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LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY

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कोल्ड प्लाज्मा

हवा के लगभग सभी वायरस खत्म कर सकता है कोल्ड प्लाज्मा (Dainik Jagran:20190411)

https://www.jagran.com/world/america-cold-plasma-can-kill-99-percent-of-airborne-viruses-as-per-study-19117140.html

अमेरिका की यूनिवर्सिटी ऑफ मिशिगन के वैज्ञानिकों का कहना है कि तकनीक भविष्य में सर्जिकल मास्क की जगह ले सकती है। प्लाज्मा की यह व्यवस्था हवा से 99.9 फीसद वायरस निष्क्रिय कर सकती ह

वाशिंगटन, प्रेट्र। हवा से फैलने वाले खतरनाक वायरस को खत्म करने की दिशा में उम्मीद की नई किरण दिखी है। वैज्ञानिकों ने कोल्ड प्लाज्मा की मदद से हवा में फैले वायरस को निष्क्रिय करने में सफलता हासिल की है। ऊर्जा से भरपूर और आवेशित हवा के अणुओं को कोल्ड प्लाज्मा कहा जाता है। इस तरह के नॉन थर्मल प्लाज्मा स्पार्क जैसे इलेक्ट्रिकल डिस्चार्ज के आसपास बनते हैं।

अमेरिका की यूनिवर्सिटी ऑफ मिशिगन के वैज्ञानिकों का कहना है कि यह तकनीक भविष्य में सर्जिकल मास्क की जगह ले सकती है। प्लाज्मा की यह व्यवस्था हवा से 99.9 फीसद वायरस निष्क्रिय कर सकती है। इसकी बड़ी खूबी यह भी है कि वायरस को निष्क्रिय करने का यह काम कुछ सेकेंड के भीतर ही हो जाता है।

अस्पतालों व ऐसी जगहों पर जहां साफ हवा की जरूरत होती है, वहां यह तकनीक बेहद कारगर साबित होगी। रिसर्च एसोसिएट हेरेक क्लैक ने कहा, 'बीमारियों के फैलने का एक बड़ा माध्यम हवा है। इससे

बचना भी मुश्किल होता है, क्योंकि सांस लेते समय वायरस से बचने का हमारे पास कोई तरीका नहीं होता।'

बचाव के तौर पर लोग मास्क लगाते हैं, लेकिन उसका प्रभाव सीमित होता है। मास्क केवल वायरस को फिल्टर करके शरीर में आने से रोकता है, उन्हें खत्म या निष्क्रिय नहीं करता।

क्लैक ने बताया कि प्लाज्मा की इस व्यवस्था से गुजरते हुए रेडिकल कहे जाने वाले अस्थिर परमाणु वायरस को ऑक्सीडाइज्ड कर देते हैं। इसके बाद जो वायरस बचता है, उसमें कोशिकाओं को प्रभावित करने की शक्ति नहीं रह जाती।

अभी हवा से वायरस खत्म करने के लिए फिल्टर और अल्ट्रावॉयलेट किरणों का प्रयोग किया जाता है। वैज्ञानिकों का दावा है कि नॉनथर्मल प्लाज्मा से हवा को साफ करने का नया तरीका पारंपरिक तरीकों से ज्यादा कारगर साबित हो सकता है।

कैंसर

अध्ययन में हुआ खुलासा, सिर्फ खून सूंघकर कैंसर का पता लगा सकते हैं कुत्ते (Dainik Jagran:20190411)

https://www.jagran.com/world/america-dog-can-detect-cancer-by-just-smelling-blood-discovered-in-the-study-19117736.html

अध्ययन के दौरान 97 फीसद मामलों में कुत्तों ने की सही पहचान। कैंसर की सही समय पर जांच से बच सकती है हजारों लोगों की जान।कुत्तों की इस क्षमता का इस्तेमाल कैंसर का पता लगाने में होगा।

न्यूयॉर्क, आइएएनएस। कुत्तों को इंसानों का सबसे वफादार दोस्त माना जाता है। अब यह वफादार दोस्त कैंसर जैसी बीमारी की जांच में भी मददगार साबित हो सकता है। अमेरिकी हेल्थकेयर कंपनी बायो सेंटर डीएक्स ने हालिया अध्ययन में पाया है कि कुत्ते खून सूंघकर कैंसर का पता लगा सकते हैं। इनके नतीजे 97 फीसद तक सही पाए गए हैं। वैज्ञानिकों को उम्मीद है कि इससे कैंसर की जांच का नया सस्ता और बिना चीरफाड़ वाला तरीका ईजाद हो सकता है।

कुत्तों में इंसानों की तुलना में सूंघने की क्षमता 10,000 गुना ज्यादा होती है। इसीलिए कुत्ते अलग-अलग महक को लेकर बेहद संवेदनशील होते हैं। जांच एजेंसियों द्वारा अपराधियों और लापता लोगों की तलाश के लिए कुत्तों का प्रयोग पूरी दुनिया में होता है। विस्फोटकों का पता लगाने में भी कुत्तों की यह खूबी काम आती है।

