



DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY
Friday 20201211

Coronavirus

How the novel coronavirus has evolved

Mapping and understanding those changes to the virus is crucial to developing strategies to combat the COVID-19 disease it causes. (The Tribune: 20201211)

<https://www.tribuneindia.com/news/health/how-the-novel-coronavirus-has-evolved-182382>

How the novel coronavirus has evolved

Mapping and understanding those changes to the virus is crucial to developing strategies to combat the COVID-19 disease it causes.

As the coronavirus SARS-CoV-2 has swept across the world, killing more than 1.5 million people over the past year, it has mutated into seven major groups, or strains, as it adapted to its human hosts.

Mapping and understanding those changes to the virus is crucial to developing strategies to combat the COVID-19 disease it causes.

"The reason for looking at the genomics is to try and find out where it came from ... in terms of trying to map out what we would expect for the pandemic, that information is critical," South Australia's chief health officer, Nicola Spurrier, said following an outbreak in the state in early November.

Reuters analysed over 185,000 genome samples from the Global Initiative on Sharing All Influenza Data (GISAID), the largest database of novel coronavirus genome sequences in the world, to show how the global dominance of major strains has shifted over time.

The original strain, detected in China's Wuhan province in December 2019, is the L strain. The virus then mutated into the S strain at the beginning of 2020. That was followed by V and G strains. Strain G mutated yet further into strains GR, GH and GV. Several other infrequent mutations were collectively grouped together as strain O.

TRACKING MUTATIONS

A mutation is a change in an organism's genetic material.

When a virus makes millions of copies of itself and moves from host to host, not every copy is identical. These small mutations accumulate as the virus is passed on – and copied again and again.

Earlier in the pandemic, the virus made its way relatively quickly around the world, being repeatedly introduced to different locations and sparking fresh outbreaks regularly.

During that time, there was a more diverse mixture of strains among the samples reported to GISAID.

As countries began to close their borders, there were fewer new strains introduced, and in countries where the more resilient G-type strains were present, they began to dominate.

In Asia, the original L strain persisted for longer as several countries, including China, were quick to shut borders and curtail movement. In contrast, North America and Europe did not restrict movement as much, at least initially, which allowed the G strains to spread - and mutate - at a faster pace.

"This virus moves in superspreader events, which means the virus doesn't have to be particularly contagious," said Catherine Bennett, epidemiology chair in the Faculty of Health at Melbourne's Deakin University. "We will see different patterns because of cluster transmission." G strains are now dominant around the world. One specific mutation, D614G, has become the most common variant.

The most recent mutation to emerge is the GV strain, which has so far been isolated to Europe where experts say it is unclear whether the strain is spreading because of any transmission advantage or because it affected socially active young adults and tourists over the summer.

WHY MUTATIONS MATTER

The SARS-CoV-2 virus has so far mutated slowly, allowing scientists and policymakers to keep on top of its progress.

Still, scientists have been divided on the implications of some of the mutations. Some experts have reported that the D614G variation has made the virus more transmissible, however other studies have contradicted that.

Either way, the changes so far have not resulted in strains that would likely be resistant to vaccines in development.

However, experts who have watched influenza and HIV mutate over years, evading vaccines, warn that future mutations of SARS-CoV-2 remain unknown. And the best shot at avoiding changes that make the virus impervious to a vaccine remains to curtail its spread and reducing the opportunities it has to mutate.

“If the virus changes substantially, particularly the spike proteins, then it might escape a vaccine. We want to slow transmission globally to slow the clock,” said Deakin’s Bennett.

“That reduces the chances of a one in a squillion change that’s awful news for us.”—Reuters

Heart disease

Heart disease now killing more people than ever before: WHO. (The Tribune: 20201211)

<https://www.tribuneindia.com/news/health/heart-disease-now-killing-more-people-than-ever-before-who-182352>

Heart disease, which has remained the leading cause of death at the global level for the last 20 years, is now killing more people than ever before, according to the World Health Organization.

The WHO said diabetes and dementia are also among the world's top 10 causes of death.

The WHO's 2019 Global Health Estimates, released on Wednesday, said non-communicable diseases now make up 7 of the world's top 10 causes of death, an increase from 4 of the 10 leading causes in 2000. The new data cover the period from 2000 to 2019.

“Heart disease has remained the leading cause of death at the global level for the last 20 years. However, it is now killing more people than ever before,” the organisation said.

Heart disease now represents 16 per cent of total deaths from all causes and the number of deaths from heart disease increased by more than two million since 2000 to nearly 9 million in 2019. Diabetes and dementia enter the top 10 causes of death.

Alzheimer's disease and other forms of dementia are now among the top 10 causes of death worldwide, ranking 3rd in both the Americas and Europe in 2019. Women are disproportionately affected: globally, 65 per cent of deaths from Alzheimer's and other forms of dementia are women.

Deaths from diabetes increased by 70 per cent globally between 2000 and 2019, with an 80 per cent rise in deaths among males. In the Eastern Mediterranean, deaths from diabetes have more than doubled and represent the greatest percentage increase of all WHO regions.

The WHO said the estimates reveal trends over the last 2 decades in mortality and morbidity caused by diseases and injuries, clearly highlighting the need for an intensified global focus on preventing and treating cardiovascular diseases, cancer, diabetes and chronic respiratory diseases, as well as tackling injuries, in all regions of the world, as set out in the agenda for the UN Sustainable Development Goals.

“These new estimates are another reminder that we need to rapidly step up prevention, diagnosis and treatment of non-communicable diseases,” Director-General of WHO Dr Tedros Adhanom Ghebreyesus said.

“They highlight the urgency of drastically improving primary health care equitably and holistically. Strong primary health care is clearly the foundation on which everything rests, from combatting non-communicable diseases to managing a global pandemic.” While more non-communicable diseases are now causing deaths worldwide, there has been a global decline in deaths from communicable diseases, which however still remain a major challenge in low- and middle-income countries.

In 2019, pneumonia and other lower respiratory infections were the deadliest group of communicable diseases and together ranked as the fourth leading cause of death. However, compared to 2000, lower respiratory infections were claiming fewer lives than in the past, with the global number of deaths decreasing by nearly half a million, WHO said adding that this reduction is in line with a general global decline in the percentage of deaths caused by communicable diseases.

HIV/AIDS dropped from the 8th leading cause of death in 2000 to the 19th in 2019, reflecting the success of efforts to prevent infection, test for the virus and treat the disease over the last two decades. While it remains the fourth leading cause of death in Africa, the number of deaths has dropped by more than half, falling from over 1 million in 2000 to 435 000 in 2019 in Africa.

WHO said Tuberculosis is also no longer in the global top 10, falling from 7th place in 2000 to 13th in 2019, with a 30% reduction in global deaths. Yet, it remains among the top 10 causes of deaths in the African and South-East Asian regions, where it is the 8th and 5th leading cause respectively.

The new estimates also emphasise the toll that communicable diseases still take in low-income countries: 6 of the top 10 causes of death in low-income countries are still communicable diseases, including malaria (6th), tuberculosis (8th) and HIV/AIDS (9th).

Meanwhile, in recent years, the WHO reports highlight an overall concerning slow-down or plateauing of progress against infectious diseases like HIV, tuberculosis and malaria.

The new projections state that people are living longer – but with more disability.

The estimates further confirm the growing trend for longevity: in 2019, people were living more than 6 years longer than in 2000, with a global average of more than 73 years in 2019 compared to nearly 67 in 2000. But on average, only 5 of those additional years were lived in good health.

