



DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY
Wednesday 20220223

कोरोना

एक हफ्ते बाद फिर बढ़े कोरोना के मामले, 24 घंटे में सामने आए 15 हजार से ज्यादा केस (Dainik Jagran: 20220223)

https://www.jagran.com/news/national-india-reports-15102-fresh-covid-cases-and-31377-recoveries-in-last-24-hours-22491433.html?itm_source=website&itm_medium=homepage&itm_campaign=p1_component

देश में आज कोरोना के 15,102 नए मामले आए

देश में कोरोना के मामलों में आज इजाफा देखने को मिला है। बीते 24 घंटे में कोरोना संक्रमण के 15102 नए मामले सामने आए हैं। वहीं कल यानी बुधवार को कोरोना के 13405 मामले सामने आए थे।

नई दिल्ली, जेनएनएन। तीसरी लहर में कोरोना संक्रमण (Coronavirus) काफी कमजोर पड़ गया है। पिछले कुछ दिनों से कोरोना के मामलों में लगातार गिरावट देखने को मिल रही है। हालांकि, आज कोरोना के मामलों में थोड़ी बढ़ोतरी देखने को मिली है। स्वास्थ्य मंत्रालय ने कोरोना को लेकर अपडेट जारी किया है।

स्वास्थ्य मंत्रालय के मुताबिक, बीते 24 घंटे में कोरोना संक्रमण के 15,102 नए मामले सामने आए हैं। रिपोर्ट के अनुसार, इस दौरान 31,377 लोग ठीक हुए हैं जबकि 278 लोगों की कोरोना से मौत हो गई। बता दें कि कल यानी बुधवार को देश में कोरोना के कुल 13,405 मामले सामने आए थे।

एक्टिव केस भी घटे

इसके अलावा कोरोना के एक्टिव केस घटकर अब 1,64,522 हो गए हैं। कुल 4,21,89,887 लोग अब तक रिकवर हो चुके हैं। देश में अब तक कोरोना के 4,28,67,031 मामले सामने आ चुके हैं। वहीं, 5,12,622 लोग अपनी जान गंवा चुके हैं।

Coronavirus: WHO says COVID pandemic may end in 2022 (The Times of India: 20220223)

<https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/coronavirus-who-says-covid-pandemic-may-end-soon/articleshow/89748205.cms>

If there are no more major Covid outbreaks after Omicron, the pandemic may see an end in 2022, the World Health Organisation (WHO) Representative in Russia has said.

However, it does not mean that the virus will vanish completely, Melita Vujnovic was quoted as saying in an interview with TASS news agency.

"It's hard to make predictions at the moment but we hope that if nothing else happens, the pandemic may end in 2022.

"What does an end to the pandemic mean? It means that there will be no major outbreaks, but it doesn't mean that the virus will vanish.

"A great number of cases means that the virus is capable of mutating so we don't know how the situation will unfold. However, there is cautious optimism that major outbreaks will end once Omicron spreads across the globe," she said.

According to Vujnovic, the WHO is trying to predict when it will happen, but it's difficult because countries "are now changing their testing strategies".

She said that the Omicron strain was very contagious and was spreading quickly, while some countries did not have the money to test everyone given the large number of patients without symptoms, the report said

"The picture that we are seeing does not fully reflect the exact number of cases as opposed to what things were like when the pandemic just broke out and the Delta strain started spreading," the WHO envoy said.

Several countries have seen a decline in Omicron variant-led Covid surge. The decrease in cases has also led to lifting restrictions. Sweden, Denmark, and Norway have all lifted Covid restrictions as they look to reclassify the virus as a disease that does not pose a threat to society. The UK and the US are soon likely to follow.

However many experts, including the WHO, have urged caution.

WHO Director General Tedros Adhanom Ghebreyesus had recently stated "it's premature for any country either to surrender or to declare victory".

विटामिन्स

सेहतमंद रहने के लिए इन विटामिन्स का रोजाना इनटेक है जरूरी (Dainik Jagran: 20220223)

<https://www.jagran.com/photogallery/lifestyle-health-daily-intake-of-these-vitamins-is-essential-to-stay-healthy-29487.html>

विटामिन A

विटामिन ए से भरपूर चीजों का सेवन आपकी इम्यूनिटी को मजबूत बनाता है साथ ही पाचन को भी चुस्त-दुरुस्त रखता है। इसके अलावा आंखों से जुड़ी समस्याएं भी दूर रहती हैं। सेब, अंडा और दूध इसका अच्छा स्रोत हैं।

विटामिन बी

विटामिन बी 8 प्रकार के होते हैं और सारे ही प्रकार की हमारी बाँडी को जरूरत होती है। इनकी कमी से कई तरह की समस्याएं शरीर में पनपने लगती हैं। बालों के साथ स्किन और नाखूनों की क्वालिटी भी खराब होने लगती है। केला, दूध, पनीर को अपनी डाइट में जरूर शामिल करें शरीर में इसकी पूर्ति के लिए।

विटामिन सी

कोविड के माहौल में खुद को स्वस्थ रखना एक बहुत बड़ा चैलेंज है। हेल्दी रहने के लिए इम्यूनिटी का स्ट्रॉन्ग होना बहुत जरूरी है। जिसमें विटामिन सी बहुत अहम रोल निभाता है। खट्टे फलों जैसे- संतरा, नींबू, आंवला इस विटामिन के सबसे अच्छे स्रोत माने जाते हैं तो इन्हें अपने भोजन में जरूर शामिल करें।

विटामिन ई

विटामिन ई में एंटीऑक्सीडेंट होता है जो हमारे हेल्दी बालों और स्किन के लिए बहुत ही जरूरी है। विटामिन ई की पूर्ति के लिए बादाम, मूंगफली, शिमला मिर्च को खासतौर से आपको खाना चाहिए।

विटामिन के

यह रक्त जमने की प्रक्रिया में शामिल जीएलए प्रोटीन, मिनरल और कैल्शियम जैसे पोषक तत्वों को सक्रिय करके शरीर में रक्त का जमाव होने से रोकता है। विटामिन K वसा में घुलनशील विटामिन है, इसमें प्रोथ्रोम्बिन नाम का प्रोटीन होता है, जो खून में थक्का नहीं बनने देता।

दिल की सेहत

दिल की सेहत का कुछ तो रखें ख्याल! लाइफस्टाइल में लाएं ये 7 बदलाव (Dainik Jagran: 20220223)

<https://www.jagran.com/lifestyle/health-7-small-changes-in-lifestyle-to-lower-heart-health-risks-22489056.html>

अगर आप चाहते हैं कि आपके दिल की सेहत चंगी रहे तो आपको इसके लिए हेल्दी लाइफस्टाइल अपनानी होगी जिसमें एक्सरसाइज़ करना हेल्दी खाना खाना अच्छी नींद लेना शामिल है। लेकिन हम कब तक इस रूटीन को फॉलो कर पाएंगे?

