



DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY
Monday 20201026

Alzheimer's disease

Study reveals new mechanism that causes Alzheimer's disease (The Tribune: 20201026)

<https://www.tribuneindia.com/news/health/study-reveals-new-mechanism-that-causes-alzheimers-disease-160958>

The research team has been exploring the role played by the MARK4 (Microtubule Affinity Regulating Kinase 4) enzyme in Alzheimer's disease

Study reveals new mechanism that causes Alzheimer's disease
Photo for representation only. Source: iStock.

Japanese researchers have discovered a new mechanism by which clumps of tau protein—found in brain cells—are created in the brain, killing brain cells and causing Alzheimer's disease.

A specific mutation to an enzyme called MARK4 changed the properties of tau, usually an important part of the skeletal structure of cells, making it more likely to aggregate, and more insoluble.

According to the study, published in the Journal of Biological Chemistry, getting to grips with mechanisms like this may lead to breakthrough treatments.

"Alzheimer's disease is said to be caused by the build-up of tangled clumps of a protein called "tau" in brain cells," said study authors from Tokyo Metropolitan University in Japan.

"These sticky aggregates cause neurons to die, leading to impairment in memory and motor functions. It is not yet clear how and why tau builds up in the brain cells of Alzheimer's patients," they added.

The research team has been exploring the role played by the MARK4 (Microtubule Affinity Regulating Kinase 4) enzyme in Alzheimer's disease.

When everything is working normally, the tau protein is an important part of the structure of cells or the cytoskeleton.

"To keep the arms of the cytoskeleton or microtubules constantly building and disassembling, MARK4 actually helps tau detach from the arms of this structure," the authors wrote.

Problems start when a mutation occurs in the gene that provides the blueprint for making MARK4.

Previous work had already associated this with an increased risk of Alzheimer's, but it was not known why this was the case.

The team artificially introduced mutations into transgenic *Drosophila* fruit flies that also produce human tau, and studied how the proteins changed in vivo.

They discovered that this mutant form of MARK4 makes changes to the tau protein, creating a pathological form of tau.

Not only did this "bad" tau have an excess of certain chemical groups that caused it to misfold, they also found that it aggregated much more easily and were no longer soluble in detergents.

This made it easier for tau to form the tangled clumps that cause neurons to degenerate.

MARK4 has also been found to cause a wide range of other diseases which involve the aggregation and buildup of other proteins.

That's why the team's insights into tau protein build-up may lead to new treatments and preventative measures for an even wider variety of neurodegenerative conditions, the study noted. IANS

Vitamin D, B12

Supplements without checking Vitamin D, B12 levels can be unsafe (The Tribune: 20201026)

<https://www.tribuneindia.com/news/health/supplements-without-checking-vitamin-d-b12-levels-can-be-unsafe-160945>

It revealed that about 70 percent of patients were with Vitamin D deficiency and 53 percent lacked Vitamin B12. Almost 15 percent of patients were taking self-dietary supplements for vitamin

Supplements without checking Vitamin D, B12 levels can be unsafe

Photo for representation only

A blood test can determine whether you are deficient in any vitamins or not. Many people self-medicate or take dietary supplements for vitamin deficiencies.

A study conducted by Pune-based Apollo Diagnostic has ruled out deficiency of vitamin D and B12 increasing with age and finds that blood tests and doctors consultation are required for taking a proper dose and avoiding risks.

To understand the prevalence of Vitamin D and B12 deficiencies in people, Apollo Diagnostic, Pune conducted a study by taking blood samples of 3,000 adult patients who came for a blood test in the last six months, in which 1673 were males and 1327 were females aged between 20-60 years.

It revealed that about 70 percent of patients were with Vitamin D deficiency and 53 percent lacked Vitamin B12. Almost 15 percent of patients were taking self-dietary supplements for vitamin.

While sunlight and fortified foods are two possible sources of vitamin D, due to the change in lifestyle and food habits, many people take dietary supplements to get adequate levels of this vitamin. A doctor may recommend a lower or higher dose for you, depending on health conditions or the level of vitamin D in your blood.

As per Dr Sanjay Ingle, Zonal Pathologist, and Technical Head West India, Apollo Diagnostic, "Mild to moderate vitamin D deficiency is identified as a risk factor for Type 2 diabetes, due to its protective role against the development of Type 2 diabetes mellitus and its complications. It increases insulin resistance and reducing insulin secretion from beta cells of the pancreas. Vitamin D deficiency has been consistently associated with an increased risk for cardiovascular disease, low bone density, fractures, osteoporosis, and hypertension. Vitamin B12 deficiency leads to memory loss, depression, muscle weakness, tingling, and numbness."

"Vitamin D and B12 deficiencies often remain undiagnosed or are undertreated as many people avoid proper investigation for vitamin deficiency and start self-supplement without recommendations from experts. Vitamin D and B12 are important for skeletal and non skeletal health.

