

There is no WHO bar on INDIA testing the controversial anti malarial drug, hydroxychloroquine (HCQ), as a preventive for COVID 19.

400 hospitals in 35 countries would be comparing the benefits of Remdesivir, Lopinavir/Ritonavir, Lopinavir/Ritonavir with Interferon beta-1a and hydroxychloroquine.

Hydroxy-chloroquine

Hydroxy-chloroquine is an oral drug used in the treatment of malaria and some autoimmune diseases such as rheumatoid arthritis.

Malaria is a disease caused by mosquito bite of female Anopheles and spreads through parasites.

Autoimmune diseases are in which the body's immune system attacks healthy cells.

Rheumatoid arthritis is a chronic inflammatory disorder affecting many joints, including those in the hands and feet.

Hydroxy-chloroquine against COVID-19:

Recent studies show that the HCQ drug alone or in combination with azithromycin appears to reduce the virus quickly.

Further, the study suggests that prophylaxis (treatment given to prevent disease) with hydroxy-chloroquine at approved doses could prevent SARS-CoV-2 infection.

Although the drug has some side effects, it is linked to instances of cardiac arrhythmia and liver damage. Wide use may handicap the people's ability to fight the disease.

What is Remdesivir?

It was manufactured in 2014 to treat for Ebola, by US-based biotechnology firm Gilead Sciences. It has since been used to treat for MERS and SARS, both caused by members of the coronavirus family. Current research is looking at whether the drug's antiviral properties work against SARS-CoV2, the coronavirus that causes Covid-19 disease.

What does the Remdesivir do?

The drug remdesivir is designed to obstruct the novel coronavirus SARS-CoV2 at the stage of replication. At this stage, the virus creates copies of itself, followed endlessly by the copies creating copies of themselves.

Researchers have described the exact mechanism of interaction between the virus and the drug. How does replication take place?

Once the virus enters the human cell, it releases its genetic material, which is then copied using the body's existing mechanism.

At every stage of infection, various human proteins, virus proteins, and their interactions come into play. At the replication stage, the key protein of the virus at play is an enzyme called RdRp.

RdRp makes copies by processing components of the RNA of the virus.

Scientifically, such an enzyme is called a polymerase or a replicase.

In any case, RdRp is the enzyme that is targeted by remdesivir.

How does remdesivir target the RdRp enzyme?

In order to replicate, RdRp processes raw material from the RNA of the virus, broken down by another enzyme with that specific function.

When a patient is given remdesivir, it mimics some of this material, and gets incorporated in the replication site.

With remdesivir replacing the material it needs, the virus fails to replicate further.

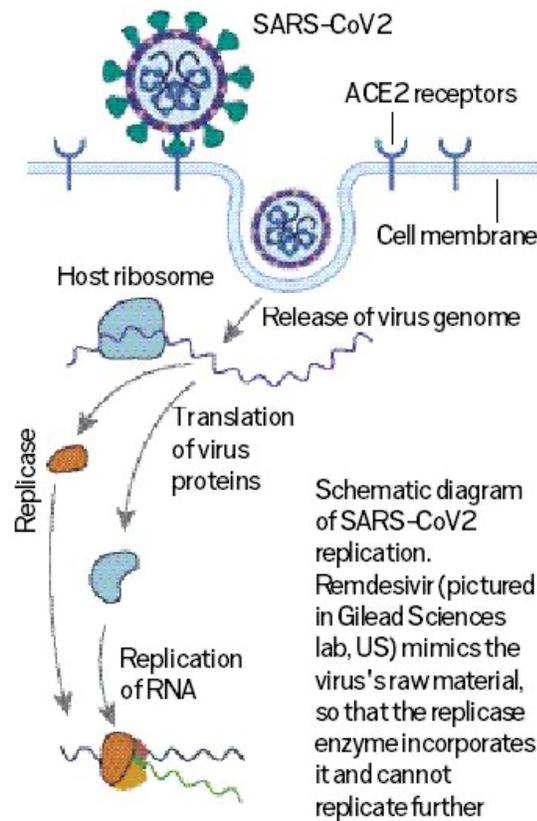
What are some new findings?

As far as SARS-CoV2 is concerned, a Chinese research paper has added to the emerging knowledge about the action of remdesivir.

They have imaged the high-resolution structure of the SARS-CoV-2 replicase complex, with remdesivir bound to it.

The structure shows where the RNA template of the virus enters the replication spot.

It also shows where the remdesivir is incorporated, and where the process of replication is terminated.