नई दिल्ली, लाइफस्टाइल डेस्क। Heart Health Tips: लाइफस्टाइल हेल्दी न होने का असर सीधा दिल की सेहत पर पड़ता है। इसलिए लाइफस्टाइल में बदलाव लाना जरूरी है ताकि दिल की खराब सेहत के

जोखिम से बचा जा सके। कई लोगों को लगता है कि मौजूद लाइफस्टाइल में छोटे बदलाव आपके दिल की सेहत के पर्याप्त होंगे लेकिन यह सही नहीं है।

सेहतमंद दिल के लिए हमें हेल्दी लाइफस्टाइल अपनानी होगी, जिसमें एक्सरसाइज़ करना, हेल्दी खाना खाना, अच्छी नींद लेना शामिल है। लेकिन हम कब तक इस रूटीन को फॉलो कर पाएंगे? ज़्यादा लंबे समय तक नहीं। इसलिए छोटे-छोटे स्टेप्स लें, जिससे आपकी सेहत पर असर पड़ना शुरू होगा।

1. दिन में एक बार वॉक करें

फिट रहने के लिए रोज़ाना चलना बेहद ज़रूरी है। हेल्थ एक्सपर्ट्स और डॉक्टर रोज़ाना आधे घंटे के लिए चलने की सलाह देते हैं, लेकिन आप चाहें तो 10-15 मिनट से भी शुरुआत कर सकते हैं। अचानक 30 मिनट तक चलने से मांसपेशियों में दर्द हो सकता है, इसलिए धीरे-धीरे शुरुआत करें।

2. सुबह का नाश्ता है ज़रूरी

हम में से ज़्यादातर लोग सुबह के नाश्ते को गंभीरता से नहीं लेते हैं? दिन का पहला खाना, भारी और पोषण से भरपूर होना चाहिए। लेकिन अफसोस की बात यह है कि रोज़ाना देर से सोना और देर से उठने की वजह से इसे अक्सर नज़रअंदाज़ किया जाता है।

3. कैलोरी सेवन का ध्यान रखें

खाने की जिस चीज़ पर हेल्दी लिखा है, वो ज़रूरी नहीं कि हेल्दी हो। स्वस्थ रहने के लिए कैलोरी की सही मात्रा का सेवन ज़रूरी है। अगर आप चावल की जगह किनोआ खाने लगे हैं, क्योंकि आपके दोस्त क अनुसार यह ज़्यादा हेल्दी है। लेकिन ज़रूरी नहीं कि यह आपके लिए भी फायदेमंद होगा। महिलाओं को दिन में 2000 और पुरुषों को 2500 कैलोरी का ही सेवन करना चाहिए।

4. घर के काम करते वक्त शारीरिक गतिविधि

अपनी सेहत को बरकरार रखने के लिए ज़रूरी नहीं कि आप रोज़ाना जिम जाएं। घर के काम करते वक्त भी आपके शरीर का वर्कआउट हो जाता है। जैसे किताबों का शेल्फ सजाना, इससे हाथों की भी एक्सरसाइज़ हो जाती है।

5. ध्यान का अभ्यास करें

स्वस्थ दिल के लिए मेडिटेशन या माइंडफुलनेस का अभ्यास बेहद उपयोगी है। विशेषज्ञों ने हमेशा तनाव और अवसाद को दिल के खराब स्वास्थ्य से जोड़ा है। इसलिए दिल की अच्छी सेहत के लिए

दिमाग को आराम देना ज़रूरी है। ध्यान लगाना ज़्यादातर जीवन की मानसिक गुणवत्ता में सुधार, अवसाद और चिंता को ठीक करने और रक्तचाप में सुधार के साथ जुड़ा हुआ है, जो हृदय के अच्छे स्वास्थ्य के लिए बहुत ज़रूरी भी है।

6. अपने आपको साफ रखें

साफ सफाई रखने से आप कई तरह की बीमारियों से बचेंगे। जैसे हाथों को साफ रखेंगे तो आप कोविड से बचे रहेंगे। इसी तरह अगर आप साफ सफाई का ख्याल रखेंगे तो शरीर स्वस्थ रहेगा। क्योंकि निमोनिया, फ्लू और दूसरे वायरल संक्रमण आपकी दिल की सेहत के लिए घातक साबित हो सकते हैं।

7. पॉज़िटिव रहें

नाकारात्मक ख्यालों को दिमाग में न आने दें। अपने आपको खुश रखें। गुस्सा और चिड़चिड़ापन आपके दिल की सेहत पर बुरा असर डाल सकते हैं।

Heart disease

How does caffeine reduce heart disease risk? (Medical News Today: 20220223)

<https://www.medicalnewstoday.com/articles/how-does-caffeine-reduce-heart-disease-risk#Caffeine-blocks-SREBP2-activation>

Scientists are beginning to understand why caffeine protects against heart disease.

A recent study uncovered how caffeine reduces the risk of cardiovascular disease.

Researchers found that caffeine lowers blood proprotein convertase subtilisin/kexin type 9 (PCSK9) levels, which, in turn, lowers “bad” cholesterol, or low-density lipoprotein (LDL) cholesterol.

High levels of LDL cholesterol contribute to the development of coronary heart disease.

Researchers are developing new caffeine derivatives as potential therapies to treat cardiovascular disease.

Cardiovascular disease, also known as heart disease^{Trusted Source}, affects the body's heart and blood vessels. An estimated 18.2 million^{Trusted Source} adults aged 20 years and older have coronary artery disease in the United States.