वैज्ञानिकों को उम्मीद है कि अब कुत्तों की इस क्षमता का इस्तेमाल कैंसर का पता लगाने में हो सकेगा। प्रमुख शोधकर्ता हीथर जनक्वेरा ने कहा, 'कैंसर का यद्यपि कोई इलाज नहीं है, लेकिन अगर सही समय पर पता लग जाए तो इसे ठीक करने की उम्मीद बढ़ जाती है। कैंसर की जांच की बेहतर तकनीक हजारों लोगों की जिंदगी बचाने में मददगार हो सकती है। इससे इलाज के तरीके में भी बड़ा बदलाव हो सकता है।' अध्ययन के नतीजों को फ्लोरिडा में अमेरिकन सोसायटी फॉर बायोकेमिस्ट्री एंड मॉलिक्यूलर बायोलॉजी की सलाना बैठक में प्रस्तुत किया जाएगा।

अध्ययन के लिए वैज्ञानिकों ने बीगल प्रजाति के चार कुत्तों को प्रशिक्षित किया। इन कुत्तों को सामान्य व स्वस्थ व्यक्ति के खून तथा फेफड़े के कैंसर (लंग कैंसर) से पीड़ित व्यक्ति के खून में फर्क की पहचान कराई गई। प्रशिक्षण के बाद दिए गए सैंपल में कुत्तों ने लंग कैंसर की 96.7 फीसद तक सही पहचान की। सामान्य खून को कुत्तों ने 97.5 फीसद तक सही पहचाना।

शोधकर्ता जनक्वेरा ने कहा, 'नतीजे बेहद उत्साहजनक हैं। यह अध्ययन दो रास्ते खोलता है, जिन पर चलकर कैंसर की जांच के नए तरीके ईजाद किए जा सकते हैं। पहला रास्ता है कि कुत्तों की मदद से कैंसर का पता लगाया जाए। दूसरा रास्ता है कि उस बायोलॉजिकल कंपाउंड का पता लगाया है, जिसकी मदद से कुत्ते कैंसर को पहचानते हैं। उस कंपाउंड का पता लगने के बाद कैंसर का पता लगाने के लिए जांच का नया तरीका ईजाद किया जा सकता है।'

Cancer: Scientists find 129 'jumping genes' that drive tumor growth (Medical News Today: 20190411)

https://www.medicalnewstoday.com/articles/324936.php

In cancer research, scientists usually look for cancer genes by scouring the genome for altered sequences — or mutations — in DNA. But a new study has now revealed that jumping genes, which customary sequencing overlooks, are also important drivers of tumor growth.

Researchers have uncovered 129 jumping genes that may drive cancer.

Scientists at the Washington University School of Medicine in St. Louis, MO, found that jumping genes are widespread in cancer and promote tumor growth by forcing cancer genes to remain switched on.

They analyzed 7,769 tumor samples from 15 different types of cancer and found 129 jumping genes that can drive tumor growth through their influence on 106 different cancer genes.

The jumping genes were functioning as "stealthy on-switches" in 3,864 of the tumors that the team analyzed. These tumors came from breast, colon, lung, skin, prostate, brain, and other types of cancer.

A recent Nature Genetics paper gives a full account of the study.

By identifying jumping genes as potential genetic targets, the findings break new ground in the quest for novel cancer treatments.

"If you," says Ting Wang, who is a professor of medicine in the Department of Genetics, "perform typical genome sequencing, looking for genetic mutations driving cancer, you're not going to find jumping genes."

A disease of many genetic facets

Cancer develops when the genetic instructions that govern how cells function, particularly how they mature and divide, undergo certain changes.

Some of the genetic changes that cause cancer alter the body's natural curbs on cell growth; others might disrupt the structure and function of proteins that carry out the work of cells and keep them in good repair.

How does tumor acidity help cancer spread?

A pH-probe helps scientists to see how acidification in tumors changes gene expression to increase cancer spread.

Genetic changes with the potential to cause cancer can pass on from parent to child. They can also arise during a person's lifetime, such as during cell division, or in response to ultraviolet radiation, carcinogens in tobacco smoke, or other environmental factors.

There are different types of genetic changes. Some affect just a single building block of DNA, while others can duplicate, omit, or rearrange long sequences of building blocks.

Another way that genetic changes can lead to cancer does not alter the DNA itself but changes its ability to express its instructions. This type of change is called epigenetic. One way that it happens is through chemical tags that attach to the DNA.

It is normal for cells, even healthy ones, to have genetic alterations, but cancer cells tend to have many more of these. Each person's cancer will have its own pattern of genetic changes, and even in the same tumor, different cells could have different genetic fingerprints.

Jumping genes — a new type of driver

Jumping genes, which scientists call transposable elements, are sequences of DNA that can move around in a genome. They "come in many different forms and shapes," and scientists need specialized tools to analyze them.

Thanks to improved and powerful techniques, scientists are realizing that jumping genes are very active in the genome and that perhaps "they should no longer be marginalized."

How jumping genes made their way into the human genome during evolution is a hot question. Some people have argued that viral infection has been a common route.

Previous studies have shown that specific elements within jumping genes can influence the expression of cancer genes. However, these have not investigated such events in much detail or explored how common they might be in different cancers.

So, Prof. Wang and his team decided to address these points by using tumor samples from The Cancer Genome Atlas program.