Disability, however, is on the rise.

“To a large extent, the diseases and health conditions that are causing the most deaths are those that are responsible for the greatest number of healthy life-years lost. Heart disease, diabetes, stroke, lung cancer and chronic obstructive pulmonary disease were collectively responsible for nearly 100 million additional healthy life-years lost in 2019 compared to 2000,” WHO said.

Injuries are another major cause of disability and death, with the African region recording a significant rise in road traffic injuries since 2000.

Globally, deaths from road traffic injuries are 75 per cent male.

Assistant Director-General for the Division of Data, Analytics and Delivery for Impact at WHO Dr Samira Asma said robust health data are critical to address inequalities, prioritize policies and allocate resources to prevent disability and save lives.

"We call upon governments and stakeholders to urgently invest in data and health information systems to support timely and effective decision-making," Asma said. PTI

Cancer (Hindustan: 20201211)

https://epaper.livehindustan.com/imageview_505345_86233982_4_1_11-12-2020_3_i_1_sf.html

कोरोना काल में अस्पताल जाने के डर ने जोखिम में डाला, जांच के अभाव में बीमारी तीसरे स्टेज पर इलाज में देरी से खतरनाक रूप ले रहा कैंसर

नई दिल्ली | वरिष्ठ संवाददाता

कोरोना काल के दौरान इलाज में देरी देरी होने से कैंसर खतरनाक रूप ले रहा है। दिल्ली स्थित एम्स, सफदरजंग और अपोलो जैसे अस्पतालों में कई ऐसे मरीज पहुंच रहे हैं जिन्हें पहले कैंसर पहली स्टेज में था लेकिन रेडिएशन थेरेपी के अभाव में और समय पर जांच न कराने के कारण यह तीसरी स्टेज तक पहुंच गया है।

कोरोना काल में कुछ लोगों ने डर की वजह से अस्पताल जाने में देरी की वहीं, कुछ लोगों को समय पर



केस 1 : रेडियोथेरेपी न कराई तो कई अंगों में फैला संक्रमण

पश्चिमी दिल्ली निवासी 33 वर्षीय स्नेहा की फरवरी में स्तन कैंसर की सर्जरी हुई थी। सर्जरी के बाद उन्हें रेडिएशन थेरेपी की सलाह दी गई थी। इसे छह माह तक टालने से यह दूसरे अंगों तक फैल गया। अब उन्हें दोबारा सर्जरी करानी पड़ेगी। इसमें लंबा समय लगेगा।

केस 2: सारकोमा कैंसर के फैलने से पैर काटना पड़ेगा

एम्स में इलाज करा रही 53 वर्षीय सारकोमा कैंसर से पीड़ित शकुंतला कोरोना के कारण मुजफ्फरपुर लौट गई। 23 नवंबर को एम्स पहुंची तो पता चला कि कैंसर पैर की हड्डियों तक फैल गया है। एम्स के डॉक्टर समीर रस्तोगी बोले, महिला का पैर काटना पड़ सकता है।

इलाज ही नहीं मिल सका। **40 % मरीजों का कैंसर तीसरे स्टेज तक फैला :** सरिता विहार स्थित अपोलो अस्पताल के डॉक्टर एसएम शोएब जैदी ने बताया कि उनके यहां आने वाले लगभग 40 फीसदी मरीजों ने समय पर जांच-पड़ताल नहीं कराई थी। इस वजह से कैंसर तीसरी स्टेज तक पहुंच गया। तीसरी स्टेज के कैंसर से पीड़ित अधिकतर मरीज ऐसे हैं जिनकी उम्र 60 साल से अधिक है। इनमें अधिकतर बुजुर्ग मरीज कोरोना के डर की वजह से समय पर जांच-पड़ताल के लिए अस्पताल नहीं पहुंचे थे।

Covid Vaccine (Hindustan: 20201211)

https://epaper.livehindustan.com/imageview_505348_86244834_4_1_11-12-2020_6_i_1_sf.html

तैयारी : कोविड वैक्सीन के लिए दो लाख लोगों का पंजीकरण



नई दिल्ली | वरिष्ठ संवाददाता

दिल्ली सरकार ने कोरोना वैक्सीन लगाने की तैयारियां तेज कर दी हैं। स्वास्थ्य मंत्री सत्येंद्र जैन ने बताया कि दिल्ली में कोविड वैक्सीन के पहले फेज के लिए दो लाख से अधिक लोगों ने पंजीकरण कराया है।

उन्होंने कहा कि हमारी पहली प्राथमिकता स्वास्थ्यकर्मियों और फ्रंट लाइन योद्धाओं को वैक्सीन देने की है। उसके बाद बुजुर्गों और बच्चों को वैक्सीन दी जाएगी। उसके बाद हम पूरी दिल्ली का वैक्सीनेशन करेंगे।

सात दिन से संक्रमण दर पांच फीसदी से कम : स्वास्थ्य मंत्री सत्येंद्र जैन ने कहा कि पिछले सात दिनों से दिल्ली में पॉजिटिविटी दर पांच फीसदी से कम है। 7 नवंबर को पॉजिटिविटी रेट 15.26 प्रतिशत थी। उन्होंने कहा कि आने वाले दिनों में इसमें और कमी आने की संभावना है। सत्येंद्र जैन ने कहा कि दिल्ली में सात नवंबर के बाद कोरोना के मामले में लगातार कमी आ रही है।



सत्येंद्र जैन, स्वास्थ्य मंत्री।

07 नवंबर के बाद कोरोना के मामलों में कमी आने का दावा

मास्क लगाएं, दिशानिर्देशों का पालन करें : जैन

स्वास्थ्य मंत्री सत्येंद्र जैन ने कहा कि हम कह सकते हैं कि दिल्ली में कोरोना की तीसरी लहर अब कमजोर हो चुकी है और यह जल्द खत्म होने वाली है। हालांकि अब भी हमें सावधानी और संयम रखना होगा। हमें ईमानदारी से कोरोना के गाइडलाइन का पालन करना होगा। जैन ने कहा कि दिल्ली में स्थिति काफी सामान्य है लेकिन सभी को मास्क लगाकर चलना चाहिए।

दिल्ली में कोरोना के मामले छह लाख के पार पहुंचे

नई दिल्ली | वरिष्ठ संवाददाता

दिल्ली में गुरुवार को कोरोना के 1575 नए मरीज मिले हैं। इसी के साथ दिल्ली में कोरोना संक्रमितों का कुल आंकड़ा अब 601150 हो गया है।

दिल्ली के स्वास्थ्य विभाग के अनुसार, गुरुवार को आए 1575 नए मामलों के साथ दिल्ली में कोरोना संक्रमित का कुल आंकड़ा 601150 हो गया है। इनमें से गुरुवार को 3307

मरीजों को छुट्टी दी गई, जबकि 61 मरीजों की मौत हो गई। दिल्ली में अभी तक 572523 मरीजों को छुट्टी दी जा चुकी है, जबकि 9874 मरीजों ने कोरोना के कारण दम तोड़ दिया। दिल्ली में शुरू से लेकर अबतक कोरोना से मृत्युदर 1.64 फीसदी है। दिल्ली के विभिन्न अस्पतालों में 5193 मरीज भर्ती हैं। वहीं कोविड केयर सेंटर में 338 और कोविड मेडिकल सेंटर में 106 मरीज भर्ती हैं।