The Ministry of Health and Family Welfare has issued revised guidelines on the 'Clinical Management of COVID-19'.

COVID-19 patients may present with mild, moderate, or severe illness and the early recognition of suspected patients allows for timely initiation of infection, prevention and control.

The Ministry has recommended use of drug combinations Lopinavir and Ritonavir (sold under the brand name Kaletra) depending upon the severity of the condition of a person having coronavirus infection, on a case-to-case basis.

Key Points

Lopinavir-Ritonavir is recommended for high-risk groups of patients aged above 60 who are suffering from diabetes mellitus, renal failure, chronic lung disease and are immuno-compromised.

Lopinavir-Ritonavir is used widely for controlling Human Immunodeficiency Virus (HIV) infection.

However, the use of Lopinavir-Ritonavir is also associated with significant adverse events which many times have led to discontinuation of therapy.

There is no current evidence from randomised controlled trials to recommend any specific treatment for suspected or confirmed COVID-19 patients.

No specific antivirals are recommended for treatment of those suffering from respiratory ailment due to lack of adequate evidence from medical literature.

The use of this drug combination is suggested by an expert committee comprising doctors from the All India Institutes of Medical Sciences (AIIMS), experts from National Centre for Disease Control (NCDC) and World Health Organisation (WHO).

India is all set to join the World Health Organisation's (WHO) Solidarity Trial which aims at rapid global search for drugs to treat COVID-19.

Key Points

India has stayed away from the multi-country trial till now due to its small sample size.

It will express its interest to participate in the trial for the Indian population when it feels that the time is right.

Vaccine development wasn't a priority for Indian Council of Medical Research (ICMR) currently because there are around 30 vaccine groups already in operation worldwide.

Keeping in view the rising number of cases and challenges faced by India, the government has decided to participate in the solidarity trial.

Solidarity Trial

It will test different drugs or combinations like:

Remdesivir.

Combination of lopinavir and ritonavir (anti-HIV drugs).

Interferon beta with the combination of lopinavir and ritonavir.

Chloroquine.

It will compare their effectiveness to the standard of care, the regular support used by the hospitals treating COVID-19 patients.

Challenges

Shortage of Medical Devices and Equipment: The Medical Technology Association of India (MTAI), which represents research-based medical technology companies, has highlighted the shortage of medical devices and equipment.

The Centre has exempted manufacturing, warehousing and distribution of the medical devices and equipment from the lockdown but these are being clamped down by the state governments and local level administrators.

Transport trucks carrying these vital preparatory materials are stuck at city and state borders. Delays in Import: India is importing probes and rapid testing kits from China, Germany and WHO. However, some delays have been reported but it is made sure that the delays do not affect the testings.

Time Constraints: ICMR is currently looking at repurposed drug molecules to find treatment for COVID-19 due to time constraints.

Solutions

India needs to prioritise what it needs right now to deal with the situation.

Indian scientists have formed a group called Indian Scientists' Response to COVID-19 (ISRC) to tackle the pandemic.

While governmental bodies make their decisions and professional scientific academies take principled stands, there is a need for individuals in the scientific community to also help individually and collectively.

Indian Scientists' Response to COVID-19

Indian Scientists' Response to COVID-19 (ISRC) is a voluntary group of scientists to address the concerns raised by the COVID-19 outbreak and to discuss the rapidly evolving situation with its dire need for science communication.

The group consists of nearly 200 scientists from institutions such as the National Centre for Biological Sciences (NCBS), the Indian Institute of Science (IISc), the Tata Institute of Fundamental Research (TIFR), the Indian Institute of Technologies (IITs), etc.

It aims to study existing and available data to bring out analysis that will support the Central, State and local governments in carrying out their tasks.

There are several working groups within it:

One of them works on hoax busting to address disinformation spreading with respect to the coronavirus.

One works on science popularisation to develop material that explains concepts such as home quarantine.

Other groups work on resources in Indian languages, mathematical models and apps etc.

It is suggested that an app should be developed that can map spaces being used as shelters and share that data with the State governments.

A platform has also been developed to connect people in need with those who can provide help.

It works through two channels, phone and WhatsApp.

It can connect patients or people with symptoms to doctors.

It may also connect elderly people with volunteers from NGOs to assist in chores such as grocery shopping.

Weak demand for airline travels leads to cancellations.

Amid concerns over privacy of data being collected by its COVID-19 contact tracing app, the union government has open-sourced the Aarogya Setu app.

About AarogyaSetu App

The App enables people to assess themselves the risk of their catching the Corona Virus infection. It is designed to keep track of other AarogyaSetu users that a person came in contact with and alert him or her if any of the contacts tests positive for COVID-19.