They discovered that jumping genes are a feature of many cancers with accelerated tumor growth.

It appears that in these more aggressive cancers, the jumping genes behave as "cryptic switches" that switch on cancer-related genes that are usually silent — and keep them switched on.

Jumping genes vary among cancer types

A critical finding of the study is that while jumping genes appear to be widespread in cancer, their pattern of presence and influence varies across cancer types.

The team found, for instance, that 12 percent of glioma brain cancers had at least one jumping gene, whereas this figure was 87 percent for a type of lung cancer called squamous cell carcinoma.

"Jumping genes are more important in some cancer types versus others, but on average, we found at least one of them activating a cancer gene in about half of all the tumors we studied," Prof. Wang explains.

He suggests that giving doctors this type of information could help them decide whether to treat particular cancers "more aggressively."

"It also provides new targets to study for future cancer therapies," he adds.

Another important finding was that jumping genes operating as stealthy on-switches were more prevalent in cancers whose DNA shape was more open. The genome typically keeps DNA tightly closed. Open-shaped DNA is more likely to lose some of its function.

"A lot of what transposable elements are doing in our genome is still a mystery. This study is the first detailed outline of their important roles in cancer."

Prof. Ting Wang

Public Health

A Rare Opportunity (The Indian Express:20190411)

https://indianexpress.com/article/opinion/columns/health-policy-rare-diseases-healthcare-opportunity-5669411/

New rare disease policy is a chance to create an inclusive public health imagination.

The government must not abandon the rare disease community to the market mechanism. Low incidence makes rare diseases “unprofitable” and companies are reluctant to invest in them.

Recent developments have not given the rare disease community much to celebrate. The suspension of the National Policy for the Treatment of Rare Diseases was a rude shock, particularly for those patients who were relying on the money allotted through the policy for life-saving treatments. A rare disease affects a small percentage of people. Most rare diseases are chronic and severe, leading to death or disability. Since these diseases are not found commonly, doctors are typically unaware about them and therefore either misdiagnose or do not diagnose them. This further decreases recorded incidence of the disease, which in turn diminishes interest in understanding the disease and finding treatments for it. This cycle of neglect can only be overcome by strong support from the government.

Unfortunately, India's suspended rare disease policy has reinforced the premise that public health is a game of numbers, not lives. There is an implicit calculation as the high "opportunity cost" of treating someone with a rare disease is considered a sound basis for negligible governmental spending on rare disease. While it is impractical to ignore fiscal constraints, India's meagre 1.15 per cent of GDP allocation to healthcare amplifies this dilemma and turns it into a decision of "balancing" disease incidence. A cold utilitarian calculation is a disturbing basis for public policy because it perpetuates marginalisation and subverts the state's duty to treat its citizens equally.

It is not surprising that in various orders recognising the rights of rare disease patients, the Delhi High Court has categorically stated that low disease incidence cannot be the state's basis for denying someone the right to life enshrined under Article 21 of the Constitution. The HC has also demanded that the government promptly frame a new rare disease policy that incorporates global best practices. To respect the HC's directions, a new policy must be founded on non-discriminatory ideals. Policymakers will have to address fiscal constraints without devaluing lives of entire patient populations.

The government should create a new policy that is based on different fundamentals. The suspended policy's narrow focus on allocating funds to treat a select few rare diseases to the exclusion of untreatable diseases lacked vision and is costly. When only 5 per cent of all rare diseases are treatable, it is extremely problematic for a government's rare disease policy to state that its least priority is to allocate money to diseases that cannot be treated. Yet, per the government's calculation, it should spend first on diseases that can be treated through a one-time treatment, then on diseases that need regular treatments and last on diseases with no treatment. In doing so, it effectively excluded 95 per cent of rare diseases from its purview.

A new and inclusive rare disease policy should allocate substantial resources to research for the development of new platform therapies that could commonly treat different rare diseases, with the additional possibility of simultaneously bringing down the costs of current treatments. More research will also facilitate greater interest in rare diseases in the medical community, increasing rates of diagnosis and improving medical care.

Increased focus on research could help develop cheaper treatments. Giving incentives to pharmaceutical companies to develop treatments for rare diseases has resulted in treatments being priced so exorbitantly that even the government cannot afford to procure them for the economically weaker sections of society. Facilitating increased profits while helpful in creating incentives for research, ignores the problems that the prohibitively high cost of treatments create once they do become available in the market. In India, where most patients are un-insured and rare diseases fall outside the insurance system, increased drug prices through patent protection will further increase patient dependence on government financing.

The government must not abandon the rare disease community to the market mechanism. Low incidence makes rare diseases "unprofitable" and companies are reluctant to invest in them.

Bhattacharya is associate professor and Deviah is a student at Jindal Global Law School. Both are associated with World Without GNE Myopathy, a rare disease patient advocacy organisation.

Candida auris

A growing threat (The Indian Express:20190411)

https://indianexpress.com/article/opinion/editorials/superbug-drug-resistance-antibiotics-candida-auris-a-growing-threat-5669419/

The latest drug-resistant microbe may not be a creation of overmedication, but of the overuse of fungicides in agriculture.

Whether resistance is of medical or agricultural origin, the solution is the same: Public education against the arbitrary use of antimicrobial drugs.