Fizher Vaccine

अमेरिका में जल्द शुरू होगा फाइजर वैक्सीन का आपातकालीन इस्तेमाल, FDA ने दी मंजूरी (Dainik Jagran: 20201211)

<https://www.jagran.com/world/america-us-to-start-emergency-use-of-pfizer-vaccine-after-got-fda-approval-21155111.html>

एफडीए के इस पैनल में वैक्सीन सलाहकार वैज्ञानिक संक्रामक रोग डॉक्टर और सांख्यिकीविद शामिल थे। न्यूयॉर्क टाइम्स के मुताबकि पैनल में इस बात पर सहमति बनी की वैक्सीन का 16 से ज्यादा उम्र के लोगों पर आपातकालीन उपयोग शुरू किया जाए।

वाशिंगटन, एएनआइ। अमेरिका में लगातार बढ़ रहे कोरोना संक्रमण के मामलों पर रोक लगाने के लिए जल्द ही वैक्सीन का आपातकालीन उपयोग शुरू किया जा सकता है। यूएस फूड एंड ड्रग एडमिनिस्ट्रेशन ने गुरुवार को फाइजर-बायोटेक कोविड-19 वैक्सीन के आपातकालीन उपयोग अपनी मंजूरी दे दी है। एफडीए के इस पैनल में वैक्सीन सलाहकार, वैज्ञानिक, संक्रामक रोग डॉक्टर और सांख्यिकीविद शामिल थे। न्यूयॉर्क टाइम्स के मुताबकि पैनल में इस बात पर सहमति बनी की वैक्सीन का 16 से ज्यादा उम्र के लोगों पर आपातकालीन उपयोग शुरू किया जाए। बता दें कि बुधवार को देश में कोरोना के कारण सबसे ज्यादा तीन हजार से भी अधिक मौतें दर्ज की गई थीं। अब वैक्सीन को मंजूरी मिलने के बाद देश में कोरोना स्थिति पर काबू पाया जा सकेगा।

गुरुवार को आठ घंटे की जनसुनवाई के बाद एफडीए पैनल में मौजूद सदस्यों ने फाइजर और उसके जर्मन साथी बायोएनटेक द्वारा विकसित वैक्सीन के उपयोग के समर्थन में वोट दिया। अब उम्मीद जताई जा रही है कि ब्रिटेन के बाद अमेरिका भी फाइजर वैक्सीन के टीके को जल्द मंजूरी दे देगा।

उम्मीद है कि एफडीए की मंजूरी मिलने के बाद शनिवार को वैक्सीन का आपातकालीन उपयोग किया जा सकता है। गौरतलब है कि यूके, कनाडा, बहरीन और सऊदी अरब में जनता के लिए फाइजर वैक्सीन को मंजूरी दी जा चुकी है। न्यूयॉर्क टाइम्स के मुताबिक, ट्रंप प्रशासन के मल्टी-बिलियन-डॉलर प्रोग्राम के ऑपरेशन वार स्पीड के तहत जुलाई में वैक्सीन की दस करोड़ डोज का ऑर्डर दिया जा चुका है। इसके साथ ही मॉडर्ना वैक्सीन के विकास और निर्माण का भारी भी समर्थन किया गया है।

गौरतलब है कि अमेरिका में कल कोरोना संक्रमण के कारण रिकॉर्ड मौतें दर्ज की गई थीं। यहां 24 घंटों में तीन हजार लोगों की मृत्यु हो गई है। ऐसा पहली बार है जब यहां एक दिन में इतनी ज्यादा मौतें दर्ज की गई हैं।

Pfizer COVID-19 vaccine

US panel endorses widespread use of Pfizer COVID-19 vaccine (The Indian Express: 20201211)

<https://indianexpress.com/article/coronavirus/us-panel-endorses-widespread-use-of-pfizer-covid-19-vaccine-7100461/>

In a 17-4 vote with one abstention, the government advisers on Thursday concluded that the vaccine from Pfizer and its German partner BioNTech appears safe and effective for emergency use in adults and teenagers 16 and older.

Pfizer covid vaccine, Coronavirus vaccine, US panel endorses Pfizer, US panel covid vaccine, US covid cases, World news, Indian express Shots could begin within days, depending on how quickly the Food and Drug Administration signs off, as expected, on the expert committee's recommendation. (Reuters)

A US government advisory panel has endorsed widespread use of Pfizer's coronavirus vaccine, putting the country just one step away from launching an epic vaccination campaign against the outbreak that has killed close to 300,000 Americans.

Shots could begin within days, depending on how quickly the Food and Drug Administration signs off, as expected, on the expert committee's recommendation.

In a 17-4 vote with one abstention, the government advisers on Thursday concluded that the vaccine from Pfizer and its German partner BioNTech appears safe and effective for emergency use in adults and teenagers 16 and older.

That endorsement came despite questions about allergic reactions in two people who received the vaccine earlier this week when Britain became the first country to begin dispensing the Pfizer-BioNTech shot.

Despite all the remaining unknowns, in an emergency, "the question is whether you know enough," said panel member Dr Paul Offit of Children's Hospital of Philadelphia, who concluded that the shot's potential potential benefits outweigh its risks.

The independent review by non-government experts in vaccine development, infectious diseases and medical statistics was considered critical to boosting Americans' confidence in

the safety of the shot, which was developed at breakneck speed less than a year after the virus was identified.

The decision came as COVID-19 cases surge to ever-higher levels across the US, with deaths hitting an all-time, one-day high of more than 3,100 on Wednesday.

Pfizer has said it will have about 25 million doses of the two-shot vaccine for the US by the end of December. But initial supplies will be limited and reserved primarily for health care workers and nursing home residents, with other vulnerable groups next in line until the shots become widely available on demand, something that will probably not happen until the spring.

Experts estimate at least 70% of the US population will have to be vaccinated to achieve herd immunity, the point at which the virus can be held in check. That means it could be several months before things start get back to normal and Americans can put away their masks.

The FDA next week will review a second vaccine, from Moderna and the National Institutes of Health, that appears about as protective as Pfizer-BioNTech's shot. A third candidate, from Johnson & Johnson, which would require just one dose, is working its way through the pipeline. Behind that is a candidate from AstraZeneca and Oxford University

All eyes now turn to the FDA staff scientists who will make the final decision on whether to greenlight use of the Pfizer-BioNTech vaccine. Regulators not only in Britain but in Canada have already approved it for use in their countries, and President Donald Trump and White House officials have complained for weeks about the pace of FDA's careful review.

FDA's vaccine director Dr Peter Marks said ahead of the expert meeting that a decision would come within "days to a week."

"Americans want us to do a scientific review, but I think they also want us to make sure we're not wasting time on paperwork as opposed to going forward with the decision," FDA Commissioner Stephen Hahn said before the meeting.

A positive vote for the vaccine was virtually assured after FDA scientists issued a glowing review of the vaccine earlier in the week. Agency staffers said data from Pfizer's ongoing study of 44,000 people showed strong protection across different age groups, races and health conditions with no major, unexpected safety problems.

The Pfizer-BioNTech shot remains experimental because that final-stage study isn't complete. As a result, the expert panel wrestled with a list of questions that have yet to be answered.

For example, while the vaccine is more than 90% effective in blocking the symptoms of COVID-19, the FDA's advisers stressed it is not yet clear if it can stop the silent, symptomless spread that accounts for up to half of cases.

"Even though the individual efficacy of this vaccine is very, very, very high, you really as of right now do not have any evidence" that it will lower transmission, said Dr Patrick Moore of the University of Pittsburgh. He urged Pfizer to take additional steps to answer that question.