The recommended daily intake (RDI) for vitamin B12 is over 14 is 2.4 mcg. Eating fatty fish, mushrooms, eggs, and getting enough of the 'sunshine vitamin,' is the key formula to stay fit and fine throughout life," Dr Ingle added Dr Anand Kavi, Orthopaedic and Spine Surgeon, Apollo Spectra Pune says, "Vitamin D also called as Sunshine Vitamin and as it is necessary for mineralization and maintenance of our bones, its deficiency can result in soft bones in children, and fragile and misshapen bones in adults. In the past decade, research has shown it is also important for several other bodily functions and it can prevent some cancers, boost immunity, and help control diabetes and hypertension. Though our country has abundant sunlight, nearly 70 to 80 percent of people are found to be Vitamin D deficient due to changing lifestyle and staying indoors, with vague complaints of muscle pain and fatigue. It is necessary to diagnose and correct Vitamin D deficiency via a qualified medical professional."

Dr. Kavi added: "Similarly Vitamin B12 deficiency is also observed in people on vegan diets and those not consuming eggs or dairy products, it is also found low with patients with absorption problems or those taking medicines for acidity. Its deficiency can cause irritability,

depression, disturbed vision, and dysfunction of nerves, it being a water-soluble vitamin it is not stored in our body and needs regular supplementation, the route of administration can be oral or by injections and is best decided by your doctor after proper diagnosis and tests." IANS

Twindemic

With winter and Covid, be prepared for 'Twindemic': Experts (The Tribune: 20201026)

<https://www.tribuneindia.com/news/health/with-winter-and-covid-be-prepared-for-twindemic-experts-160944>

It is now more important to be prepared for the coming winters by boosting immunity

With winter and Covid, be prepared for 'Twindemic': Experts
Photo for representation only. Source: iStock.

In view of the winter season, health experts on Sunday said that they are worried about "twindemic", as it is highly possible that people may contract both influenza and the Covid-19 infection, resulting in devastating consequences.

With the medical care system already overwhelmed, experts are worried about the fast-approaching season of sniffles and coughs as the threat of 'Twindemic'.

It is now more important to be prepared for the coming winters by boosting immunity, they said.

"Winter season being a season of flu poses a peculiar challenge during Covid-19 pandemic," Harshal R. Salve, Associate Professor at Centre for Community Medicine, told IANS.

"Precautions such as the use of mask, frequent hand washing and physical distancing not only help to prevent the spread of Covid- 19 but also prevent a person from getting seasonal flu," Salve said.

"Adequate Intake of citrus fruits and green leafy vegetable supplies much-needed antioxidants to the body to fight viral infections," he advised.

According to Parmeet Kaur, the Senior Dietician at Narayana Hospital in Gurugram, this winter season is approaching just around the corner like another second wave of the pandemic.

"Our body has the power to heal as most of 70-80 per cent immunity comes from the gut. Vitamin C and antioxidants help to build up immunity and prevent from various illnesses," Kaur said.

Also, maintain a healthy lifestyle by meeting the 80 per cent nutritional requirements and 20 per cent physical activity, she added.

S.P. Byotra, Chairman, Department of Internal Medicine at Sir Ganga Ram Hospital in New Delhi also told IANS: "During the time of changing weather and covid19 situation, antioxidants can help reduce the risk of Covid-19.

Along with taking different natural products recommended by Ministry of AYUSH for building immunity, demand for natural antioxidants has also increased.

"To keep your body immune and healthy, using natural anti-oxidants like Gamma Oryzanol has many health benefits including boosting immunity as it neutralizes free radicals in the body," Byotra told IANS.

Gamma oryzanol is a substance that is taken out of rice bran oil. It is also found in wheat bran and some fruits and vegetables. People use it as medicine "Gamma-oryzanol is also used for controlling elevated cholesterol and triglyceride levels, supporting cardiovascular health along with controlling anxiety and menopausal symptoms," Byotra explained.

It is known to be of multiple uses for different people and has the power to address and promote overall health as one of the key main aspects.

As per studies, Gamma Oryzanol is up to four times more powerful antioxidant than Vitamin E.

So, experts recommend taking healthy diet, doing exercise and taking all necessary precautions which would be key to fight this adverse situation ahead. IANS

'Gateway protein': Study

Body's immune response drives production of non-functional coronavirus 'gateway protein': Study (The Tribune: 20201026)

<https://www.tribuneindia.com/news/health/bodys-immune-response-drives-production-of-non-functional-coronavirus-gateway-protein-study-160895>

The research, published in the journal Nature Genetics, examined the genetic information that codes for the ACE2 receptor

Body's immune response drives production of non-functional coronavirus 'gateway protein': Study

The research, published in the journal Nature Genetics, examined the genetic information that codes for the ACE2 receptor. Tribune photo.

Some immune system molecules trigger the production of a non-functional variant of the human protein used by the novel coronavirus to enter and infect host cells, according to a study that sheds light on the body's natural defence against COVID-19.

The research, published in the journal Nature Genetics, examined the genetic information that codes for the ACE2 receptor, to which the SARS-CoV-2 virus must bind in order to enter and infect human cells.

In the study, scientists, including those from the Francis Crick Institute in London, analysed existing genetic databases and human cells to identify a new variant, or isoform, of ACE2 called MIRb-ACE2, which the SARS-CoV-2 virus cannot bind to.

