis can also occur if the milker's hygiene is compromised or unclean milking equipment is used. The disease is most common in high milk-yielding exotic breeds or crossbreds.

- Farmers prefer to treat the animals themselves as it saves them the trouble of taking them to hospital.

What does the government recommend?

Department of Animal Husbandry (DAHD) Farmer Manual recommends use of only penicillin, gentamicin, streptomycin and enrofloxacin on animals. However, the farmers use ceftiofur, amoxicillin, cloxacillin and ceftriaxone-sulbactam.

Effect on milk -

- There are times when milk comes from sick animals under heavy antibiotic treatment. **The farmers do not know about withdrawal period—this is the time after the last day an antibiotic is administered and before the milk is sold**. Farmers must not sell milk cattle during this period as it can increase chances of antibiotic residues in milk.
- Consuming milk drawn during withdrawal period can lead to resistance against antibiotics because the antibiotics exert selection pressure among the gut bacteria in humans. Studies show that boiling or pasteurisation milk may not completely eliminate antibiotics.

What should the farmers' do?

- Keep cattle sheds clean, dry.
- Clean milking glands before and after milking the animal.
- Use clean milking equipment, follow correct and hygienic milking methods.
- Prevent the animal from sitting at least 30 to 45 minutes after milking.
- Animals with chronic mastitis should be milked last.
- Separate sick/infected animal from healthy ones, destroy fodder in contact with infected animal.
- Use ethnoveterinary medicines for treatment.
- Regularly vaccinate animals.
- Use antibiotic judiciously.
- Promptly inform authorities for early disease control

Way forward -

- A well-defined **roadmap to limit the use of critically important antimicrobials (CIA)**, and no use of Highest Priority CIA (HPCIA), is critical to reduce the huge burden of antibiotic resistance.
- DAHD should **develop standard treatment guidelines to reduce the misuse of antibiotics**.
- **The outreach of veterinary extension system should be strengthened**. DAHD must also expand the vaccine coverage for diseases through its programmes. It should run awareness campaigns for farmers so that they follow withdrawal period before selling milk. Good farm management and hygiene should be promoted to prevent mastitis.
- **It is time FSSAI set tolerance limits for antibiotics such as amoxicillin, ceftriaxone and gentamicin, which are used in dairy animals, and not listed by FSSAI**. Antibiotics with no tolerance limits should not be allowed for use in them. The regulator should help state food and drug administrations to strengthen routine antibiotic monitoring in milk and make the data public.
- **FSSAI must also increase the frequency of testing milk as per STI and support states on its implementation**. The Central Drugs Standard Control Organisation must regulate over-the-counter sale of antibiotics. It should **work with state drug officials** to ensure that no antibiotic is sold without prescription.
- The Indian Council of Agricultural Research should also **develop low-cost diagnostics for early disease diagnosis and antibiotic residue monitoring at all levels** be it farm, veterinary healthcare setting or milk collection centre. Considering the linkages of environmental spread of AMR with dairy farm waste, the Central Pollution Control Board along with state pollution control boards should ensure that its guidelines for Environmental Management of Dairy Farms and Gaushalas are followed.

Dangerous dilution

In May 2020, Maharashtra, Odisha and Chhattisgarh where over one-fourth of India's tribes live, changed a law meant to protect them. They modified the Scheduled Tribes and Other Traditional

Forest Dwellers (Recognition of Forest Rights) Act, 2006 or FRA, threatening to make the forest-dwelling communities even more vulnerable.

What is the amendment?

- Maharashtra Governor, using his powers under Schedule V of the Constitution, notified an amendment in Section 6 of FRA. Now, a divisional-level committee would serve as the appellate body to examine people's grievances. As per the government, the change would help serve justice to tribal people whose individual or community rights have been rejected by the district-level committee.
- Soon after Maharashtra, the Odisha Forest and Environment department issued a notification on May 21 appointing the tehsildar as the forest settlement officer, who would inquire into and determine the "existence, nature and extent of any rights or privileges alleged to exist in favour of any person".
- Chhattisgarh also amended the law. It made forest department the nodal agency for recognition of community forest resource rights. These rights are given collectively to the Gram Sabha and come with the power to conserve and manage forests by the village.

What is the concern?

- Creation of the new appellate body has taken many by surprise because under the FRA provisions, a state-level monitoring body already exists to oversee the process.
- Creation of another body will only complicate matters .It will also reduce the claimants' ability to approach higher courts to challenge the decision of the district-level committee, as the courts would hold that an appellate body has already rejected the claim.
- More worrying is that the amendment applies only to areas covered under the Panchayats (Extension to Scheduled Areas) Act, 1996, (PESA). The spirit of FRA was to take the provisions of PESA, such as Gram Sabha's ownership over forest resources, to non-scheduled areas. Now, scheduled and non-scheduled areas will be treated differently.
- In case of Odisha, the move overturns FRA's democratic process. Under its three-tier process, a claim is led at the Gram Sabha-level committee, which goes to the sub-divisional committee and finally to the district committee, which accepts or rejects it. These bodies had representatives from forest, revenue, tribal and panchayati raj departments. The move would create conflict with FRA.
- In the case of Chhattisgarh, the decision completely violates the provisions of FRA, under which a state's tribal department is the nodal agency. This drew strong criticism and the state government withdrew the notification within 48 hours.

Why workers lost patience?

In the last two months or so, the country has been overwhelmed by the biggest-every exodus of informal workers from business hubs to their respective states after the lockdown was declared.

Profile of migrants -

- They are mostly informal daily wagers sustaining an entirely cash-based economy in urban areas. They left their villages, both out of distress and due to lack of choice.
- In cities, they had to earn every day to sustain their household, and also to remit a little saving back home for the survival of their extended families.
- They do not enjoy job security like workers of the formal economy. When the lockdown forced all businesses to shut down, they lost employment and also their earning.

What could they have done?

- In such situations - similar to a severe natural disaster—workers have two options: they either stayed back hoping that the business would resume; or they left home.
- In the case of the first option, there was some certainty as to when the business would resume.
- But India's lockdown was extended three times. In such an uncertain governance structure, the workers opted for the second option.
- That's why migration picked up only after the second extension of the lockdown in April. And when it started, there were no government plans to arrange transport to ferry them back to their villages.

What was missing?

- But in both options, people needed something that only the government could have ensured: **assurance**.
- Or, in other words, they needed the trust of the government to rescue them. But the migrants didn't have either the assurance or the trust of the government.
- They began their journey due to a jobless situation to a place they called home, where at least they had the assurance of a roof on their heads.

Is it right to blame the migrants?

- The 2020 Edelman Trust Barometer Spring Update: Trust and the COVID-19 Pandemic", based on a survey of over 13,000 respondents— belonging to the educated and well-earning classes in 11 markets that include India—shows that trust in governments has hit the highest in last 20 years. Some 65 per cent of the respondents said they trust their governments would help them out of this pandemic.
- This is a trust level that was seen after World War II. The survey also found that 67 per cent of respondents believed that the less privileged and poor people suffered disproportionately more than others.
- This is a scary verdict. The privileged classes, while accepting there was inequality in our governance, said they needed the government the most in this situation. Then how could poor daily wagers not have lost their patience?