About 361,000 people in the U.S. died in 2019 from coronary heart disease, with 20% of deaths occurring in adults under 65 years.

Coronary heart disease occurs when fatty deposits^{Trusted Source} or plaques consisting of cholesterol, calcium, and fibrin — a substance that causes blood clotting — accumulate in blood vessels.

Plaque buildup, or atherosclerosis, in arteries causes narrowing, which may cause a partial or total blockage, leading to heart attack, stroke, or tissue death in the extremities, which people know as gangrene.

Scientists currently believe that high blood pressure, diabetes, smoking, and high cholesterol may cause damage to the arteries' inner lining.

Elevated LDL cholesterol levels^{Trusted Source} contribute to atherosclerosis, while high levels of high-density lipoprotein (HDL), or “good” cholesterol, may be protective.

HDL carries LDL away from the arteries, transporting it from the blood to the liver, where the LDL cholesterol is broken down and eliminated from the body.

High LDL or low HDL levels alongside elevated triglycerides — the most common type of fat in the body that stores excess energy — increase the risk for heart attack and stroke risk.

Cholesterol regulation

Sterol regulatory element-binding protein 2 (SREBP2) regulates LDL cholesterol levels in the body.

When cholesterol and calcium levels in a cell decrease, it activates SREBP2. This protein then moves to the cell nucleus and activates genes that influence cholesterol production.

These gene regulators of cholesterol production include:

3-hydroxy-3-methylglutaryl coenzyme-A (HMG-CoA) reductase^{Trusted Source}, which controls the rate of cholesterol production

LDL receptors^{Trusted Source}, which transport LDL cholesterol from the blood into cells

PCSK9, which controls the number of LDLRs

Dr. Robert Greenfield, who specializes in cardiovascular disease, internal medicine, and vascular medicine for the Orange Coast Memorial Medical Center and Clinical Faculty at the University of California Irvine Medical Center in Orange County, spoke with Medical News Today.

He explained that PCSK9 protects the liver from getting too much cholesterol. “The liver has the ability to create receptors on its surface — let’s call them ‘parking spots’ for LDL or ‘bad’ cholesterol.”

He continued, “When an LDL molecule decides to park in the parking spot, the liver is then able to absorb that cholesterol [...] into the liver cell to make bile, vitamin D, and other substances. To avoid too much LDL from entering the liver, and too many parking spots being available, it also manufactures this molecule called PCSK9.”

Dr. Greenfield added, “PCSK9 goes out to the parking spots or LDLRs that are on the surface of the liver, and actually [destroys] them, so the amount of LDLRs are kept in check.”

Current cholesterol treatments

Medical professionals treat high cholesterol with lifestyle changes, such as a nutritious diet and exercise alone or in combination with medications^{Trusted Source}. These medications reduce high cholesterol through various mechanisms.

Statins are the gold standard of treatment and block cholesterol production in the liver by inhibiting HMG-CoA reductase. Other medication classes are available to treat high cholesterol in those who do not respond to statins or have intolerable side effects.

These other drugs include:

adenosine triphosphate-citrate lyase inhibitors^{Trusted Source}, which block the production of cholesterol

bile acid sequestrants, which increase the elimination of cholesterol from the intestine

ezetimibe, which limits cholesterol absorption in the intestine

niacin^{Trusted Source}, which decreases the production of cholesterol in the liver

fibrates and omega-3 fatty acid ethyl esters, which lower triglycerides

PCSK9 inhibitors, which block the PCSK9 protein

Dr. Matthew J. Budoff, a professor of medicine and program director of cardiac computed tomography at David Geffen School of Medicine at University of California, Los Angeles, in an American Journal of Managed Care Peer Exchange, explains:

“PCSK9 is a protein developed in the liver. It ‘kills’ the LDL receptors on the liver. [...] The LDL floats in our bloodstream [and] does not get taken up by the liver, [which causes] our LDL levels to stay elevated.”

He adds, “If you block PCSK9, [...] we lower that protein [and] end up with many more LDL receptors, and the liver can then lower LDL. It’s pretty remarkable and consistent that the PCSK9 inhibitors lower LDL by an additional 50% to 60% LDL.”

Statins lower LDL to a lesser degree, by about 30–50%. However, PCSK9 inhibitors are injectable medications that are expensive.

Despite the availability of different treatment options, some people have difficulties reaching cholesterol goals because of side effects or the lack of access due to medication costs. Therefore, finding new, more cost-effective ways to influence cholesterol levels is an urgent necessity.

Caffeine blocks SREBP2 activation

Recent research suggests that people consuming caffeine in nonalcoholic beverages in doses greater than 600 milligrams (mg) per day may reduce cardiovascular risk.

This led researchers at McMaster University in Canada to investigate the mechanism behind caffeine's cardioprotective effect.

The team published their results in the journal *Nature Communications* Trusted Source. The study consisted of a series of experiments in liver cells and mice and found that caffeine:

The authors also tested how a 400 mg caffeine dose affected PCSK9 levels in healthy, fasting volunteers. At 2 hours, caffeine reduced PCSK9 levels by 25% at 2 hours and 21% at 4 hours.

Fasting participants in the control group who did not consume caffeine did not experience changes in PCSK9 levels at these time intervals.

Dr. Greenfield commented on the results of the study, “So the idea that caffeine may be something beneficial and trying to figure out why it's beneficial was really important. Caffeine seems [...] to shut off the production of PCSK9.”

He elaborated, “That's a good thing because if there is less PCSK9, [there will be] more liver receptors, and [a greater] ability to clear excess cholesterol from our blood.”

The 400 mg dose of caffeine that participants consumed in the study is the Food and Drug Administration (FDA)-recommended maximum dose Trusted Source of caffeine per day, according to Dr. Greenfield.

He stated, “An 8-ounce cup of coffee [contains] between 80 [and] 100 milligrams of caffeine, [...] which [...] comes out to [...] 4 or 5 cups a day.” However, caffeine intake may cause palpitations or jitteriness, which may be bothersome to some people.

The researchers of this study are developing xanthines — similar molecules to caffeine — which inhibit PCSK9 to a greater extent, without the side effects observable with caffeine.