"This variant of genetic information is the result of retroelements in our DNA, which can 'jump' around the genome impacting gene expression," said Kevin Ng, a co-author of the study from the Francis Crick Institute.

"From looking at which other species also have this variant, it appears to be widely present in mammals, so it must have entered the human genome a long time ago," he added.

In order to understand the role this variant plays in the body's immune response to SARS-CoV-2, the scientists assessed the effects of exposing cells to interferons -- signalling proteins that are made and released by virus-infected cells.

They found that interferons increase the response and production specifically of MIRb-ACE2, while ACE2 is not affected.

According to the researchers, the findings allay concerns that interferon-based treatments for SARS-CoV-2 could inadvertently be helping the virus by bringing about an increase in coronavirus cell receptors in the body.

They said the coronavirus is not able to bind to MIRb-ACE2, which is also highly unstable.

"The non-functional MIRb-ACE2 isoform was likely responsible for results from previous studies that suggested interferons could be upregulating ACE2, as there was no distinction between these two isoforms," said George Kassiotis, another co-author of the study.

"This highlights how scientific knowledge about SARS-CoV-2 is constantly being revised and updated as new research is carried out. We still have a lot to learn, but we are making rapid progress," Kassiotis said.

The researchers also found that cells in the upper aero-digestive tract, including the mouth and the nose, express more MIRb-ACE2 than the functional ACE2, and this balance changes lower in this tract and in the intestines.

They believe more research is needed to understand why this difference occurs and the impact it might have on how the virus spreads in the body. PTI

Global Covid-19 cases

Global Covid-19 cases top 42.5mn: Johns Hopkins (The Tribune: 20201026)

<https://www.tribuneindia.com/news/health/global-covid-19-cases-top-42-5mn-johns-hopkins-160888>

India comes in second place in terms of cases at 7,814,682, while the country's death toll soared to 117,956.

Global Covid-19 cases top 42.5mn: Johns Hopkins

The overall number of global coronavirus cases has topped 42.5 million. Reuters photo.

The overall number of global coronavirus cases has topped 42.5 million, while the deaths have soared to more than 1,148,940, according to the Johns Hopkins University.

As of Sunday morning, the total number of cases stood at 42,532,198, while the death toll surged to 1,148,943, the University's Center for Systems Science and Engineering (CSSE) revealed in its latest update.

The US is the worst-hit country with the world's highest number of cases and deaths at 8,571,943 and 224,771, respectively, according to the CSSE.

India comes in second place in terms of cases at 7,814,682, while the country's death toll soared to 117,956.

The other top 15 countries with the maximum amount of cases are Brazil (5,380,635), Russia (1,487,260), France (1,084,659), Argentina (1,081,336), Spain (1,046,132), Colombia (1,007,711), Mexico (886,800), Peru (883,116), the UK (857,043), South Africa (714,246), Iran (562,705), Italy (504,509), Chile (500,542), Iraq (449,153) and Germany (427,808), the CSSE figures showed.

Brazil currently accounts for the second-highest number of fatalities at 156,903.

The countries with a death toll above 10,000 are Mexico (88,743), the UK (44,835), Italy (37,210), Spain (34,752), France (34,536), Peru (34,033), Iran (32,320), Colombia (30,000), Argentina (28,613), Russia (25,647), South Africa (18,944), Chile (13,892), Indonesia (13,205), Ecuador (12,542), Belgium (10,658), Iraq (10,568) and Germany (10,015).

New algorithm

New algorithm predicts likelihood of acute kidney injury (The Tribune: 20201026)

<https://www.tribuneindia.com/news/health/new-algorithm-predicts-likelihood-of-acute-kidney-injury-160554>

AKI is common among hospitalised patients and has significant impact on morbidity and mortality

New algorithm predicts likelihood of acute kidney injury
Photo for representational purpose only. Thinkstock

A new artificial intelligence-based tool can help clinicians predict which hospitalised patients face a high risk of developing acute kidney injury (AKI), say researchers, including one of Indian-origin.

AKI is common among hospitalised patients and has a significant impact on morbidity and mortality.

Unfortunately, it's difficult to predict which patients are most likely to develop AKI and could benefit from preventative treatments.

To address this, the research team at Dascena Inc. in the US developed and evaluated a prediction algorithm based on machine learning, a type of artificial intelligence.

The algorithm analysed 7,122 patient encounters and was compared with the standard of care, the Sequential Organ Failure Assessment (SOFA) scoring system.

The Dascena algorithm outperformed SOFA, demonstrating superior performance in predicting acute kidney injury 72 hours prior to onset.

“Through earlier detection, physicians can proactively treat their patients, potentially resulting in better outcomes and limiting the severity of AKI symptoms,” said Ritankar Das, president and chief executive officer of Dascena.

This presentation highlights our algorithm's ability to provide this earlier detection over traditional systems, which could profoundly impact AKI management in the hospital setting in the future.