There's a new superbug on the loose. Candida auris was first described as a pathogen in 2009, when it was found infesting a Japanese woman's ear (whence the auris) and in the decade since, it has been reported in 32 countries, including India and Pakistan. A hardy fungus, undeterred by antifungals, it may have killed a third of the several hundred people it has infected, and is at the new threat horizon of drug-resistant microorganisms. Sulpha drugs and penicillin liberated the human race from the tyranny of microbes, which used to casually cut short lives. Easily accessible antimicrobials made possible an era of improving public health, which changed the fortunes of nations and, arguably, altered the course of history. But now, an excess of access threatens to send us back to the dark times before penicillin, when ordinary micro-organisms — even soil bacteria — could slay the weak at will. Candida auris has gained infamy as a hospital-acquired infection, and like other resistant organisms, preys on people with poorly developed or compromised immune systems, including newborns, the elderly and diabetics. In a few decades, they could represent a greater threat to life than cancer.

It's anthropogenic Darwinism at work. Drug-resistant strains of microorganisms commonly develop from flawed prescription regimes, a matter of concern for decades. In affluent populations, they may be caused when patients demand overmedication. But slums in poor countries probably yield a richer crop, with patients buying antimicrobials over the counter from untrained shopkeepers. The method is hit-or-miss, a full course of medicines is rarely taken, and the bugs that survive are those resistant to medication. Over time, the efficacy of

the antimicrobial can only diminish. But the cause for the Candida auris rampage lies deeper, in the over-use of antifungals in agriculture and animal husbandry. This has wiped out whole species, giving hitherto fringe species room to flourish. The new superbug is a country cousin of the well-known Candida albicans, which causes the oral infection called thrush. But the hitherto obscure organism now represents a far greater threat to humans.

Whether resistance is of medical or agricultural origin, the solution is the same: Public education against the arbitrary use of antimicrobial drugs. It did not work earlier, when it was a largely theoretical issue. But now that organisms like Candida auris are actually killing patients and contaminating entire hospital wards, as it has done in the US, UK and Spain, audiences will be more receptive.

Healthcare

Quality control a must to bolster healthcare (The Tribune:20190411)

https://www.tribuneindia.com/news/comment/quality-control-a-must-to-bolster-healthcare/756751.html

The healthcare that people receive is often inadequate, with the most vulnerable populations faring the worst. There is a need for fewer but better measures of outcomes, people's confidence in the system, system competence and user experience, along with measures of financial protection and equity.

THE Global Burden of Disease study (2018) gives us a good indication of the current status of our health sector. India has improved its ranking on global healthcare access and quality (HAQ) index from 153 in 1990 to 145 in 2016. Nevertheless, India's score of 41.2 points is well below the global average of 54.4. We rank lower than neighbouring Bangladesh and Sri Lanka, and even Bhutan with 47.3 points has done far better! Within India, best performers Goa and Kerala scored more than 60 points on the HAQ index, while Assam and Uttar Pradesh were among the laggards. Recent surveys by the Association for Democratic Reforms show that healthcare and drinking water matter the most to people after jobs.

The Global Hunger Index (2018) puts India at the 103rd rank out of 119 countries. Because of poorly fed mothers, lack of adequate food for children in the first two years of their lives, and causes such as malaria, 38.4 per cent of Indian children under 5 are stunted (height for age); 21 per cent are wasted (weight for height) and 35.8 per cent are under-weight. Timely treatment could save the lives of malnourished children. Those who remain untreated are at

risk of dying from diarrhoea and acute respiratory infections, delayed growth and impaired brain development.

Seventy per cent of our water is contaminated; India is ranked 120th among 122 countries on the water quality index. The poor water quality, according to the NITI Aayog, causes around two lakh deaths every year. The prolonged exposure to poor-quality air, with an Air Quality Index between 300 and 500, causes respiratory illness, affects healthy individuals and seriously distresses those with existing diseases.

The social determinants are equally unfavourable. According to a recent ASER survey (2018), 13.5 per cent of the girls in the 15-16 age group were not enrolled in schools because of the perceived poor quality of education, concerns about their safety, and work demands at home. Such girls are likely to be married early and become vulnerable to complications during pregnancy and childbirth, the leading cause of death for 15 to 19-year-old girls globally.

These differences are further accentuated by large variations in physical access to health facilities, the state of health infrastructure, the level and scale-up of medical technologies, and the provision of effective services across the spectrum of care.

The care that people receive is often inadequate, with the most vulnerable populations faring the worst. Less than half of the suspected cases of tuberculosis are correctly managed, and fewer than one in 10 persons diagnosed with major depressive disorder receive minimally adequate treatment.

Existing indicators, however, do not capture many of the processes and outcomes that matter the most to people. There is a need for fewer but better measures of outcomes, people's confidence in the system, system competence and user experience, along with measures of financial protection and equity.

Effective registration of births and deaths, and dependable routine health information systems are prerequisites for good performance assessment. This has to be supplemented by regular rapid surveys to validate the data and understand the health status of the population. This would require huge investment in national institutions and capacity-building of health professionals in quantitative and qualitative skills to make sense of the available data. Simultaneously, new research would be required for measuring the quality of the health system as a whole, across the care continuum.