Dr. Jakob Magolan, co-author and associate professor in the Department of Biochemistry & Biomedical Sciences at McMaster, elaborates, “We are excited to be pursuing this new class of medicines — or nutraceuticals — for the potential treatment and prevention of cardiovascular disease.”

Dr. Richard Austin, Ph.D., senior author and professor in the Department of Medicine at McMaster and a member of the Hamilton Centre for Kidney Research at The Research Institute of St. Joe's Hamilton, explains:

“Coffee and tea drinkers have another important health reason to rejoice — minus the sugar. These findings now provide the underlying mechanism by which caffeine and its derivatives can mitigate the levels of blood PCSK9 and thereby reduce the risk of cardiovascular disease.”

Premature Birth

Why Don't We Talk About Premature Birth? (The Indian Express: 20220223)

<https://indianexpress.com/article/parenting/sponsored-parenting/why-dont-we-talk-about-premature-birth-7783507/>

Preterm birth is the leading cause of death in children under the age of five. Each year, about 15 million babies worldwide are born prematurely, that is about 1 in 10 children.

Preterm birth complications are the leading cause of death among children under 5 years of age, responsible for approximately 1 million deaths.

What is Prematurity?

A baby is termed 'preterm' when it is born ahead of 37 weeks of pregnancy. There are subcategories of preterm birth, based on gestational age, with risk of death, morbidity, and disability proportionate to the level of prematurity: moderate to late preterm (32 to 37 weeks), very preterm (28 to 32 weeks), and extremely preterm (less than 28 weeks).

Incidence and Trends of Prematurity

Preterm birth is the leading cause of death in children under the age of five; each year, about 15 million babies worldwide are born prematurely, that is about 1 in 10 children. Out of 15 million 3.5 million babies are born every year in India. Countries with the largest numbers of preterm births include India, China, Nigeria, Pakistan, and the United States, demonstrating that preterm birth is a problem in all settings and an increase in preterm birth rates over the past 20 years.

Causes of Prematurity

Common causes of preterm birth include multiple pregnancies, infections, and chronic conditions such as diabetes and high blood pressure; however, often no cause is identified. There could also be a genetic influence.

Burden of Prematurity

Preterm birth complications are the leading cause of death among children under 5 years of age, responsible for approximately 1 million deaths. In low-income settings, most of the babies die due to a lack of feasible, cost-effective care, such as warmth, breastfeeding support, and basic care for infections and breathing difficulties. In high-income countries, only extremely premature babies may have some forms of impairment, while in low-and middle-income countries a large number of moderately preterm babies survive with disability due to suboptimal quality of care and challenges in access and use of technology for care, rehabilitation, and support.

Short and long-term problems of prematurity

Short-term problems are breathing-related, ventilatory support, Heart (PDA), apnoea (cessation of breathing), Infections, gut-related (NEC), eye-related (Retinopathy). Long-term problems depend on how delivery room management was done and the level of NICU care. These include developmental, social, and language, growth-related problems and oxygen-dependent lungs, etc.

Hope and the future

If we are treating a middle-aged person with a life-threatening disease, we are extending his/her life for the next 15-20 years, but here we are treating newborns and giving their whole life. Moreover, three-quarters of these deaths because of prematurity can be prevented with current, cost-effective measures and interventions which include essential care during childbirth and in the postnatal period to every mother and baby, with the provision of antenatal steroid injections (given to pregnant women at risk of preterm labor and under set criteria to strengthen the babies' lungs), by providing kangaroo mother care (the baby is carried by the mother with skin-to-skin contact and frequent breastfeeding) and antibiotics to treat newborn infections.

In India, preterm baby outcomes have been improved over the last decade. The neonatal mortality rate of India fell gradually from 84.4 deaths per thousand live births in 1970 to 21.7 deaths per thousand live births in 2019. In Rainbow Children's Hospital, an extremely premature baby who was born at 24 weeks gestation, weighing 350 grams suffering from breathing difficulty and many other complications like feeding difficulties, multiple blood transfusions, and chronic lung disease was on a ventilator for almost 105 days. Finally, the baby was successfully managed and saved from all the emergencies with the help of a highly qualified and skilled team. It takes a lot to treat a little but still we don't have to lose our hope as many of these conditions are treatable.

Diet/Nutrition

Caffeine alert: How many cups of coffee should you drink daily? (The Indian Express: 20220223)

<https://indianexpress.com/article/lifestyle/health/caffeine-how-much-coffee-per-day-research-experts-7785235/>

"The healthiest way to take your coffee is hot-brewed and black. One cup has virtually no calories or carbs, no fat, and is low in sodium," said Sakina Diwan, a dietician

Many of us love to kickstart our day with a cup of coffee. While there is enough research on how coffee can help boost brain function, there is still not much understanding on what type and how much coffee should one consume on a daily basis. Addressing some of these concerns, Uma Naidoo, a nutritional psychiatrist and director of nutritional and lifestyle psychiatry at Massachusetts General Hospital, said that one should have three cups of coffee.

According to Naidoo, a study which tracked coffee consumption and cognitive health of 676 elderly men over 10 years noted that coffee drinkers had less than half the cognitive decline as compared to non-coffee drinkers, and those who had three cups a day had the least decline. A Harvard study also examined the likelihood of death in more than two lakh participants over more than 20 years, and suggested that coffee drinkers were less likely to die, with those who had 3.1 to five cups of coffee a day living longer.

How does coffee impact brain function and overall health?

So, how much should one have?

Since caffeine may not work for everyone and excess consumption may lead to digestive issues, Naidoo recommends to 'tune into your innate body intelligence'. "This means (know) how foods and beverages make you feel, and then act accordingly. If coffee doesn't make you feel good after drinking, it's probably not good for you," she said in the post.

Sakina Diwan, dietician, Bhatia Hospital, Mumbai is of the opinion that in moderation, coffee seems to be good for most people — that's 3 to 5 cups daily, or up to 400 milligrams of caffeine. "The healthiest way to take your coffee is hot-brewed and black. One cup has virtually no calories or carbs, no fat, and is low in sodium. Black coffee also has micronutrients, including potassium, magnesium, and niacin," said Diwan.