And the advisers are worried that Pfizer will lose its opportunity to answer critical questions as it begins offering the real vaccine to study participants who had been getting dummy shots.

The company proposed gradually moving those patients to the vaccine group, with priority based on age, health conditions and other factors. Under that plan, 70-year-old participants would cross over before healthy 30-year-olds.

Pfizer must still show whether the vaccine works in children younger than 16 and in pregnant women.

On the safety front, as widespread vaccinations begin, the first recipients will be closely tracked by government health authorities since studies in tens of thousands of people can't detect rare risks that strike 1 in a million. Hanging over the meeting were the British allergic reactions and a warning from authorities there that people with a history of serious reactions shouldn't get the vaccine for now.

Pfizer representatives said they have seen no signs of allergic reactions in their trial. But some of the FDA advisers fear the British warning will deter millions of Americans with allergies who might benefit from the COVID-19 vaccine from giving it a try, and urged additional studies to try to settle the issue

Vaccine:

Vaccine: Science over speed (Hindustan Times: 20201211)

<https://www.hindustantimes.com/editorials/vaccine-science-over-speed-ht-editorial/story-LOJL60UGLxXDTXOT13A7HI.html>

Safety and efficacy must be the key principles. It's good that India is following due process

It is important that domain experts are armed with every bit of information, and free of any pressure of anticipation, to make the right decision on the vaccines

It is important that domain experts are armed with every bit of information, and free of any pressure of anticipation, to make the right decision on the vaccines(REUTERS)

India began assessing options for a coronavirus vaccine this week, reviewing submissions by two pharma companies for emergency approval. At the outset, a panel of experts deemed that the data was insufficient to judge the two key parameters — safety and efficacy. While it may seem like this decision will delay the rollout of inoculations for Indians, it is an encouraging sign that the experts are upholding the process to the necessary standards. The nature of the recommendations they offered to both companies suggested that they had jumped the gun in filing their submissions. Serum Institute of India (SII) has to now wait till authorities in the

United Kingdom (UK), where clinical trials were held, take a decision on their shot. Bharat Biotech will need to present efficacy data from phase 3 trials that have only just begun.

Neither company has offered comments on the timing or the nature of their submissions, but a quick look at the regulatory literature indicates the bar they failed to meet was clearly defined. Vaccines need to demonstrate safety as well as efficacy, with the latter usually determined only in phase 3 trials. And if the vaccine is made outside of India (such as the Oxford-AstraZeneca one that SII sought cleared), it needs to be approved in a foreign market first. It is only Pfizer, the third vaccine developer that also applied but later requested more time, that ticks both these boxes. But even in Pfizer's case, news broke yesterday that people predisposed to allergic drug reactions should be closely monitored after some people in the UK who got the shot developed reactions. These were deemed not worrying, but they highlight the risk of unknowns that can still persist when a process that takes years is collapsed into months.

It is thus important that domain experts are armed with every bit of information, and free of any pressure of anticipation, to make the right decision on the vaccines. This information and its assessment are projected to take a few weeks, like it has in the United States, and the UK (where vaccine makers have been making rolling submissions). Science must prevail over speed. In the meantime, India must devote its energy and focus on other challenges, such as planning more purchases, strengthening the distribution plans and, most importantly, keeping infections low.

Navigating the vaccine challenge

Navigating the vaccine challenge (Hindustan Times: 20201211)

<https://www.hindustantimes.com/analysis/navigating-the-vaccine-challenge/story-qVaZbfDC7mLDYdRkoBhkDI.html>

Getting the product, quantity, condition, place, time and cost right is key

India does not have an adult immunisation programme beyond the tetanus/diphtheria vaccination for pregnant women. Hence, in the prioritisation lists that have been announced, identifying and reaching all priority groups will be a challenge

India does not have an adult immunisation programme beyond the tetanus/diphtheria vaccination for pregnant women. Hence, in the prioritisation lists that have been announced, identifying and reaching all priority groups will be a challenge(Reuters)

For anyone seeking to understand the path ahead for vaccines and vaccination for Sars-CoV-2, there is abundant confusion. Part of this is because there is divergence in information from official sources, academics and “unofficial” sources, and a difference in opinion on the timeliness and completeness.

Press releases tell us that vaccines are performing well. On December 2, the United Kingdom (UK)’s Medicines and Healthcare Products Regulatory Agency became the first regulator to grant temporary authorisation based on a phase III trial, to Pfizer and BioNTech’s mRNA-based Covid-19 vaccine. On December 7, the UK began the process of administering vaccines.

Results from the Astra-Zeneca/University of Oxford vaccine, based on a chimpanzee adenoviral vector, well exceed the 50% efficacy requested by the World Health Organization (WHO) and regulators, leading to the reasonable assumption that most vaccines that are based on the spike protein of Sars-CoV-2 will be successful.

In India, Pfizer has applied to the Central Drugs Standards Control Organisation for emergency approval, under the provisions of the New Drugs and Clinical Trials Rule, 2019, which allow the national regulatory authority to waive clinical trials. Even if Pfizer is granted approval, it is unlikely that this will be a vaccine that can be widely deployed because it requires storage at -70 degrees Celsius. Given the limited capacity of even cold storage at -20 degrees Celsius as required by the Moderna vaccine, it is likely that India’s national immunisation system, and those of other low- and middle-income countries, will opt for vaccines that can be stored at the more widely available facilities that hold vaccines at 2-8 degrees Celsius.

If vaccines that will not be used for national immunisation programmes are given limited or full approval, the ability to purchase vaccines will differentiate sections of society between those with purchased access and those who must wait for the government to provide vaccines. This situation already exists for many vaccines, such as influenza or chickenpox where vaccines are available in the private sector. Open and transparent discussions about the role of the private sector and access to vaccines are essential for a clearer picture of what lies ahead.

In terms of production capacity, figures vary, but a survey of 113 manufacturers by the Coalition for Epidemic Preparedness Innovations and partners between March and June 2020 estimated that global capacity was two to four billion doses by the end of 2021. Vaccine production landscapes tend to be slow to change, but much more optimistic figures are now being projected, with the Duke Global Health Innovation Center stating that purchase of more than nine billion doses is in discussion and India alone already has an advance market commitment of 1.6 billion doses. This figure does not align with the government’s announcement of financial commitments to vaccines or plans for immunisation, and company announcements of their production capacity and commitment not just to India, but to global supply through the COVAX facility.

Even if the figures are correct, and India will have access to 1.6 billion doses of vaccines by the end of 2021, there are significant challenges to getting these doses to where they are needed. The WHO has six rights of supply-chain management for immunisation, which are right product, right quantity, right condition, right place, right time and right cost. Making sure that

all of these logistics are in place requires permutations of product packed volume, temperature for transport and storage, location of supply and delivery, cycle for vaccination and restocking. Availability of refrigerated transport, security of transport, opportunities for pilferage and replacement with fake products are all very real concerns for which preparation is necessary.

To accompany the complexity of storage and supply, which in India will be managed by the National Cold Chain Vaccine Management Resource Centre and the electronic Vaccine Information Network, redeveloped as COVIN, we will need to train vaccinators, have additional supplies needed for immunisations, prepare for immunisation sessions and establish systems for waste disposal. And all that, as we develop and use methods to identify and track individuals who need the vaccine.

India does not have an adult immunisation programme beyond the tetanus/diphtheria vaccination for pregnant women. Hence, in the prioritisation lists that have been announced, identifying and reaching all priority groups will be a challenge. States have been asked to list public and private health care workers, and this is feasible and being done.