Antibodies

Antibodies against coronavirus detectable up to 7 months post COVID-19 onset, says study (The Tribune: 20201026)

<https://www.tribuneindia.com/news/health/antibodies-against-coronavirus-detectable-up-to-7-months-post-covid-19-onset-says-study-160472>

According to the research, the participants had antibodies with confirmed neutralisation activity for up to six months post-infection with the SARS-CoV-2 virus

Antibodies against coronavirus detectable up to 7 months post COVID-19 onset, says study
Photo for representation. iStock

Antibodies against the novel coronavirus follow a classic pattern with a rapid increase within the first three weeks after symptoms and detectable up to seven months post contracting the disease, according to a new study which assessed 300 patients infected with the virus and 198 post-COVID-19 volunteers.

According to the research published in the European Journal of Immunology, the participants had antibodies with confirmed neutralisation activity for up to six months post-infection with the SARS-CoV-2 virus.

The scientists, led by Marc Veldhoen from Instituto de Medicina Molecular (IMM) in Portugal, monitored the antibody levels of over 300 COVID-19 hospital patients and healthcare workers, 2500 university staff and 198 post-COVID volunteers.

They set up an in-house sensitive specific and versatile COVID-19 serology test.

The study reveals that 90 per cent of subjects have detectable antibodies up to seven months post contracting COVID-19.

It also found that age was not a confounding factor in levels of antibodies produced but disease severity is.

“Our immune system recognises the virus SARS-CoV-2 as harmful and produces antibodies in response to it, which helps to fight the virus,” Voldhoen said.

“The results of this six months cross-sectional study show a classic pattern with a rapid increase of antibody levels within the first three weeks after COVID-19 symptoms and, as expected, a reduction to intermediate levels thereafter,” he added.

Based on the findings, the scientists said men produced more antibodies on average than women “but levels equilibrate during the resolution phase and are similar between the sexes in the months after SARS-CoV-2 infection”.

In the acute phase of the immune response, the researchers observed higher antibody levels in subjects with more severe disease. They said age was not a confounding factor for the production of antibodies since no significant differences were observed between age groups.

While there was a reduction in the levels of antibodies over time, the team found that there was “robust neutralisation activity” for up to the seventh month post-infection in a large proportion of previously virus-positive screened subjects.

“Our work provides detailed information for the assays used, facilitating further and longitudinal analysis of protective immunity to SARS-CoV-2,” Veldhoen said.

“Importantly, it highlights a continued level of circulating neutralising antibodies in most people with confirmed SARS-CoV-2,” he added.

The researchers believe the next months will be critical to evaluate the robustness of the immune response to SARS-CoV-2 infection and to find clues for questions such as the duration of circulating antibodies and the impact of reinfection. PTI

Covid Recovery Rate (The Asian Age: 20201026)

<http://onlinepaper.asianage.com/articledetailpage.aspx?id=15185936>

Covid recovery rate nears 90%

AGE CORRESPONDENT
NEW DELHI, OCT. 24

India's national recovery rate has reached close to 90 per cent after 70.16 lakh persons have recovered from novel coronavirus out of the total positive cases detected so far.

On Saturday, India's total Covid tally reached 78.15 lakh with detection of 53, 370 fresh cases. In comparison to fresh cases, 67, 549 persons were discharged from medical supervision taking the national recovery rate to 89.78 per cent.

The total deaths due to the virus have reached 1.18 lakh out of which 650 fatalities took place in the last 24 hours. The Covid case fatality rate has further declined to 1.51 per cent.

India's 5-day moving average of daily rate of addition to total cases stands at 0.7%.

India's doubling time for total cases stands at 101.1 days, and for deaths at 125.4 days.

▶ **THE TOTAL** deaths due to the virus have reached 1.18 lakh out of which 650 fatalities took place in the last 24 hours. The Covid case fatality rate has further declined to 1.51 per cent

Overall, five states with the biggest 24-hour jump in total cases are Kerala (8511), Maharashtra (7347), Karnataka (5356), West Bengal (4143), and Delhi (4086).

According to the union health ministry, the active cases are less than 7 lakh for the second consecutive day and stand at 6.81 lakh and active cases comprise only 8.71% of the total positive cases of the country. 61% of the total recovered cases are from Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu, Uttar Pradesh and Delhi. Maharashtra has contributed the maximum with more than 13,000 single day recovery.

Coronavirus pandemic in India

A tool for thought: On coronavirus pandemic in India (The Hindu: 20201026)

<https://www.thehindu.com/opinion/editorial/a-tool-for-thought-on-coronavirus-pandemic-in-india/article32895575.ece>

Pandemic forecasts must be used to induce changes and avoid worst-case scenarios — a committee of experts — well-regarded mathematicians and infectious disease experts — appointed by the Department of Science and Technology to use mathematical modelling and forecast the course of the pandemic has brought good tidings. By their estimate, India passed its COVID-19 peak in September and the decline in the overall caseload being observed for nearly a month now is to continue. Active cases, about 7.5 lakh now, are expected to drop below 50,000 by December, and by February, the pandemic is likely to extinguish itself with only ‘minimal’ (not zero) infections. While it is reasonable to assume that the seven-member committee has been scrupulous, the caveat is that this is still a forecast based on mathematical modelling. There are some strong assumptions. The decline will continue only if there are no major mutations during winter, protective antibodies are durable, and current restrictions are maintained. There would be no significant gains from a strict lockdown beyond the district level, and current containment measures would suffice, except if there are local outbreaks that threaten to overwhelm health-care facilities there. Their calculation also showed a peak by July latest, with anything from six to 15 times the existing infections had there been no lockdown or if it had been delayed to April.