COVID vaccine

Got a Covid booster? You probably won't need another for a long time (The Indian Express: 20220223)

<https://indianexpress.com/article/lifestyle/health/got-a-covid-booster-you-probably-wont-need-another-for-a-long-time-7785257/>

Three doses of a COVID vaccine — or even just two — are enough to protect most people from serious illness and death for a long time, the studies suggest

As people across the world grapple with the prospect of living with the coronavirus for the foreseeable future, one question looms large: How soon before they need yet another shot?

Not for many months, and perhaps not for years, according to a flurry of new studies.

Three doses of a COVID vaccine — or even just two — are enough to protect most people from serious illness and death for a long time, the studies suggest.

“We’re starting to see now diminishing returns on the number of additional doses,” said John Wherry, director of the Institute for Immunology at the University of Pennsylvania. Although people who are over 65 or at high risk of illness may benefit from a fourth vaccine dose, it may be unnecessary for most people, he added.

Federal health officials including Dr Anthony Fauci, the Biden administration’s top COVID adviser, have also said that they are unlikely to recommend a fourth dose before the fall.

The omicron variant can dodge antibodies — immune molecules that prevent the virus from infecting cells — produced after two doses of a COVID vaccine. But a third shot of the mRNA vaccines made by Pfizer-BioNTech or by Moderna prompts the body to make a much wider variety of antibodies, which would be difficult for any variant of the virus to evade, according to the most recent study.

The diverse repertoire of antibodies produced should be able to protect people from new variants, even those that differ significantly from the original version of the virus, the study suggests.

“If people are exposed to another variant like omicron, they now got some extra ammunition to fight it,” said Dr Julie McElrath, an infectious disease physician and immunologist at Fred Hutchinson Cancer Research Center in Seattle.

What’s more, other parts of the immune system can remember and destroy the virus over many months if not years, according to at least four studies published in top-tier journals over the past month.

Specialized immune cells called T cells produced after immunization by four brands of COVID vaccine — Pfizer-BioNTech, Moderna, Johnson & Johnson and Novavax — are about 80% as powerful against omicron as other variants, the research found. Given how different omicron's mutations are from previous variants, it is very likely that T cells would mount a similarly robust attack on any future variant as well, researchers said.

This matches what scientists have found for the SARS coronavirus, which killed nearly 800 people in a 2003 epidemic in Asia. In people exposed to that virus, T cells have lasted more than 17 years. Evidence so far indicates that the immune cells for the new coronavirus — sometimes called memory cells — may also decline very slowly, experts said.

“Memory responses can last for ages,” said Wendy Burgers, an immunologist at the University of Cape Town who led one of the studies, published in the journal *Nature*. “Potentially, the T-cell response is extremely long lived.”

Throughout the pandemic, a disproportionate amount of research attention has gone to antibodies, the body's first line of defense against a virus. That is partly because these molecules are relatively easy to study. They can be measured from a drop of blood.

Analyzing immune cells, by contrast, requires milliliters of blood, skill, specialized equipment — and a lot of time. “It's orders of magnitude slower and more laborious,” Burgers said.

Few labs have the wherewithal to study these cells, and their findings lag weeks behind those on antibodies. Perhaps as a result, scientists have frequently overlooked the importance of other parts of the immune system, experts said.

“Most people don't even know what they are — a lot of doctors and scientists are not completely clear what a T cell is,” said Dr. Dan Barouch, a virus expert at Beth Israel Deaconess Medical Center in Boston who led one of the T-cell studies.

“Fundamentally, I would argue that T cells are probably more important than what many people have given them credit for,” Barouch said.

Antibodies spike after every shot of vaccine — or after each exposure to the virus — and inevitably decline within a few weeks to months.

Waning antibody levels after two vaccine doses prompted federal officials to recommend boosters for everyone older than 12. The extra shots fortified antibody levels and helped to contain omicron's spread, but they too appear to lose some of their ability to prevent infections within four months, according to recent data from the Centers for Disease Control and Prevention.

Antibodies recognize two or three key parts of the spike protein, a protrusion on the outside of the coronavirus that allows it to latch on to human cells. But T cells detect many more parts of the spike, and so are less likely to fail when the virus gains mutations in some of them.

Vaccines also encode a memory of the virus in B cells, which can churn out fresh batches of antibodies within four or five days after a new exposure to the virus.

This dual punch of T and B cells help explain why many people who received two or even three doses of vaccine could still be infected with the omicron variant, but only a small percentage became seriously ill.

“You will see a decrease of the antibody levels over time, but if memory B cells are still there, and memory T cells are still there, they can kick back into action relatively quickly,” said Alessandro Sette, an immunologist at the La Jolla Institute for Immunology who led a new study of T cells published in *Cell*.

Memory B cells become increasingly sophisticated over time, and they learn to recognize a diverse set of viral genetic sequences. The longer they have to practice, the broader the range of virus variants they can thwart.

Researchers showed last year that the elite school inside of lymph nodes where the B cells train, called the germinal center, remains active for at least 15 weeks after the second dose of a COVID vaccine. In an updated study published in the journal *Nature*, the same team showed that six months after vaccination, memory B cells continue to mature, and the antibodies they produce keep gaining the ability to recognize new variants.

“Those antibodies at six months are better binders and more potent neutralizers than the ones that are produced one month after immunization,” said Ali Ellebedy, an immunologist at Washington University in St. Louis who led the study.

In the newest study, another team showed that a third shot creates an even richer pool of B cells than the second shot did, and the antibodies they produce recognize a broader range of variants. In laboratory experiments, these antibodies were able to fend off the beta, delta and omicron variants. In fact, more than half of the antibodies seen one month after a third dose were able to neutralize omicron, even though the vaccine was not designed for that variant, the study found.

“If you’ve had a third dose, you’re going to have a rapid response that’s going to have quite a bit of specificity for omicron, which explains why people that have had a third dose do so much better,” said Michel Nussenzweig, an immunologist at Rockefeller University who led the study.

Memory cells produced after infection with the coronavirus, rather than by the vaccines, seem less potent against the omicron variant, according to a study published last month in *Nature Medicine*. Immunity generated by infection “varies quite a lot, while the vaccine response is much more consistently good,” said Marcus Buggert, an immunologist at the Karolinska Institute in Sweden who led the study.