According to 'The Lancet Global Health Commission, on High Quality Health Systems in the SDG Era', more than 8 million people per year in low and middle income countries (LMICs) die from conditions that should be treatable by the health system. In 2015, these deaths resulted in $6 trillion in economic losses. About 60 per cent of the deaths from conditions amenable to healthcare are due to poor-quality care. The remaining deaths result from non-utilisation of the health system. High-quality health systems could prevent 2.5 million deaths from cardiovascular disease, 1 million newborn deaths, 9,00,000 deaths from tuberculosis, and half of all maternal deaths, in the LMICs each year.

The health system leaders need to adopt a shared vision of quality care, a clear quality strategy, strong regulation, and continuous learning. There is a need for partnerships between the Health Ministry, the private sector, civil society, and sectors outside of healthcare, such as education, infrastructure, communication and transport. Countries should redesign service delivery to maximise health outcomes rather than geographical access to services alone. Countries should transform the health workforce by adopting competency-based clinical education, introducing training in ethics and respectful care, and better supporting and respecting all workers to deliver the best care possible. Governments and civil society should ignite demand for quality to empower people to hold systems accountable and actively seek high-quality care.

Additional targeted actions in areas such as healthcare financing, management and district-level learning can complement these efforts. India currently spends just 1.4 per cent of the GDP on health, as against the WHO recommendation of 4-5 per cent to achieve universal healthcare. The Pradhan Mantri's Jan Arogya Yojana (PM-JAY) is a step towards achieving universal health coverage (UHC). It provides financial protection of Rs 5 lakh each to almost 10.7 crore poor households against hospitalisation costs. It also aims at strengthening healthcare infrastructure in tier 3 and 4 towns where most of the beneficiaries reside. The urgency of operationalisation should not, however, come in the way of doing things that are important. Progress on the UHC should be measured on the basis of effective (quality-corrected) coverage of the poor. Providing health services without guaranteeing a minimum level of quality would be ineffective, wasteful and unethical.

The onus is on the media to confront political leaders with probing questions that are crucial to people's health and guide voters to make informed choices.

Water Crisis

Usable groundwater 'rapidly depleting' in north, east India (The Tribune:20190411)

https://www.tribuneindia.com/news/nation/usable-groundwater-rapidly-depleting-in-north-east-india/756487.html

Haryana has highest level, HP lowest, says IIT study

India's northern and eastern states saw a rapid decline in usable groundwater between 2005 and 2013, raising an impending risk of severe droughts, food crisis, and drinking water scarcity for millions of people, researchers have found.

A team from IIT-Kharagpur, West Bengal and Athabasca University, Canada, compiled the first estimates of usable groundwater storage (UGWS) at the state-level across India using both in situ and satellite-based measurements.

Groundwater-level data was used from 3,907 in situ monitoring wells and estimate shows rapid depletion of UGWS in Assam, Punjab, Haryana, UP, Bihar and West Bengal.

In these areas, increases in agricultural food productions have resulted at the cost of non-renewable loss in groundwater volume at an alarming rate, the researchers wrote in the study published in the journal "Advances in Water Resources". On the other hand, southern and western states like Andhra, Maharashtra, Gujarat and Chhattisgarh show replenishing usable groundwater storage trends.

Earlier works by the government agencies have only been able to estimate the total groundwater, only a part of which is usable for human purposes, said lead researcher Abhijit Mukherjee, Associate Professor Hydrogeology, Department of Geology and Geophysics, IIT-Kharagpur.

Assam, which was regarded as water-affluent, has lost two per cent of its usable groundwater resource, and is at the brink of suffering drought and famine in impending years. Haryana, which gets an annual precipitation of 689 mm, holds the highest levels of usable groundwater with 3,593 cm, while Himachal with a precipitation of 1,147 mm per year has the lowest UGWS level of 520 cm. — PTI

Smoking

Smokers spent $700 billion on cigarettes in 2017, says WHO (The Hindu:20190411)

https://www.thehindu.com/sci-tech/health/smokers-spent-700-billion-on-cigarettes-in-2017-says-who/article26799361.ece

Cigarette butts are the most common form of anthropogenic litter and constituted a significant proportion of the total litter in the world – but they often go unnoticed.

Global cigarette sales in 2017 stood at $700 billion, the World Health Organisation (WHO) tweeted, highlighting the fact that the amount was 250 times more than what the international organisation needed to protect human health.

“This is what people spend every year on health-destroying products. It’s like paying to die and is 250 times more than what World Health Organisation (WHO) needs to protect and promote the most precious commodity on earth — human health,’’ it said in a Twitter post on tobacco abuse worldwide.

Six million deaths

WHO noted that tobacco is the only legal drug that kills many of its users when used exactly as intended by manufacturers.

It is estimated that tobacco use (smoking and smokeless) is currently responsible for the death of about six million people across the world each year with many of these deaths occurring prematurely.

In India, where the mean age at initiation to daily smoking is 18.7 years, the total tax revenue collected from tobacco products is more than ₹34,000 crore annually. Doctors warn that the early age of starting tobacco abuse translates into an increased risk of heart disease in younger people.