However, moving beyond health care workers and other essential workers, however defined, to the elderly and those with co-morbidities as indicated in official announcements will be difficult and there is a need to prepare for falsified documents and fraud.

As important as the issue of delivering vaccines to those prioritised, and not those who try to beat the system is the global concern for migrants and refugees who might be excluded from vaccination based on lack of residency documentation. Ensuring that both doses of a two-dose schedule are delivered is also a challenge since drop-outs are already known to be an issue, particularly for the most vulnerable populations, for infant immunisation. This is likely to be much greater with adult immunisation.

Not all problems can be anticipated, but we have experience with strengthening immunisation and with the conduct of campaigns, particularly in the last decade. While the government is using that experience to plan for a range of product, supply and logistic scenarios, sharing plans and developing the right partnerships is important, because in this enterprise, all of us are stakeholders.

वैक्सीन

अगर होती हैं ऐसी समस्याएं तो समझें कागसर है वैक्सीन (Dainik Jagran: 20201211)

<https://www.jagran.com/news/national-coronavirus-vaccine-news-if-there-is-pain-or-fever-after-applying-the-vaccine-it-means-it-is-working-jagran-special-21155281.html>

आइए जानते हैं कि वैक्सीन का क्या असर है और विशेषज्ञ इस पर क्या कहते हैं।

शरीर की प्रतिरोधक क्षमता किसी भी अनजान तरल को तुरंत नहीं पहचान पाती। उसे यह समझने में समय लगता है कि यह वैक्सीन है या वायरस। इसी के चलते कई बार शरीर पर चकते पड़ जाते हैं या सिरदर्द होने लगता है।

नई दिल्ली, जेएनएन। ब्रिटेन में फाइजर की वैक्सीन लगवाने के बाद दो लोगों की तबीयत बिगड़ने पर वहां के स्वास्थ्य विभाग ने अलर्ट जारी किया और कहा कि किसी भी तरह की एलर्जी से ग्रसित लोग टीकाकरण से बचें। जिस पर फाइजर की ओर से कहा गया कि ट्रायल में कोई ऐसा व्यक्ति शामिल नहीं था जिसे एलर्जी हो। हालांकि स्वास्थ्य विशेषज्ञों का कहना है कि यदि वैक्सीन लगाने के बाद दर्द या बुखार है तो मतलब है कि यह काम कर रही है। आइए जानते हैं कि वैक्सीन का क्या असर है और विशेषज्ञ इस पर क्या कहते हैं।

अस्थायी असर से घबराएं नहीं : अमेरिका के प्यू रिसर्च के मुताबिक, वैक्सीन को लेकर चल रही अफवाहों के चलते 60 प्रतिशत लोग टीकाकरण कराएंगे इनमें 51 प्रतिशत लोग सितंबर तक वैक्सीन लगवाएंगे, लेकिन सिर्फ 37 प्रतिशत इसके लिए पहल करेंगे। टीकाकरण के दौरान हो रहे परीक्षण में सामने आया कि 2-10

प्रतिशत लोगों पर इसका साइड इफेक्ट दिख सकता है, लेकिन यह अस्थायी होगा।

वैक्सीन के बाद रखें खयाल : यदि वैक्सीन लगवाने जा रहे हैं तो अगले कुछ दिनों तक कोई व्यस्तता न रखें। दर्द और बुखार की दवा घर पर रखें। आसपास के लोगों और मित्रों को पहले से सूचित कर दें।

भारत से म्यांमार, श्रीलंका और मॉरीशस हथियार खरीदते हैं। वहीं अमेरिका दुनिया को सबसे अधिक हथियार सप्लाई करता है।

वैक्सीन और प्रभाव मॉडर्न

सुस्ती

बांह में दर्द

जोड़ों में दर्द

मांसपेशियों में दर्द

बांह का लाल हो जाना

फाइजर

सुस्ती

सिरदर्द

एस्ट्राजेनेका

सुस्ती

बुखार

बांह में दर्द

मांसपेशियों में दर्द

जीतेगा भारत हारेगा कोरोना

Pollution

दिल्ली में गंभीर श्रेणी में बना हुआ है प्रदूषण का स्तर, NCR के लोगों को मिली थोड़ी राहत (Dainik Jagran: 20201211)

<https://www.jagran.com/delhi/new-delhi-city-ncr-delhis-air-quality-remains-in-the-very-poor-category-21155332.html>

दिल्ली गुरुग्राम व फरीदाबाद में एयर इंडेक्स खराब श्रेणी में दर्ज किया गया। वहीं गाजियाबाद ग्रेटर नोएडा व नोएडा में भी लोगों को भी प्रदूषण से थोड़ी राहत मिली है। हालांकि उन शहरों में एयर इंडेक्स बहुत खराब श्रेणी में निचले स्तर पर दर्ज किया गया।

नई दिल्ली, राज्य ब्यूरो। दिल्ली में प्रदूषण गंभीर श्रेणी में बना हुआ है। जबकि एनसीआर में प्रदूषण के स्तर में सुधार हुआ है। दिल्ली में प्रदूषण का स्तर बहुत खराब श्रेणी से खराब की श्रेणी में आ गया। इसलिए दिल्ली, गुरुग्राम व फरीदाबाद में एयर इंडेक्स खराब श्रेणी में दर्ज किया गया। वहीं गाजियाबाद, ग्रेटर नोएडा व नोएडा में भी लोगों को भी प्रदूषण से थोड़ी राहत मिली है। हालांकि उन शहरों में एयर इंडेक्स बहुत खराब श्रेणी में निचले स्तर पर दर्ज किया गया।

केंद्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) व सफर इंडिया के अनुसार पश्चिम विक्षोभ के कारण शुक्रवार को कुछ इलाकों में बारिश होने की संभावना है और हवा की गति भी तेज रहेगी। इस वजह से प्रदूषण के स्तर पर सुधार होने की उम्मीद है। शनिवार को एयर इंडेक्स मध्यम से खराब श्रेणी में बीच रह सकता है। सीपीसीबी के अनुसार दिल्ली का एयर इंडेक्स 284 दर्ज किया गया। जबकि एक दिन पहले 348 था। इस तरह एयर इंडेक्स में 64 अंकों की गिरावट हुई। इस वजह से एयर इंडेक्स बहुत खराब श्रेणी से खराब श्रेणी में आ गया। एनसीआर के शहरों में गुरुग्राम में प्रदूषण का स्तर सबसे कम 217 दर्ज किया गया।

वहीं एक दिन पहले तक गाजियाबाद व ग्रेटर नोएडा का एयर इंडेक्स गभीर श्रेणी में 400 से उपर था। नोएडा का एयर इंडेक्स भी 394 था। बृहस्पतिवार को इन तीनों जगहों पर भी प्रदूषण के स्तर में सुधार हुआ। फिर भी एयर इंडेक्स बहुत खराब श्रेणी में बना हुआ है। सफर इंडिया के अनुसार दिल्ली के वातावरण में पार्टिकुलेट मैटर (पीएम)-10 का स्तर 347 से घटकर 266 माइक्रोग्राम प्रति घन मीटर व पीएम-2.5 स्तर 193 से घटकर 122 माइक्रोग्राम प्रति घन मीटर पर आ गया। पीएम-10 का सामान्य स्तर 100 व पीएम-2.5 का सामान्य स्तर 60 माइक्रोग्राम प्रति घन मीटर माना गया है। इस आधार पर देखें तो दिल्ली में प्रदूषण का स्तर दो से ढाई गुना अधिक है।