Although most people, vaccinated or not, show only a small drop in their T cell response against omicron, about 1 in 5 had “significant reductions of their responses” of about 60%,

Buggert said. The differences are most likely because of their underlying genetic makeup, he said.

Still, the recent studies suggest that in most people, the immunity gained from infection or vaccination will hold up for a long while. Even if mutations in new variants change some of the viral regions that T cells recognize, there would still be enough others to maintain a reasonably strong immune response, experts said.

One big unknown is how slowly the T cells may decline, and whether two doses of vaccine can create a long-lasting response, or if instead people would need three — as some experts have suggested — to cement immune memory.

“That’s a question that we don’t know the answer to yet,” Burgers said. “Those are the kind of studies that we’re going to need to do.”

Endemic stage of a pandemic

Explained: What is endemic stage of a pandemic, and how far is India from getting there? (The Indian Express: 20220223)

<https://indianexpress.com/article/explained/explained-pandemic-and-endemic-7784540/>

The UK has eased restrictions while new measures in California approach Covid-19 as being endemic. What does endemic stage mean, how far is India from getting there, and what changes in control measures?

Some experts agree that precautions such as masking should remain in place. (AP)

People with Covid-19 will no longer legally need to isolate in United Kingdom and the tests are likely to be scaled back as part of a plan to live with Covid-19. California too has announced a shift to an endemic approach to Covid-19 that will focus on watching out for new variants and reacting quickly to outbreaks rather than issuing mandates for masking indoors.

A look at what an endemic stage of Covid-19 will look like, how the world will reach there, and what it will mean for control measures such as masking, social distancing in India and vaccination globally:

What does endemic stage mean, and are we there yet?

An infection becomes endemic when the rates become static in a given geographical location, meaning that the pathogen causing the disease — SARS-CoV-2 in this case — is likely to remain in circulation without causing large outbreaks as witnessed over the last two years.

Although the number of infections in India is consistently declining, experts say they cannot give a deadline on when the disease will become endemic. It will depend on the number of susceptible people in the population, vaccination rates, and emergence of new variants that are able to evade the immune response.

“Endemic means that the virus will continue circulating in the population and there will be periodic ups and downs when the conditions are favourable to the virus and less favourable to humans. Take, for example, flu which goes up in the winters and when the season is changing because of lower immunity in people or dengue which goes up after monsoons because of the availability of vectors. Covid-19 also may become seasonal and cause disease in the vulnerable,” said Dr Pramod Garg, director, Translational Health Science and Technology Institute (THSTI)-Faridabad.

An important determinant for whether we can “technically” say that the disease is endemic would be a representative sero-survey (population-level survey of antibodies against SARS-CoV-2) and laboratory susceptibility studies, said Dr Amit Singh, associate professor, Centre for Infectious Disease at the Indian Institute of Science-Bangalore.

“We can say that the disease is endemic only after we see that a majority of the people have immunity against the infection either through previous exposure or vaccination. If a representative sero-survey shows over 90% positivity, we can assume that. But we also need to see whether these antibodies can effectively protect against the current variants and a neutralisation study would tell us that,” Dr Singh said.

Does it mean we are safer?

A disease becoming endemic does not mean it is harmless. In an editorial in *Nature*, Oxford University professor on viral evolution Dr Aris Katzourakis argued, “A disease can be endemic and both widespread and deadly. Malaria killed more than 600,000 people in 2020. Ten million fell ill with tuberculosis that same year and 1.5 million died. Endemic certainly does not mean that evolution has somehow tamed a pathogen so that life simply returns to normal.”

He added, “Nor does it suggest guaranteed stability: there can still be disruptive waves from endemic infections, as seen with the US measles outbreak in 2019.”

Researchers are also wary of new variants emerging. Another *Nature* article on the virus’s future course said, “The sky-high circulation of the Delta variant and the rise of Omicron — aided by inequitable vaccine roll-outs to lower-income countries and minimal control measures in some wealthy countries such as the United States and the United Kingdom — offer fertile ground for SARS-CoV-2 to take additional surprising evolutionary leaps.”

How will control measures change if the disease becomes endemic?

Although experts have pushed for easing of restrictions, they say that there is a need to maintain high levels of testing and good genomic surveillance.

“We need to maintain high levels of testing and ensure that the cases get reported. Testing is quite less in smaller cities and villages and with home testing becoming available even in bigger cities like Delhi, people are not reporting if they test positive. Testing can tell us whether infections are going up or down,” said Dr Singh. He also insisted on good genomic surveillance.

Talking about genomic surveillance when the disease becomes endemic, Dr Rakesh Mishra, former director of Centre For Cellular And Molecular Biology-Hyderabad which is one of the ten central labs of India’s genomic surveillance consortium, said, “It is not always about the numbers. During the peak of a wave, a lot of sequencing makes no sense. It is more important in a period of lull. That is the time to not relax.”

The best way to find new variants, he said, was to “One, conduct a general survey; sequence probably 1% or 2% of the positive cases. Two, wherever there are more cases from an area, we should sequence immediately. Third, we need to keep a very close eye on hospitalised cases. The sample of any person admitted to the hospital with positive Covid-19 should be certainly sequenced. If they needed to come to the hospital with severe symptoms, it may be because of a new variant.”

Should we continue to mask up?

“There is no real benefit in declaring that the disease is now endemic,” Dr Mishra said. “What is the hurry to remove restrictions? If we live with the new normal, we will be protecting the economy as well. We don’t know when a new variant might emerge. If we look at omicron, it did not cause severe disease in India but in the US it led to high rates of hospitalisations and deaths. US is a smaller country, it is a richer country. We cannot afford to do what they did. We have all suffered, let us not fall into the ditch of a new variant,” he said.

Other experts agreed that the precautions should remain in place.

Another concern with officially declaring Covid-19 endemic would be fewer resources being made available for measures such as vaccination. “There is a vaccine inequity; not all countries are vaccinated. If the disease is declared endemic, then the 10% vaccination rate in some countries will remain 10%’ nobody will take care of that,” said Dr Singh.