“Worldwide, a total 6,00,000 people are also estimated to die from the effects of second-hand smoke,” WHO said. “Although often associated with ill-health, disability and death from non-communicable chronic diseases, tobacco smoking is also associated with an increased risk of death from communicable diseases,’’ it added.

Reduces risk

According to information released by the All India Institute of Medical Sciences (AIIMS), quitting tobacco abuse immediately reduces the risk of heart attack and/or stroke. This helps even if a person has already had a heart attack and/or stroke, irrespective of his/her age.

Smokeless tobacco

“Despite accounting for 17% of the world population, tobacco consumption in the form of cigarettes in India is less than 2% of global consumption,” notes the Tobacco Institute of India (TII), a representative body of farmers, manufacturers, exporters, etc. “However, India accounts for 84% of the world’s consumption of smokeless tobacco while accounting for low per capita consumption of cigarettes,’’ it adds.

Among young people, the short-term health consequences of smoking include respiratory and non-respiratory effects, addiction to nicotine and the associated risk of other drug use. Long-term health consequences of youth smoking are reinforced by the fact that most young people who smoke regularly continue to smoke through adulthood. Also cigarette smokers have a lower level of lung function than those persons who have never smoked, noted WHO.

Bio Waste Rules

Hospitals yet to comply with bio waste rules (Hindustan Times:20190411)

http://paper.hindustantimes.com/epaper/viewer.aspx

NEWDELHI: Even though the Union environment ministry had last year extended its deadline for compliance with the new rules for handling biomedical waste till March 27, 2019, Delhi government hospitals and dispensaries are yet to get the mandated barcoding for tracking such waste.

On Wednesday, the Delhi Pollution Control Committee (DPCC) issued an ultimatum to all non-bedded health care facilities to obtain authorisation by April 25 under Bio-medical Waste Management Rules 2016 or face closure.

Taking cognizance of a report in HT about illegal dumping of bio-medical waste in Barapullah Nullah, the DPCC also imposed ₹5 lakh as environmental compensation charge on SDMC, PWD and district-level monitoring committee (South East).

“The problem in Delhi is that there are just two common biomedical waste treatment facilities and their areas are demarcated, so that they have a monopoly in their respective areas. The government has not been able to carry out a competitive bidding process because we need more than one bidder,” a senior official from Delhi government’s health department said.

“Currently, 10 Delhi government hospitals are getting the registration done. We will try and get it done for the rest of the hospitals as soon as possible,” the official said.

The procedure is being undertaken as the Central Pollution Control Board (CPCB) has already asked the state governments to share their login ID and password for tracking the biomedical waste.

“We have written to all states to share with us the login ID and password for the websites on which the waste can be tracked. We have received some replies, but we are still waiting for all states to respond before we compile the data,” a CPCB official said, requesting anonymity.

The common waste disposal vendors have already installed the required barcoding.

“We have tied up with a company for the software and the barcodes and have to set up a website for the data,” Ankit Gupta, marketing head, Biotic Waste Solutions, one of the bidders, said.

North Delhi Municipal Corporation’s six hospitals have already implemented the system. “Now, we get the disposal bags from them that are already barcoded and we can track them.

We are reporting the figures daily," Dr Arun Yadav, head of hospital administration, North body said.

The Central government-run Safdarjung hospital has designed its own system. "Safdarjung was the first to comply with the biomedical waste rules. At that time, the vendor did not have a barcoding system so we got a system of our own. It is dynamic and the data can be integrated with any other network," Dr KT Bhowmik, additional medical superintendent of the hospital, said.

Smaller nursing homes and clinics are also yet to comply with the rules."The problem is that a neurologist or a general physician who just prescribes medicines and does not generate waste also has to register. Besides, even the doctors who have registered complain that the service is not regular— in some places, the waste is collected once a week or every 10 days," Dr Girish Tyagi, president elect of DMA, said.

The smaller facilities also haven't switched over to the nonchlorinated bags. "Most of the big hospitals have started using nonchlorinated bags. We still get mixed bags, resulting in the emission levels going up," Gupta said.

Ortho implant surgeries

To track outcome, AIIMS to start registry of ortho implant surgeries (Hindustan Times:20190411)

http://paper.hindustantimes.com/epaper/viewer.aspx

NEWDELHI: The All India Institute of Medical Sciences (AIIMS), Delhi, will start a registry of all orthopaedic implant surgeries done at the hospital to keep track of surgical outcomes such as revision procedures, infection rate, etc.

It could act as a reference point for a national registry that the Union health ministry began considering after the Johnson & Johnson's faulty hip implants controversy, which highlighted the need for documenting the results of all surgeries across the country where implants were being used.

"We are starting our own hospital-based registry, and have the in-principle approval of the director. The work has already begun on the project that we plan to execute with the support of the Indian Council of Medical Research (ICMR)," said Dr Rajesh Malhotra, head of orthopaedic department, AIIMS.

“It is important to know how many total surgeries are being performed, what types of artificial joints are being used, how many patients need revision surgeries and reasons for it. At the moment, people are supposed to share data voluntarily but the need is to make it mandatory so that people don’t conceal surgical outcomes,” he added.

The hospital is one of the busiest centres for orthopaedic implant surgeries in India and performs about 1,500 hip- andknee implants in a year.