दिल्ली एनसीआर का एयर इंडेक्स

गाजियाबाद- 330

ग्रेटर नोएडा- 322

दिल्ली- 284

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फरीदाबाद- 300

नोएडा- 310

डायबिटीज

इंसुलिन क्या होता है, शरीर के अंदर कैसे बनता है और डायबिटीज से बचने के लिए क्यों जरूरी है? जानें हर सवाल का जवाब (Navbharat Times: 20201211)

<https://navbharattimes.indiatimes.com/lifestyle/health/what-is-insulin-and-how-it-works/articleshow/79661706.cms>

इंसुलिन एक तरह का हॉर्मोन होता है, जो शरीर के अंदर प्राकृतिक रूप से बनता है और रक्त में मिलकर ग्लूकोज के स्तर को नियंत्रित करने का काम करता है। लेकिन हममें से ज्यादातर लोग इंसुलिन के बारे में डायबिटीज जैसे खतरनाक रोग के कारण जानते हैं। क्योंकि यदि शरीर के अंदर इंसुलिन का उत्पादन ठीक से ना हो या यह अपना काम ठीक से ना कर पाए तो हम शुगर के पेशेंट बन सकते हैं।

सर्दियों में गीजर समेत कई घरेलू सामान पर ऑफर, 70% तक मिल रही छूट

शरीर में इतने काम करता है इंसुलिन

-रक्त में शुगर की मात्रा नियंत्रित करने के अतिरिक्त इंसुलिन शरीर के अंदर फैट को सहेजने का काम करता है। ताकि जरूरत पड़ने पर शरीर इस वसा का उपयोग कर सके।

-रक्त में ग्लूकोज का स्तर नियंत्रित करने के साथ ही इंसुलिन शरीर की हर कोशिका तक ऊर्जा पहुंचाने का काम भी करता है। यानी सीमित मात्रा में हर कोशिका तक ग्लूकोज पहुंचाता है।

शरीर में इतने काम करता है इंसुलिन

कोलोरेक्टल कैंसर और आंत के ऊतकों में परिवर्तन के लिए जिम्मेदार नहीं है IBS

-हमारे शरीर को ऐक्टिव रखने के लिए इंसुलिन का उत्पादन और इसका अब्सॉर्प्शन दोनों ही बहुत जरूरी हैं। यदि इस प्रक्रिया में कोई भी दिक्कत होती है तो व्यक्ति थका हुआ और असहाय अनुभव करता है।

-इंसुलिन मेटाबॉलिज़म की प्रक्रिया को सही रखने में मदद करता है। इंसुलिन का उत्पादन अगनाश्य में होता है और कार्य क्षमता के आधार पर यह कई तरह का होता है। इसके बारे में आगे बात करेंगे।

इंसुलिन कैसे बनता है?

-इंसुलिन का उत्पादन हमारे अगनाश्य यानी पैनक्रियाज में होता है। भोजन करने के बाद जब रक्त में शुगर और ग्लूकोज की मात्रा बढ़ जाता है, उस समय उस बढ़ी हुई शुगर को नियंत्रित करने के लिए इंसुलिन का स्राव होता है।

PCOD की समस्या के बारे में वो सबकुछ, जो आपको पता होना चाहिए

शुगर पेशेंट को क्यों पड़ती है इंसुलिन की जरूरत?

-जिन लोगों को टाइप-1 डायबिटीज होती है, उनके पैनक्रियाज में इंसुलिन बनानेवाली बीटा कोशिकाएं नष्ट होने के कारण इंसुलिन नहीं बन पाता है।

डायबिटीज में इंसुलिन की जरूरत

-जिन लोगों को टाइप-2 डायबिटीज होती है, उनके शरीर में इंसुलिन बनता तो है लेकिन यह इंसुलिन प्रभावी नहीं होता है। इसलिए ग्लूकोज की मात्रा को नियंत्रित करने के लिए इंसुलिन लेने की आवश्यकता होती है।

सिर्फ मोटापे से नहीं बल्कि इन 4 सामान्य कारणों से भी बार-बार फूल जाता है पेट

डायबिटीज और इंसुलिन इंजेक्शन

-जैसा कि यहां बताया गया है कि इंसुलिन एक हॉर्मोन है और इसका उत्पादन अग्न्याशय में होता है। लेकिन डायबिटीज के मरीज शुगर को नियंत्रित करने के लिए जिस इंसुलिन का उपयोग करते हैं, उसकी कार्यक्षमता शरीर में बननेवाले इंसुलिन से अलग होती है। यह भिन्नता इंसुलिन के प्रभाव के आधार पर होती है।

-शुगर के मरीज आमतौर पर इंजेक्शन की मदद से इंसुलिन लेते हैं। एक इंसुलिन वह होता है, जो इंजेक्शन लगने के मात्र 15 मिनट में असर दिखाना शुरू कर देता है और करीब चार घंटे तक शरीर में इंसुलिन की कमी को पूरा करता है।

तुरंत संक्रमित होने पर मात्र 30 सेकंड्स में मारा जा सकता है कोरोना वायरस

बाँडी में इंसुलिन की जरूरत

-दूसरा इंसुलिन वह होता है, जो इंजेक्शन लगने के करीब 30 मिनट बाद असर दिखाना शुरू करता है और यह शरीर में करीब 6 घंटे तक इंसुलिन की कमी को पूरा करता है।

-एक इंसुलिन वह होता है जो इंजेक्शन लगने के 2 घंटे बाद असर दिखाना शुरू करता है और इसका असर शरीर के अंदर 12 घंटे तक रहता है।

-चौथा इंसुलिन वह होता है, जो इंजेक्शन लगने के एक घंटे बाद असर दिखाना शुरू करता है और यह शरीर के अंदर 24 घंटे तक इंसुलिन की कमी को पूरा करता है।

-यदि आप शुगर के मरीज हैं तो आपको किस तरह के इंसुलिन की जरूरत होगी, इस बारे में आपको अपने डॉक्टर से बात करनी चाहिए। क्योंकि आपकी रिपोर्ट्स के आधार पर वही इस बारे में सही जानकारी दे सकते हैं।

बहुत अधिक गुस्सा आना भी है पित्त बढ़ने का लक्षण, जानें पित्त दोष होने पर क्या खाना चाहिए और क्या नहीं (Navbharat Times: 20201211)

<https://navbharattimes.indiatimes.com/lifestyle/health/pitta-dosha-reason-symptoms-and-precautions/articleshow/79664462.cms>

शरीर में पित्त क्यों बढ़ता है? इसके लक्षण क्या हैं और इस स्थिति में क्या खाना चाहिए क्या नहीं? यहां जानें इन सभी सवालों के जवाब...

छोटी-सी बात पर गुस्सा आना और बहुत अधिक गुस्सा करना। नहाने के कुछ समय बाद ही शरीर से दुर्गंध आने लगना...ये इस बात के लक्षण हैं कि आपका शरीर पित्तज प्रकृति का है। यानी आपके शरीर में पित्त की अधिकता है। पित्त शरीर में अनेक स्थानों पर प्रमुखता में रहता है और इनके काम भी अलग होते हैं।

-आयुर्वेद के अनुसार, पित्त असंतुलित होने पर एक या दो नहीं बल्कि 40 प्रकार के रोग हो सकते हैं। पित्त कम हो तब भी व्यक्ति रोगी हो जाता है और यदि पित्त अधिक हो तब भी कई तरह के रोग घेर लेते हैं। यहां जानें किन मुख्य कारण से शरीर में पित्त की मात्रा बढ़ जाती है...