“The more a virus replicates, the greater the chance that problematic variants will arise, most probably where spread is highest. The Alpha variant was first identified in the United Kingdom, Delta was first found in India and Omicron in southern Africa — all places where spread was rampant,” Dr Katzourakis wrote in the Nature editorial.

Urine Infection

Possible Health Reasons Your Urine Is Smelly (The Times of India: 20220223)

<https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/possible-health-reasons-your-urine-is-smelly/photostory/89742998.cms>

01/8Urine can be weirdly smelly and could indicate a lot of things.

It is a common occurrence to use public toilets and find oneself amidst extremely foul smells that can sometimes border on unbearable. While urinating at your own house or office, you may find a similar smell around you and wonder if it's the bathroom that needs some maintenance. However, if you ever come to find that it's you, then you need to dig deeper. Even though urine can be smelly for a number of reasons that are inconsequential, there are other reasons too. At times, smelly urine can be a result of infections and other underlying health conditions. Here are some of the possible reasons why your urine might smell.

02/8UTI

UTIs or Urinary Tract Infections are common and occur because of unsolicited bacteria that end up in your bladder and multiply. The smell is a direct result of the presence of these bacteria. However, UTIs are characterized by multiple other symptoms like burning sensation while peeing and frequent urination.

03/8Not drinking enough water

Urine isn't anything but a mixture of water and other waste products. When the quantity of water isn't enough, then the other waste products dominate the composition of urine and can bring about a bad smell.

04/8Drinking too much coffee

Even though this doesn't hold true for everybody, but coffee can make the urine smell because the composition of coffee is such that when it is metabolized, its by-products can make the urine smell. In addition to this, coffee can also cause dehydration, which in itself is another reason for bad smelling urine.

05/8Diabetes

People who have diabetes but are unaware of it can experience bad smelling urine because their bodies aren't able to digest sugar the way other people's bodies do, due to which their urine might smell sweet or fruity. Increased frequency of peeing in diabetic people is common and is another signifier of diabetes.

06/8STI

Sexually Transmitted Infections can be extremely prominent especially because of what they do to the urine and the bladder. At times these infections can cause an inflammation of the urethra which can change the smell of the urine. In addition to an STI, a slight irritation in the vagina can also lead to smelly urine.

07/8 Specific foods

All bodies are different and because of their different operating mechanisms, they digest different foods differently. Asparagus, brussels sprouts, onion, garlic, salmon, alcohol and curry are some food groups that are difficult to completely digest by some people's bodies and leave out metabolites that are accompanied by odors.

08/8 Yeast infection

Yeasts are naturally present in several parts of the body including the vagina. When they proliferate too much, it can lead to complications in the body, and yeasts grow in the vagina. A smelly urine can very well indicate a yeast infection because of the proximity between the urethra and the vagina. The infection is accompanied by other symptoms that include redness, swelling and a thick white discharge.

Diabetes

Mimicking natural light cycles may influence diabetes risk (Medical News Today: 20220223)

<https://www.medicalnewstoday.com/articles/mimicking-natural-light-cycles-may-influence-diabetes-risk#Natural-Light-cycles-are-important-to-metabolism>

A new study investigates the light-dark cycle and metabolic disease.

Researchers recently investigated how night-day variations in light intensity affected metabolism in people with insulin resistance.

Metabolism was lower during sleep in those exposed to dim light during the day and bright light in the evening.

The timing and intensity of light that humans experience daily has subtle effects on glucose and fat metabolism that can contribute to obesity and metabolic diseases.

More than 1 in 3 Trusted Source adults in the United States may have prediabetes, according to the National Institutes of Health.

Insulin resistance is a disorder of metabolism that precedes prediabetes. If left unchecked, prediabetes can develop into type 2 diabetes.

Recently, a team of researchers theorized that societal changes such as increased exposure to artificial light might be one factor linked to the global rise in people with insulin resistance.

As reported in the journal *Diabetologia*, Prof. Patrick Schrauwen, Jan-Frieder Harmsen, and their colleagues tested their hypothesis by studying individuals who already had insulin resistance.

Insulin resistance Trusted Source occurs when cells do not respond to insulin as efficiently, reducing their ability to take in glucose from the blood.

With painstaking measurements, the researchers were able to determine if varied light exposures altered human metabolism.

What is insulin resistance?

Carbohydrates are complex sugar molecules that people consume through their diet. The body converts these into “simple” sugars in our blood, namely, glucose.

Insulin is a hormone that helps bring glucose from the blood into cells. The cells then convert glucose into an energy-storing molecule called ATP.

If cells are resistant to insulin, glucose remains in the bloodstream, causing a condition called hyperglycemia — elevated blood glucose. Doctors consider this a precursor to developing type 2 diabetes.

Individuals who develop insulin resistance may:

consume high calorie diets that are high in fats and sugars and low in fiber

have an accumulation of centralized body fat

have a genetic predisposition to insulin resistance

have obesity or be physically inactive

Scientists suggest that there has been a rise in insulin resistance concurrent with the advent of the industrial revolution fostering a less nutritious diet and decreased physical activity. Insulin resistance is a known risk factor for type 2 diabetes, high blood pressure, and heart disease.

In the recent study, volunteers tested positively for any one of four common parameters that determine insulin resistance, such as an inability to normalize their blood glucose after consuming a sugar-laden drink.

‘Cue the lights’

The scientists based their new research on prior work that confirmed that light is a “zeitgeber,” an important environmental cue that controls the body’s circadian rhythms.

Light cues humans via a specialized brain structure called the suprachiasmatic nucleus, located in the pineal gland.

Dr. Victoria Salem, a senior clinical lecturer in bioengineering and an honorary consultant in diabetes, endocrinology, and internal medicine at Imperial College London, explained to Medical News Today:

“We all have natural body clocks. For example, babies often wake up earlier in the summer months when sunlight pours into the room. Light hitting the back of our eyes is sensed by the brain and our ‘master clock,’ which then sends signals via the nervous system or hormones to other parts of the body, such as the liver or muscle, to regulate digestion and the way we use fuel.”

“For example, the body becomes ‘primed’ in the morning to consume and metabolize the first meal after a long time without food. [...] Related to this body clock is the release of the hormone melatonin. The production and release of melatonin are connected to the time of day — increasing when it’s dark and decreasing when it’s light.”