It achieves this using the phone's Bluetooth and GPS capabilities.

Once installed in a smartphone through an easy and user-friendly process, the app detects other devices with AarogyaSetu installed that come in the proximity of that phone.

The app can then calculate the risk of infection based on sophisticated parameters if any of these contacts have tested positive.

The personal data collected by the App is encrypted using state-of-the-art technology and stays secure on the phone until it is needed for facilitating medical intervention.

Issues with the app

The AarogyaSetu app faces the same issue as every other contact tracing technology that has come up during the pandemic period — it is people dependent.

It needs widespread usage and self-reporting to be effective.

Given that any number of total users will be a subset of smartphone owners in India, and there are bound to be variations in the levels of self-reporting, the efficacy is not bulletproof.

The terms of use of the app also say as much, distancing the government from any failure on the part of the app incorrectly identifying COVID-19 patients.

1) Privacy concerns

First of all, the app exists in the privacy law vacuum that is India.

With no legislation that spells out in detail how the online privacy of Indians is to be protected, AarogyaSetu users have little choice but to accept the privacy policy provided by the government.

The policy goes into some detail on where and how long the data will be retained, but it leaves the language around who will have access to it vague.

As per the policy persons carrying out medical and administrative interventions necessary in relation to COVID-19 will have access to the data.

This suggests interdepartmental exchanges of people's personal information and is more excessive than countries like Singapore and even Israel.

2) Technical issue

Beyond the legal loopholes, there are technical loopholes as well.

The unique digital identity in AarogyaSetu is a static number, which increases the probability of identity breaches.

The abundance of data collected is also potentially problematic.

AarogyaSetu uses both Bluetooth as well as GPS reference points, which could be seen as overkill whereas other apps such as TraceTogether make do with Bluetooth.

3) Other issues

Experts emphasise that automated contact tracing is not a panacea.

They caution against an over-reliance on technology where a competent human-in-the-loop system with sufficient capacity exists.

Back2Basics: What is Open Source?

The term open source refers to something people can modify and share because its design is publicly accessible.

The term originated in the context of software development to designate a specific approach to creating computer programs.

Today, however, "open source" designates a broader set of values—what we call "the open source way." Open source projects, products, or initiatives embrace and celebrate principles of open exchange, collaborative participation, rapid prototyping, transparency, meritocracy, and community-oriented development.

The source code

"Source code" is the part of the software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software—a "program" or "application"—works. Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly.

What is Open Source Software?

At the simplest level, open-source programming is merely writing code that other people can freely use and modify.

Open source is a term that originally referred to open source software (OSS).

OSS is a code that is designed to be publicly accessible—anyone can see, modify, and distribute the code as they see fit.

An open-source development model is a process used by an open-source community project to develop open-



The advertisement for the Aarogya Setu app features a yellow background with the Indian national emblem at the top right. The text 'Introducing' is positioned above a red heart icon with a green checkmark, followed by the app name 'Aarogya Setu' and its QR code. A smartphone mockup displays the app's interface. Below this, a 'Download Today' button is accompanied by the Google Play and Apple App Store logos. The 'Why Aarogya Setu?' section is enclosed in a rounded rectangle and contains five circular icons with corresponding text: 'Protect yourself & the community from COVID-19', 'Precision tracking of the spread of COVID-19', 'Access contact and relevant advisory', 'Self-assessment test for infection mitigation', and 'Help and support at hand'. The slogan 'Protect One | Protect All | Protect India' is displayed at the bottom.

Financial Stability and Development Council (FSDC)

FSDC is a non-statutory apex council under Ministry of Finance constituted by Executive Order of Union Govt in 2010.

The Chairman of the Council is the Finance Minister and its members include the heads of financial sector Regulators (RBI, SEBI, PFRDA, IRDA), Finance Secretary and/or Secretary, Department of Economic Affairs, Secretary, Department of Financial Services, and Chief Economic Adviser.

In May, 2018 government reconstituted FSDC to include the Minister of State responsible for the Department of Economic Affairs (DEA), Secretary of Department of Electronics and Information Technology, Chairperson of the Insolvency and Bankruptcy Board of India (IBBI) and the Revenue Secretary.

It aims strengthening and institutionalizing the mechanism of financial stability and development.

It will monitor macro-prudential supervision of the economy. It will assess the functioning of the large financial conglomerates.

It will address intra regulatory coordination issues.

The Raghuram Rajan committee (2008) on financial sector reforms recommended for the creation of FSDC.