The purpose of pandemic modelling is to generate a probabilistic overview of the future and mathematical modelling has become a popular, creative exercise, with several models and forecasts being made available on pre-print servers and pending peer-review. The latest model is expected to be published in the Indian Journal of Medical Research this week, but it appears to be a quotidian exercise. The datasets it has relied on are publicly available and the modelling employs a category of models called SEIR that estimates, within a population, those Susceptible, Exposed, Infected and Recovered. It is extremely dependent on the quality of data that is used as an input and relies as much on simplifying assumptions that sacrifice complexity for comprehension but there is nothing to suggest, from what is known about the exercise, that it is more likely to be true than similar estimates from scores of models the world over that subscribe to a certain degree of rigour. Experts associated with the pandemic have reiterated many times that mathematical modelling ought not to be taken literally. The latest assessment too should then be used not to critique or justify past decisions but dwell more on the future. For instance, if the model suggests that the pandemic would extinguish by February with a dramatic dip by December, then should the accelerated clinical trials of potential vaccines be top priority? Mathematical models, to be useful, must induce policy or behavioural change to avoid their own worst-case scenarios and this latest assessment must be seen — no more, no less — as a tool to this end.

Breast cancer

Nearly 30 pc of breast cancer patients gain weight after receiving chemotherapy (New Kerala: 20201026)

<https://www.newkerala.com/news/2020/187768.htm>

Nearly 30 per cent patients with breast cancer gained weight after receiving chemotherapy treatment, suggested a study.

The study was published in the journal BMC Medicine.

Beyond weight gain, chemotherapy is also known to increase the risk of high blood pressure and glucose intolerance, a prediabetes condition. Although this is a familiar phenomenon, the mechanisms underlying these processes have not yet been identified.

Dr Ayelet Shai initiated the research study. He is Director of Oncology at the Galilee Medical Center, who led the study with Professor Omry Koren, an expert in gastrointestinal bacteria at the Azrieli Faculty of Medicine of Bar-Ilan University.

Dr Shai said that symptoms she has witnessed as an oncologist led her to initiate the study "In my clinical work with women recovering from breast and gynaecological tumours, I have seen many of them gain weight following treatment and experience difficulty returning to their original weight. When I read in the medical literature about the link between the microbiome and obesity in people without cancer, I thought it would be interesting to see if the microbiome of patients is one of the causes of obesity and other metabolic changes," she said.

The study conducted by Dr Shai and Prof Koren involved 33 women who were about to begin chemotherapy for breast cancer and gynaecological cancer. The women were weighed once before the treatment, and once again approximately five weeks after treatment began. Prior to treatment, a stool sample was used to genetically characterize the microbiome of each of the women. Nine of the women were found to have gained weight to a degree that was defined as significant (3 per cent or more). The microbiome of these women exhibited a smaller diversity of gut bacteria and different bacterial strains compared to that of the women who did not experience weight gain.

The study showed that the composition of intestinal bacteria may predict which women will gain weight as a result of chemotherapy. In addition, when the gut microbiota of women who gained weight were transferred to germ-free mice, they developed glucose intolerance and signs of the chronic inflammatory condition were detected in their blood. These findings suggest that bacteria are partially responsible for metabolic changes that lead to weight gain following chemotherapy treatment.

"We have shown for the first time that the pre-treatment microbiome of patients that gained weight following chemotherapy is different than the microbiome of patients that did not gain

weight and that faecal transplantation from patients that gained weight results in glucose intolerance, adverse lipid changes and inflammatory changes in germ-free mice," said Prof Koren. These results suggest that the intestinal microbiome is mediating metabolic changes in women treated by chemotherapy. Moreover, the pre-chemotherapy composition of the intestinal microbiome can predict which patients will gain weight following treatment.

Dr Shai and Prof Koren are currently in the midst of a follow-up study which aims to examine the results in a larger patient population and to examine the microbiome of women at the end of chemotherapy in order to understand the effect of the treatment on bacterial composition. The researchers also plan to study the effect of chemotherapy on obesity in germ-free mice following faecal transplantation.

If the results obtained in the initial study are repeated, it will be possible to consider a stool test for women before starting treatment, so that the patient knows if she is at risk of gaining weight. As October marks Breast Cancer Awareness Month, Dr Shai said, "We hope that in the future we will be able to identify those women who are at risk for weight gain through a simple examination and perhaps even suggest ways to prevent this phenomenon."

Blood transfusion

Blood transfusion increases risk of surgery outcomes in neonates, suggests study (New Kerala: 20201026)

<https://www.newkerala.com/news/2020/187757.htm>

A recent study suggested that blood transfusions may have a potential danger on the outcomes of surgeries on newborns.