-बहुत अधिक तीखा भोजन करने से पित्त बढ़ता है।

-मानसिक तनाव के कारण पित्त बढ़ता है।

-शरीर की क्षमता से अधिक मेहनत करने पर भी पित्त दोष में वृद्धि हो जाती है।

-भूख लगने पर भोजन ना करना या बिना भूख के भी कुछ ना कुछ खाने से भी पित्त बढ़ने की समस्या हो जाती है।

-नॉनवेज अधिक खाने से भी पित्त बढ़ता है।

-जो लोग खट्टी चीजें, गर्म तासीर की चीजें और सिरके से बनी चीजों का अधिक सेवन करते हैं, उन्हें भी पित्त बढ़ने की समस्या हो जाती है।

फैट को तेजी से पिघलाती है फूलगोभी, सर्दियों में इन 5 कारणों से करें इसका नियमित सेवन

पित्त दोष बढ़ने के लक्षण

ऐसे पहचाने बढ़े हुए पित्त को

-अब उन लक्षणों की बात करते हैं, जिनके आधार पर आप पहचान सकते हैं कि आपके शरीर में पित्त की मात्रा बढ़ी हुई है। इन लक्षणों में- बहुत जल्दी थकना और थकान अधिक होना

-बहुत अधिक गर्मी लगना और पसीना आना

-शरीर से अधिक दुर्गंध आना

-मुंह में छाले होना या गले में सूजन इत्यादि की समस्या

-बहुत अधिक गुस्सा आना

-चक्कर आना और कभी-कभी बेहोशी की समस्या होना

-लगातार ठंडी चीजें खाने की इच्छा होना

नाश्ते में हर दिन खाएं इन 8 में से कोई 1 चीज और बढ़ता वजन घटने लगेगा

पित्त बढ़ने पर क्या खाएं और क्या ना खाएं

पित्त को संतुलित करने के घरेलू उपाय

-बढ़े हुए पित्त को शांत करने के लिए आप अपने खान-पान में जरूरी बदलाव करें। सबसे पहले मसालेदार भोजन करना बंद करें और नॉनवेज बिल्कुल ना खाएं।

-भोजन में देसी घी का सेवन करें।

-शरीर को ठंडक देनेवाली कच्ची सब्जियों को अधिक खाएं। जैसे खीरा, मूली, चुकंदर, ककड़ी, गाजर, ब्रोकली इत्यादि।

अगर इन बर्तनों में खाना बनाएंगे तो वैक्सीन लगने के बाद भी हो सकता है कोरोना संक्रमण

पित्तज प्रकृति के लोग क्या ना खाएं?

-पित्त बढ़ा हुआ रहता है तो आपको कुछ खास चीजों का सेवन बहुत ही सीमित मात्रा में करना चाहिए।
जैसे, कच्चे टमाटर ना खाएं

-ड्राईफ्रूट्स बहुत ही कम खाएं

-बादाम को रातभर पानी में भिगोकर खा सकते हैं।

-मूंगफली का सेवन कम से कम करें।

-चाय और कॉफी कम पिएं।

-अल्कोहल से दूर रहें।

Rare malaria genus Plasmodium

Rare malaria genus Plasmodium ovale reported in Kerala, soldier who came from Sudan is under treatment (Hindustan Times: 20201211)

<https://www.hindustantimes.com/india-news/rare-malaria-genus-plasmodium-ovale-reported-in-kerala-soldier-who-came-from-sudan-is-under-treatment/story-3SmqQwk1WmAhxITzYDu40K.html>

There is no reason to worry as the health minister has said that the spread of the disease can be avoided with timely treatment and preventive measures

Health minister KK Shailaja said the virus was found in a soldier who came from Sudan.

At a time when Kerala is grappling with a resurgence of Covid-19 cases in the last few weeks, the health department of the state has detected a new genus of malaria called 'plasmodium oval', state health minister KK Shailaja tweeted on Thursday. The disease was detected in a soldier who travelled from Sudan. He was being treated at the district hospital in Kannur. "Plasmodium oval, a new genus of malaria, has been detected in the State. It was found in a soldier who was being treated at the District hospital in Kannur. The soldier had come from Sudan," Shailaja wrote on Twitter.

Protozoa which is responsible for malaria can be found in five varieties: Plasmodium vivax, Plasmodium falciparum, Plasmodium malaria, Plasmodium knowlesi and Plasmodium ovale. Among these, Plasmodium Vivax and Plasmodium Falciparum are the most common in India. Plasmodium ovale is generally found in Africa.

However, there is no reason to worry as the health minister has said that the spread of the disease can be avoided with timely treatment and preventive measures. This type of malaria is not known to be fatal. The malaria test was held at Kannur District Hospital after the soldier who went to Sudan as part of UN service complained of malaria symptoms. The virus was confirmed after a detailed study.

India reported its first confirmed case of the novel coronavirus in Thrissur district of Kerala when a student, who was studying in Wuhan University, China and had returned to India. Also in 2018, a Nipah virus disease (NiV) outbreak was reported from Kozhikode district.

Diarrhea

Toxin provides clues to long-term effects of diarrhea caused by E. coli (New Kerala: 20201211)

<https://www.newkerala.com/news/2020/213717.htm>

Researchers at Washington University School of Medicine in St. Louis have discovered that a toxin produced by the bacterium Escherichia coli (E. coli), long known to cause diarrhea, also has other effects on the human digestive tract.

The toxin, they found, changes gene expression in the cells that line the inside of the gut, inducing them to manufacture a protein that the bacterium then uses to attach to the intestinal wall.

The findings, published Nov. 17 in Proceedings of the National Academy of Sciences, offer a clue to why recurrent but short-lived episodes of diarrhea could lead to long-term nutritional problems.

"There's more than meets the eye with this toxin. It is basically changing the surface of the intestine to benefit itself, probably ultimately to the detriment of the host," said senior author James M. Fleckenstein, MD, a professor of medicine and of molecular microbiology.

"Decades ago, people worked out how the toxin causes diarrhea, but until recently, nobody really had the tools to delve into what else this toxin might be doing. We're trying to put together the pieces of the puzzle to find out how toxin-producing E. coli might be driving malnutrition and other ripple effects of diarrhea," added Fleckenstein.

Fleckenstein and first author Alaullah Sheikh, PhD, a postdoctoral researcher, study enterotoxigenic E. coli (ETEC), a toxin-producing strain of E. coli that is a common cause of severe, watery diarrhea.

The bacterium's so-called heat-labile toxin causes ion channels on intestinal cells to open, triggering an outpouring of water and electrolytes into the digestive tract -- in other words, diarrhea.

Since oral rehydration therapy was invented in the 1970s, deaths from diarrhea have dropped by more than 80 percent worldwide. While invaluable at helping people survive a bout of diarrhea, the therapy does nothing to reduce the number of cases.

Worldwide, young children still develop diarrhea an average of three times a year, with the youngest and poorest children bearing the brunt of the caseload -- and of the long-term health consequences.

Fleckenstein and Sheikh speculated that ETEC's heat-labile toxin might be doing more than just causing acute diarrhea and dehydration. If so, it might explain the link between ETEC and malnutrition, stunting and other problems.