There is a need for an audit as only about 1%-2% of around 3 lakh implant surgeries are being done in government-run centres; the rest are done at private centres.

“Incidentally, high volume centres put together do less numbers than the centres that operate in small volumes. The documentation needs to be done uniformly to get to know the trend about which implant is working the best in our country, and what is causing implant failure etc.,” said Dr Malhotra.

The AIIMS orthopaedic department is in the process of submitting a proposal to the ICMR in this regard so that it is executed as an ICMR-supported project that can also be replicated in other regions.

“The AIIMS could work as a nodal centre and there can be other regional centres in the north-east, west and south that can be established for documenting the details comprehensively,” Dr Malhotra maintained.

Those doing implant procedures are expected to furnish safety details as part of national pharmacovigilance system.

“It’s there in the law to share safety data with the regulatory authorities. It needs to be enforced harder as not all are sharing relevant data with the government,” said a senior health ministry official, requesting anonymity.

Spinal Injury (The Asian Age:20190411)

http://onlineepaper.asianage.com/articledetailpage.aspx?id=12791320

'Timely action can heal severe spinal injury'

AGE CORRESPONDENT
NEW DELHI, APRIL 10

Timely action can save victims of severe spinal injury, say experts. Senior consultant and spine surgeon at Indraprastha Apollo Hospitals, Dr Rajendra Prasad discussed some major cases of young patients where timely surgery saved their lives and subsequent neuro-rehabilitation helped them regain most of their lost neurological function and allowed them to walk rather than be permanently confined to a wheel chair.

"It is very important trauma victims get immediate attention to ABC (airway, breathing, circulation) at the site of injury by trained first responders (bystanders, policemen etc.) and then transported safely by trained paramedic and ambulance men to a hospital, on a spine board without making the injury worse, in the 'golden hour'," said Dr Prasad.

It is important that patients get neuro rehabilitation after acute care so that they are made independent at home and at work.

Depression

Can genetic variants predict depression risk in young people? (Medical News Today:20190411)

https://www.medicalnewstoday.com/articles/324927.php

A new study looks at the genetic makeup of thousands of adults with depression to try to find an accurate way of predicting which children and adolescents may be at risk of developing this mental health problem.

Researchers identify a genetic risk score that could help predict depression risk in the young.

Many factors determine a person's risk of depression, and these include both genetic and environmental factors, such as going through difficult life events or taking medications with certain side effects.

However, while we already know some of the probable risk factors, it is not always easy to predict who is most at risk of depression, especially early on in life.

Recently, researchers from institutions all over the world have joined forces to investigate whether they can find a way of predicting a child or adolescent's risk of depression by analyzing the genetic makeup of adults with depression and coming up with a "map" of likely genetic culprits.

Their efforts, the investigators say, would also make it easier to understand which individuals have more exposure to mental health events before some potentially confounding factors set in.

The researchers hail from the Max Planck Institute of Psychiatry and the Ludwig-Maximilians-Universitaet in Munich, Germany, the Emory University in Atlanta, GA, the University of Coimbra in Portugal, and the University of Helsinki in Finland.

In their study, the researchers calculated polygenic risk score — the quantification of the possible effects of different combinations of genetic variations — using the findings of the Psychiatric Genomics Consortium, which looked at data from more than 460,000 adults.

They now report the results in the American Journal of Psychiatry.

Complex genetic risk score to the rescue

The researchers explain that on an individual basis, the different genetic variants that previous studies have associated with depression do not make a significant difference to the risk of depression. However, cumulatively, they have a substantial effect on this risk.

"The [polygenic risk] score was first calculated from genetic data obtained from a very large number of adults with depression," notes first author Thorhildur Halldorsdottir.

Following this first step, the researchers assessed this risk score in groups of children and adolescents aged 7–18 years, of whom 279 had symptoms of depression and 187 were healthy. The latter acted as the control group.

Mental health can impact memory decades later

Experiences of depression and anxiety can have a lasting effect on memory, study finds.

"This parameter was then evaluated in smaller cohorts of children and adolescents to determine whether it could predict depression and symptoms of depression in this age group," adds Halldorsdottir.

The researchers also looked at the effect of early experiences of abuse on the young participants' mental health, since this is a verified risk factor for depression. Doing this

allowed the investigators to show just how important the polygenic risk score is in assessing depression risk.

"We found that both the polygenic risk score and exposure to childhood abuse were informative in identifying young people at risk for depression," notes Halldorsdottir.

The researchers believe that the results of this study and other similar research could, in the future, help mental health experts identify which young people are most at risk of developing depression, allowing them to implement prevention strategies where appropriate.

"By applying the findings of studies like this one, it should be possible in future to target young people who are at greatest risk for depression, i.e., those with a high polygenic risk score and/or a history of childhood abuse, for these effective interventions," says the study's joint lead investigator, Gerd Schulte-Körne.

Co-author Elisabeth Binder calls this "the first study to show that the polygenic risk score calculated from adults with depression can be used to identify [at-risk] children [...] before any clinical symptoms have emerged."

Although Binder admits that the work of finding the best methods of identifying young people at risk of mental health issues does not stop with this study, she believes that this is an important first step toward implementing better preventive strategies more effectively.