The new study by Nemours Children's Health System researchers was published in the journal Pediatrics.

"In some cases, blood transfusions may be doing more harm than good when used before surgery in our most critically ill infants," said Loren Berman, MD, pediatric surgeon at Nemours Children's Health System in Delaware. "Giving a transfusion in anticipation of blood loss may seem prudent, but our findings suggest that a "wait and see" approach to giving infants blood during surgery may reduce surgical complications and the risk of death."

Neonatal patients, especially pre-term infants, often undergo blood transfusions to treat anaemia to increase oxygen delivery, especially in preparation for surgery. However, this treatment can have adverse effects, including stimulating an inflammatory response. Since there are currently no established guidelines defining red blood count thresholds for transfusion in neonatal surgical patients, there is significant variability in how and when transfusion is used before surgery.

Berman and her colleagues conducted a retrospective database analysis of 12,184 infants who underwent surgery between 2012 and 2015 using the American College of Surgeons National Surgical Quality Improvement Project Pediatric database. From there, a total 1,209 were identified who received a blood transfusion within 48 hours prior to surgery. The team compared the complications and deaths that occurred in this group within 30 days after surgery to those who did not receive a pre-operative transfusion. Because the group that received transfusions was found to be sicker prior to surgery, the team also conducted propensity score matching, statistical analysis to make a more equal comparison. Using both analytic approaches, pre-operative transfusions were independently associated with an approximately 50 per cent increased rate of postoperative complications or death in the 30 days post-surgery.

Given the findings, researchers concluded that blood transfusion may adversely affect surgical outcomes. They caution that prospective studies are needed to define transfusion thresholds to maximise the benefit of transfusion for anaemia while minimising the risk for surgical patients.

"It is clear that research is desperately needed to inform decision-making and improve surgical outcomes in these vulnerable infants," said Berman.

Artificial bone

Researchers discover artificial bone coating to avoid secondary surgical procedure (New Kerala: 20201026)

<https://www.newkerala.com/news/2020/187734.htm>

Researchers develop an artificial bone coating with stronger adhesion strength which may improve the success rate of implant surgeries.

The research was conducted at the Korea Institute of Science and Technology (KIST) Center for Biomaterials.

Bone disease is becoming increasingly prevalent in modern society due to population ageing among other factors, and the use of dental and orthopaedic implants to treat bone disease has been on the rise.

Despite the long history, however, there are still a number of issues associated with implant procedures such as a loose implant resulting from slow integration into the bone tissue or an inflammation necessitating a secondary surgical procedure.

To mitigate these issues, there has been an attempt to coat the implant material with 'artificial bone' that has the same composition as the actual human bone. Conventional coating methods, however, require a synthesis process to manufacture the artificial bone material and a separate coating process, which takes a long time. Plus, the binding between the substrate and the

artificial bone coating layer tends to be weak, resulting in damage or even drop-off, and strong coating methods that could be applied to actual patients in a clinical setting were rare.

Under these circumstances, Dr Hojeong Jeon's research team at KIST's Center for Biomaterials announced that they have developed a ceramic artificial bone coating with triple the adhesion strength compared to conventional coating materials.

The research team developed a technology to induce artificial bone coating, which had taken at least a day and required dozens of steps, in just one hour using a single process. By using the technique, there is no need to synthesize the raw material for artificial bone coating in a separate process, and it is possible to create the coating with a nanosecond laser without any expensive equipment or heat-treatment process.

Not only that, it is possible to form a coating layer with a stronger binding power than the few artificial bone coating techniques applied clinically today. Also, in case of using this process, it results in robust coating not only on metal surfaces but even on the surfaces of polymer materials such as orthopaedic plastic implants, which has not been possible with conventional processes.

In order to reduce the number of steps involved in the process as well as the duration and at the same time ensure robust coating, Dr Jeon's team positioned the material to be coated in a solution containing calcium and phosphorous, the main components of the bone and irradiated it with the laser. The temperature was raised in a localized manner at the target site of the laser, causing a reaction involving the calcium and phosphorous to produce ceramic artificial bone (hydroxyapatite) and the formation of a coating layer.

Unlike the conventional coating methods, the synthesis of the artificial bone component is induced by laser and, at the same time, the surface of the substrate is heated above the melting point for the artificial bone material to get adsorbed on the melted surface and get hardened as is, which maximizes the binding strength.

Dr Jeon said, "The hydroxyapatite coating method using nanosecond laser is a simple way to induce bioactivity in non-bio-active materials such as titanium and PEEK that are commonly used as biomaterials. I anticipate that it will become a game-changer in that it will have wide applications to diverse medical devices where osseointegration is needed.

Herpes infection

Herpes infection may impair human brain development: Study (New Kerala: 20201026)

<https://www.newkerala.com/news/2020/187707.htm>

Three cell-based models shed light on how herpes simplex virus type 1 (HSV-1) infection, which can spread to the fetal brain during pregnancy, may contribute to various neurodevelopmental disabilities and long-term neurological problems into adulthood, say researchers.