To find other ways the toxin affects the gut, the researchers grew human intestinal cells in a dish and treated the cells with the toxin. They found that the toxin activates a set of genes known as CEACAMs. One in particular -- CEACAM6 -- codes for a protein that is normally in cells of the small intestine at low levels.

Further experiments revealed that the toxin causes cells to produce more CEACAM6 protein, which the bacteria then uses to attach to intestinal cells and deliver even more toxin. Moreover, using intestinal biopsy specimens from people in Bangladesh infected with ETEC, the researchers showed that CEACAM6 expression increases in the small intestine during natural infection.

"CEACAM6 is expressed in what is called the brush border of the small intestine, which is where all your vitamins and nutrients get absorbed," Sheikh said.

"This is one of the first pieces of evidence that ETEC can change the intestinal surface. We don't yet know how long that lasts and what that means for people who are infected, but it stands to reason that damage to this part of the body could affect the ability to absorb nutrients," added Sheikh.

Fleckenstein, Sheikh and colleagues are continuing to study the link between ETEC and malnutrition, stunting and other health consequences.

"We are trying in the lab to understand the role of ETEC and its toxins as they relate to nondiarrheal effects of ETEC infection, particularly in young children in developing countries," Fleckenstein said.

"There's a lot of work to be done to explore how the toxins might be related to these long-term consequences of diarrhea," added Fleckenstein.

SARS-CoV-2 infection

Studies reveal potential weaknesses in SARS-CoV-2 infection (New Kerala: 20201211)

<https://www.newkerala.com/news/2020/213647.htm>

A single protein that appears necessary for the COVID-19 virus to reproduce and spread to other cells is a potential weakness that could be targeted by future therapies.

The molecule, known as transmembrane protein 41 B (TMEM41B), is believed to help shape the fatty outer membrane that protects the virus' genetic material while it replicates inside an infected cell and before it infects another.

The latest finding comes from a pair of studies led by researchers at NYU Grossman School of Medicine and NYU Langone Health's Perlmutter Cancer Center, and colleagues at Rockefeller University and elsewhere.

Published in the journal Cell online on December 8, the studies revealed that TMEM41B was essential for SARS-CoV-2 to replicate.

In a series of experiments, researchers compared how the COVID-19 virus reproduces in infected cells to the same processes in two dozen deadly flaviviruses, including those responsible for yellow fever, West Nile and Zika disease.

They also compared how it reproduces in infected cells to three other seasonal coronaviruses known to cause the common cold.

"Together, our studies represent the first evidence of transmembrane protein 41 B as a critical factor for infection by flaviviruses and, remarkably, for coronaviruses, such as SARS-CoV-2, as well," said studies' co-senior investigator John T. Poirier, PhD.

"An important first step in confronting a new contagion like COVID-19 is to map the molecular landscape to see what possible targets you have to fight it," said Poirier, an assistant professor of medicine at NYU Langone Health.

"Comparing a newly discovered virus to other known viruses can reveal shared liabilities, which we hope serve as a catalogue of potential vulnerabilities for future outbreaks," added Poirier.

"While inhibiting transmembrane protein 41 B is currently a top contender for future therapies to stop coronavirus infection, our results identified over a hundred other proteins that could also be investigated as potential drug targets," said Poirier, who also serves as director of the Preclinical Therapeutics Program at NYU Langone and Perlmutter Cancer Center.

For the studies, researchers used the gene-editing tool CRISPR to inactivate each of more than 19,000 genes in human cells infected with each virus, including SARS-CoV-2. They then compared the molecular effects of each shutdown on the virus' ability to replicate.

In addition to TMEM41B, some 127 other molecular features were found to be shared among SARS-CoV-2 and other coronaviruses. These included common biological reactions, or pathways, involved in cell growth, cell-to-cell communication, and means by which cells bind to other cells. However, researchers say, TMEM41B was the only molecular feature that stood out among both families of viruses studied.

Interestingly, Poirier notes, mutations, or alterations, in TMEM41B are known to be common in one in five East Asians, but not in Europeans or Africans.

He cautions, however, that it is too early to tell if this explains the relatively disproportionate severity of COVID-19 illness among some populations in the United States and elsewhere.

Another study finding was that cells with these mutations were more than 50 per cent less susceptible to flavivirus infection than those with no gene mutation.

Poirier says more research is needed to determine if TMEM41B mutations directly confer protection against COVID-19 and if East Asians with the mutation are less vulnerable to the disease.

The research team next plans to map out TMEM41B's precise role in SARS-CoV-2 replication so they can start testing treatment candidates that may block it. The team also has plans to study the other common pathways for similar potential drug targets.

Poirier adds that the research team's success in using CRISPR to map the molecular weaknesses in SARS-CoV-2 serves as a model for scientists worldwide for confronting future viral outbreaks.

Neurological complications

Neurological complications common in moderate Covid cases: Study (New Kerala: 20201211)

<https://www.newkerala.com/news/2020/213622.htm>

Covid-19 can lead to a broad range of neurological complications, including stroke, seizures, movement disorders, inflammatory diseases and more, even in moderate cases, say researchers, one of whom is of Indian-origin.

For the study, published in the journal Neurology, the research team looked at people with neurological symptoms and Covid at a racially and socioeconomically diverse hospital.

"We found a wide range of neurological complications--spanning inflammatory complications, stroke and other vascular conditions, metabolic problems, exacerbation of underlying neurological conditions and more," said study author Pria Anand from the Boston University in the US.

"Yet the majority of these people did not require critical care, suggesting that neurological complications may be common in people with moderate Covid-19 as well as those with severe disease," Anand added.

The study involved 74 people who between April 15 and July 1, 2020, tested positive for Covid-19 and were evaluated for various neurological conditions at a large hospital serving underserved, low-income and elderly people in Boston.

The average age was 64. A total of 47 people had a prior history of neurological disease.

At the time of hospitalization, 18 people had strokes, 15 had seizures and 26 people had a type of brain dysfunction that causes confusion and delirium.

Seven people had movement disorders, including five people with myoclonus, which involves sudden, brief twitching of the muscles. Three people had traumatic brain injuries due to falls in their homes after developing Covid-19.

One person had signs of developing autoimmune encephalitis, a rare, complex disease where the body's immune system attacks itself, yet these symptoms improved after the person received corticosteroids, the study said.

The findings showed that 10 people died in the hospital. The people who survived had a moderately severe disability, on average, at the time they left the hospital, compared to mild disability before their hospitalization.

A total of 27 people were able to return home with or without home health services, 20 went to skilled nursing facilities, including 11 who had previously been living at home, and nine went to acute rehabilitation centres, including eight who had been living at home.

Three people went to long-term acute care hospitals and five people were entered into hospice, either at home or as an inpatient.

"More research is needed to fully understand the breadth of neurological complications associated with COVID-19 infection," Anand noted.

Pandemic

Amid rise in digital transactions, pandemic hits ATMs in Kenya (New Kerala: 20201211)

<https://www.newkerala.com/news/2020/213529.htm>

Covid-19 pandemic has accelerated the use of digital financial channels in Kenya, dealing a blow to automated teller machines (ATM), which have recorded a faster decline in the last eight months, a new data from the Central Bank showed.

The east African nation at the end of October had 2,409 ATMs, according to the apex bank, down from 2,459 in January, Xinhua reported.

This is a decline of 50 machines in about 10 months, the bulk of the fall in the second and third quarters, to push the total number to a seven-year low.

And as the number of ATMs falls, mobile money usage has surged during the pandemic period to clock 528.9 billion shillings (about 4.9 billion US dollars) a month, the highest ever.