Specifically, the authors of the new study focused on how cycling bright and dim light affected people by measuring:

frequent blood glucose levels

insulin levels

levels of melatonin, a hormone produced by the body to promote healthy sleep

fats in the blood known as triglycerides

daily energy expenditure

sleeping metabolic rate

Life in a metabolic bubble

The researchers were able to make these measurements by asking volunteers to stay overnight, twice, in a respiration chamber while wearing an activity monitoring watch.

The special chamber allowed scientists to measure the amount of oxygen consumed and carbon monoxide produced, giving an accurate measure of the study participants’ metabolic rate.

The participants all ate similar meals and performed similar physical activities.

Next, the researchers exposed 14 participants to two variations of daylight and evening: 10 hours of bright light followed by 5 hours of dim light in the evening — a “normal” human day — or 10 hours of dim light during the daytime and 5 hours of bright light before sleep.

What they found

In these carefully controlled circumstances, the scientists discovered several interesting results:

Melatonin release was significantly suppressed in the dim day-bright evening scenario.

Those who spent the day in bright light had lower glucose levels before dinner and higher metabolic rates at night.

Metabolism slowed after dinner in individuals in the dim day-bright evening scenario.

In people who spent the day in bright light with a dim night, melatonin levels were increased at night, which is helpful for inducing sleep.

The researchers concluded that the timing of light exposure can influence the body’s handling of glucose and fats, energy use and expenditure, and even temperature regulation in insulin-resistant individuals.

Natural light cycles are important to metabolism

Dr. Victoria Salem summarized the findings for MNT:

“The more natural light conditions were associated with subtle improvements in certain metabolic parameters. [M]ost interestingly, it aided a higher metabolic rate at night — good for burning calories!”

“This was associated with normal melatonin release compared to its inhibition with bright evening light,” Dr. Salem continued.

“The effect described here is probably small, but nonetheless important, since a holistic approach to improving well-being — which includes, amongst other things, healthy lighting, keeping the room cool at night, and good sleep hygiene — is rather good advice.”

The authors of the study recommend further research in two realms: more investigation into how light exposure affects energy expenditure and studies into how thoughtful lighting control in the home and office settings may improve health outcomes.

MNT asked Dr. Victoria Salem if any research supports the theory that sleeping better or natural light patterns can reduce metabolic disruptions. She replied:

“Yes, but not high quality [randomized controlled trials], and since the effect size is small it is going to be difficult to prove clinically. Having said that, I do believe that this study is telling us something important — that as part of a holistic approach to good metabolic health

and general well-being, encouraging good sleep and evenings where we wind down and reduce bright screen time is a very good idea.”

HIV/AIDS

Stem-cell treatment may have cured woman of HIV (Medical News Today: 20220223)

<https://www.medicalnewstoday.com/articles/stem-cell-treatment-may-have-cured-woman-of-hiv#Not-a-universal-cure>

Using stem cell technology, researchers may have cured one case of HIV. The photo depicts stem cell cultures.

An HIV-positive woman who received a blood stem cell transplant to treat acute myeloid leukemia appears to have been cured of HIV.

The stem cells, from umbilical cord blood, contained a gene variant that makes them resistant to HIV infection.

The woman has been free of HIV for 14 months since the treatment.

This finding could point toward a cure for HIV for some patients.

A middle-aged, mixed-race, HIV-positive woman has been free of the virus since receiving a blood stem cell transplant for a different condition.

Following high-dose chemotherapy for acute myeloid leukemia — a treatment that destroys blood cells — the woman received the stem cell transplant from specialists at Weill Cornell Medicine, in New York City.

They used transplant cells from two sources: stem cells from a healthy adult relative and umbilical cord blood from an unrelated newborn.

Doctors use umbilical cord blood to supply blood stem cells when a good match cannot be found. Cord stem cells are often successful, even when their immune markers only partially match the recipient's.

The stem cells from the adult donor are used to rapidly restore the patient's blood cell population. The cord stem cells replicate to replenish the blood cells in the longer term.

For this transplant, the doctors used umbilical blood stem cells containing a gene variant that gives resistance to HIV. The CCR5 gene encodes a cell receptor used by the HIV virus to enter the cells, but the CCR5 Δ 32 variant blocks the entry of the virus.

Disappearance of HIV

Three months after the treatment, the doctors found that all the patient's blood cells derived from the HIV-resistant cord blood stem cells. The team detected no HIV when performing highly sensitive assays of the patient's blood.

The patient then stopped taking antiretroviral drugs to suppress her HIV infection.

Now, 14 months after the treatment, the HIV infection has not reemerged. The patient has also been leukemia-free for 4 years.

“This is a very interesting case that could help inform our understanding and approach to HIV cure research.”

– Dr. Michael Brady, medical director of the Terrence Higgins Trust, speaking to Medical News Today.

It is also the first time a person who identifies as mixed race has received the treatment, as the CCR5 Δ 32 variant is much more common in people of European heritage.

The specialists treating the leukemia were the first to use cord blood cells in this way. Using cord blood, doctors can give cells with the CCR5 Δ 32 variant to people of non-European heritage, for whom finding well-matched CCR5 Δ 32 donors would be difficult.

Not a universal cure

“It's important to note that a stem cell transplant, which was used to treat leukemia in this case, is a very risky procedure and not one which could be scaled up to ‘cure’ the millions of people living with HIV across the globe,” Dr. Brady cautioned.

Although the woman has no signs of HIV, the specialists stress that they regard her as being in long-term remission, rather than cured.

They, too, note that this treatment carries significant risks, and doctors can only consider it for HIV-positive people with cancer who need blood stem cell transplants.

While welcoming the findings, Dr. Brady emphasized that finding a cure was only one element of the fight against HIV:

“A cure for HIV would be amazing. Whilst research into that continues, we mustn't forget that we already have highly effective HIV treatments that both protect the immune system from damage — meaning people living with HIV can expect long and healthy lives — and fully suppress the virus so it can't be passed on to their partners.”

– Dr. Brady

“It’s these facts that are turning the tide against the epidemic and tackling HIV-related stigma.”