According to the study, published in the journal PLOS Pathogens, HSV-1 is a highly prevalent pathogen that can cause lifelong neurological problems such as cognitive dysfunction, learning disabilities, and dementia.

"But progress in understanding the role of HSV-1 in human fetal brain development has been hampered by restricted access to fetal human brain tissue as well as limitations of existing animal models," said study authors from Wuhan University in China.

To address this gap in knowledge, the researchers generated three different cell-based neurodevelopmental disorder models, including a 2D layer of cells and a 3D brain-like structure.

These models are based on human induced pluripotent stem cells (hiPSCs) - immature, embryonic stem cell-like cells that are generated by genetically reprogramming specialized adult cells.

According to the researchers, HSV-1 infection in neural stem cells derived from hiPSCs resulted in activation of the caspase-3 apoptotic pathway, which initiates programmed cell death.

HSV-1 infection also impaired the production of new neurons, and hindered the ability of hiPSC-derived neural stem cells to convert into mature neurons through a process called neuronal differentiation.

Moreover, the HSV-1-infected brain mimicked the pathological features of neurodevelopmental disorders in the human fetal brain, including impaired neuronal differentiation and abnormalities in brain structure.

In addition, the 3D model showed that HSV-1 infection promotes the abnormal proliferation and activation of non-neuronal cells called microglia, accompanied by the activation of inflammatory molecules, such as TNF-a, IL-6, IL-10, and IL-4.

According to the authors, the findings open new therapeutic avenues for targeting viral reservoirs relevant to neurodevelopmental disorders.

"This study provides novel evidence that HSV-1 infection impaired human brain development and contributed to the neurodevelopmental disorder pathogen hypothesis," authors wrote.

Cholesterol medications

Lower rate of cancer related death noticed in women taking cholesterol medications (New Kerala: 20201026)

<https://www.newkerala.com/news/2020/187694.htm>

Among women with breast cancer, colorectal cancer, or melanoma, those who were taking cholesterol-lowering medications, were less likely to die from cancer.

The analysis was published in the British Journal of Clinical Pharmacology.

The analysis included 20,046-11-719 and 6,430 women in Australia who were diagnosed with breast cancer, colorectal cancer, and melanoma, respectively, from 2003 to 2013. The women had been prescribed cholesterol-lowering medications such as statins before their diagnosis.

The more consistently women took these medications in the year after being diagnosed with cancer, the lower their likelihood of dying from the disease, suggesting that the drugs may have anti-tumour effects.

"If this inverse adherence-response relationship is confirmed, cholesterol-lowering medications -- primarily statins -- could be repurposed as adjuvant therapy to improve cancer prognosis," said co-author Jia-Li Feng, BMed, MMed, PhD, of QIMR Berghofer Medical Research Institute.

Chemotherapy treatments

Study reveals about 60 per cent cancer patients do not respond effectively to chemotherapy treatments (New Kerala: 20201026)

Nearly 60 per cent of all cancer patients do not respond effectively to chemotherapy treatments, as estimated by scientists from Purdue University. In recent research, they say that the results can be even worse - as many of those same patients experience toxic and sometimes deadly side effects.

Now, a Purdue University scientist and entrepreneur working to use simple LED light to help determine if certain chemotherapy options will work for specific patients. The work is published in Scientific Reports. "We are using a technique very similar to Doppler radar used in the weather to advance personalized medicine," said David Nolte, the Edward M. Purcell Distinguished Professor of Physics and Astronomy in Purdue's College of Science. "We take the LED light and shine it on biopsies. We then apply chemotherapy to the biopsies and analyse how the light scatters off the tissues."

Nolte, who also is a member of the Purdue University Center for Cancer Research, said the light scattering dynamics give scientists and doctors detailed information about the likelihood of a chemotherapy drug being effective for a patient. Nolte said they have results within 24 hours. This first trial looked at biodynamic imaging on human patients with ovarian cancer.

"We look for signs of apoptosis, or what we call the controlled death of cells," Nolte said. "Apoptosis is the signal that indicates the effectiveness of the chemotherapy for this patient's tissues and tumours. For some cancers, there are so many treatment options available that it's

like a doctor is trying to fit square pegs in circular holes until the desired outcome is found. We want to make this process better for patients."

Nolte has worked with several groups within the Purdue entrepreneurial and commercialization ecosystem, including the Purdue Foundry, on business plan development and management searches. AniDyn, a medical technology startup, was spun out of Purdue by professors Nolte and John J. Turek. AniDyn is focused on the development and commercialization of live-tissue imaging platform technologies.

Nolte also works closely with the Purdue Research Foundation Office of Technology Commercialisation to patent and license his technologies.

Swine flu

Risk of Swine flu in MP amid season change & pandemic (New Kerala: 20201026)

<https://www.newkerala.com/news/2020/187579.htm>

The risk of swine flu has increased in Madhya Pradesh with change in weather amid the ongoing corona pandemic. The state Health Department has issued guidelines to its officials to deal with the possible threat of swine flu and asked for immediate measures to tackle any eventuality.

The Directorate of Health has written to all the Chief Medical and health officials as well as Civil Surgeons in the state that due to the change in weather the possibility of swine flu seasonal influenza (H1N1) affecting people has increased.

In the screening, diagnosis, treatment and prevention of potential seasonal influenza (H1N1) cases necessary protocols and guidelines by the Government of India must be followed and acted upon.

Children, pregnant women and people suffering from any fatal disease are at the highest risk of catching this fever so they need to be more vigilant.

All health officials have been instructed to send twice daily the reports of common cold and cough patients in clinics to the state surveillance units.

COVID-19 anxiety

Body image issues may be stemming from COVID-19 anxiety: Study (New Kerala: 20201026)

<https://www.newkerala.com/news/2020/187552.htm>

A number of body image issues amongst men and women may be linked to anxiety and stress stemming from COVID-19, suggest the findings of a new study.

The research, led by Professor Viren Swami of Anglia Ruskin University (ARU) and published in the journal *Personality and Individual Differences*, involved 506 UK adults with an average age of 34.

Amongst women, the study found that feelings of anxiety and stress caused by COVID-19 were associated with a greater desire for thinness. It also found that anxiety was significantly associated with body dissatisfaction.

Amongst the male participants, the study found that COVID-19-related anxiety and stress were associated with a greater desire for muscularity, with anxiety also associated with body fat dissatisfaction.

Negative body image is one of the main causes of eating disorders, such as anorexia and bulimia, and this new study adds to recent research indicating that fears around COVID-19, and the consequences of the restrictions introduced to help tackle it, could be contributing to a number of serious mental health issues.

Lead author Viren Swami, Professor of Social Psychology at Anglia Ruskin University (ARU), said "In addition to the impact of the virus itself, our results suggest the pandemic could also be leading to a rise in body image issues. In some cases, these issues can have very serious repercussions, including triggering eating disorders.

"Certainly during the initial spring lockdown period, our screen time increased, meaning that we were more likely to be exposed to thin or athletic ideals through the media, while decreased physical activity may have heightened negative thoughts about weight or shape. At the same time, it is possible that the additional anxiety and stress caused by COVID-19 may have diminished the coping mechanisms we typically use to help manage negative thoughts."

"Our study also found that when stressed or anxious, our pre-occupations tend to follow gender-typical lines. During the lockdown, women may have felt under greater pressure to conform to traditionally feminine roles and norms, and messaging about self-improvement may have led to women feeling dissatisfied with their bodies and having a greater desire for thinness.

"Similarly, our findings reflect the way in which stress and anxiety impact men's relationships with their bodies, particularly in terms of masculine body ideals. Given that masculinity typically emphasises the value of toughness, self-reliance, and the pursuit of status, COVID-19-related stress and anxiety may be leading men to place greater value on the importance of being muscular."

Health Care Services (Hindustan: 20201026)

https://epaper.livehindustan.com/imageview_406774_128280714_4_1_26-10-2020_2_i_1_sf.html

तैयारी : दिल्ली के कोविड अस्पतालों में 25% बेड बढ़ेंगे

नई दिल्ली | वरिष्ठ संवाददाता

कोरोना मरीजों के बढ़ने की आशंकाओं के बीच दिल्ली सरकार ने कोविड अस्पतालों में बेड बढ़ाने की तैयारी शुरू कर दी है। सरकार ने अस्पतालों से 25 फीसदी से अधिक बेड बढ़ाने के लिए कहा है। चिकित्सा अधीक्षकों से प्लान मांगा गया है।

एक वरिष्ठ अधिकारी के मुताबिक वीके पॉल समिति ने कहा था ठंड और प्रदूषण के कारण संक्रमितों की संख्या रोजाना 15 हजार तक पहुंच सकती है। उन्होंने कहा कि मरीजों को इलाज में कोई दिक्कत ना हो इसलिए तैयारी शुरू कर दी गई है। सभी बेड पर ऑक्सीजन की सुविधा उपलब्ध होगी।

जांच बढ़ाई गई: मुख्यमंत्री अरविंद केजरीवाल ने भी एक दिन पहले कहा था कि सरकार इलाज के लिए हर जरूरी कदम उठा रही है। वहीं, स्वास्थ्य विभाग ने जांच बढ़ा दी है।

लगातार बढ़ रहे मरीज: कुछ दिनों

15

हजार 737
कोविड बेड
अस्पतालों में

05

हजार से
अधिक मरीज
भर्ती हैं इनमें

10

हजार से अधिक कोविड
बेड खाली हैं राजधानी
के अस्पतालों में

आफत: संक्रमण के साथ अस्पताल में मरीज बढ़े

तारीख	मरीज	भर्ती
21 अक्टूबर	3686	5081
22 अक्टूबर	3882	5116
23 अक्टूबर	4086	5182
24 अक्टूबर	4116	5323

आसार: सर्दियों में बढ़ेंगे केस

दिल्ली में त्योहारों और सर्दियों में कोरोना के मामले एक बार फिर बढ़ सकने हैं। दिल्ली के उपायुक्त मंत्री