"[I]dentifying which children are more likely to go on to develop depression would give us the opportunity to implement effective prevention strategies and reduce the huge health burden associated with depression."

Elisabeth Binder

Physical Fitness

5-minute breathing 'workout' may benefit heart and brain health (Medical News Today:20190411)

https://www.medicalnewstoday.com/articles/324928.php

Preliminary research reveals that a technique called Inspiratory Muscle Strength Training can boost cognitive and physical performance, as well as cardiovascular health.

New research adds another tool in the toolbox for preventing high blood pressure.

Most of us know that exercising and eating right are good for us.

However, putting in the effort to do so can often require more willpower than we have.

What if there was a way to reap all the benefits of a workout without having to lift a finger?

New research introduces a 5-minute technique that might improve blood pressure, lower heart attack risk, boost cognitive ability, and enhance sports performance — all while barely having to move.

The technique is called Inspiratory Muscle Strength Training (IMST), and researchers led by Daniel Craighead — a postdoctoral researcher in the University of Colorado Boulder's Department of Integrative Physiology — have tested the technique in a clinical trial.

"IMST is basically strength-training for the muscles you breathe in with," explains Craighead. The researcher and his colleagues presented the preliminary results of their research at the annual Experimental Biology conference, which this year takes place in Orlando, FL.

Why study the benefits of IMST?

IMST involves inhaling through a resistive hand-held device called an inspiratory muscle trainer. Its creators initially developed it for people with respiratory problems such as chronic obstructive pulmonary disease, bronchitis, or cystic fibrosis, or to wean people off ventilators.

Craighead and team explain that in 2016, a 6-week trial on the effects of IMST on obstructive sleep apnea — during which participants performed 30 inhalations per day — revealed that using the device also lowered systolic blood pressure by 12 millimeters of mercury.

Frequent urination at night may be a sign of hypertension

New research finds that nocturia, or the need to urinate frequently at night, may signal high blood pressure.

Exercising for the same amount of time usually only lowers blood pressure by half that amount, and the benefits seem to exceed those normally achieved with hypertension medication.

This trial piqued the researchers' interest, so they set out to study the possible benefits of IMST for the vascular, cognitive, and physical health of 50 middle-aged adults.

"Our goal is to develop time-efficient, evidence-based interventions that [...] busy midlife adults will actually perform," explains senior investigator Prof. Doug Seals, the director of the University of Colorado Boulder's Integrative Physiology of Aging Laboratory.

Lowers blood pressure and boosts cognition

The researchers compared participants who tried IMST with people who used a sham device that provided no resistance on inhalation. They found that the blood pressure was significantly lower among IMST participants and that the function of their large arteries had improved considerably.

IMST participants also performed better on cognitive tests and treadmill tests. In the treadmill tests, they were able to run for longer and keep their heart rate and oxygen consumption low.

"[IMST is] something you can do quickly in your home or office, without having to change your clothes, and so far it looks like it is very beneficial to lower blood pressure and possibly boost cognitive and physical performance."

Daniel Craighead

"High blood pressure," claims Craighead, "is a major risk factor for cardiovascular disease, which is the number one cause of death in America. Having another option in the toolbox to help prevent it would be a real victory."

However, the study authors caution that their results are preliminary, and that people interested in the technique should consult their physician first.

HIV/AIDS

New HIV vaccine could expose latent virus and kill it (Medical News Today:20190411)

https://www.medicalnewstoday.com/articles/324923.php

Antiretroviral therapy may soon be obsolete, as scientists have successfully used immune cells to kick the dormant form of HIV out of its hiding place and destroy it. The findings may soon lead to an HIV vaccine.

New research brings us closer to an HIV vaccine that could eradicate it completely.

According to recent estimates, around 1.1 million people in the United States have HIV.

With the help of antiretroviral therapy, over half of these people now have a very low level of the virus.

This means that they can no longer transmit it to other people.

Antiretroviral therapy can keep HIV in check so well that the virus is near-undetectable in the blood.

However, HIV continues to "live" in latent form, so people with it must keep taking the medications to prevent it from flaring up.

Antiretroviral therapy can have a host of side effects. These may include gastrointestinal problems, cardiovascular problems, insulin resistance, and bleeding events, as well as effects on bone density, liver health, and neurological and psychiatric health.

So, the search for an HIV cure is ongoing. Now, new research may have found a way to "drag" the virus out of its hiding place and neutralize it. The findings may lead to a vaccine that would allow people living with HIV to stop taking antiretroviral medication every day.

Senior study author Robbie Mailliard, Ph.D. — an assistant professor of infectious diseases and microbiology at the University of Pittsburgh Graduate School of Public Health in Pennsylvania — and colleagues have published their findings in the journal EBioMedicine.

Using an entirely different virus to target HIV

Mailliard explains the motivation for their study, saying, "A lot of scientists are trying to develop a cure for HIV, and it's usually built around the 'kick and kill' concept — kick the virus out of hiding and then kill it."

He adds, "There are some promising therapies being developed for the kill, but the holy grail is figuring out which cells are harboring HIV so we know what to kick."

In the case of HIV, the virus goes latent by hiding itself in the DNA of T helper immune cells.

Liver health in HIV: This gene indicates new therapeutic targets

This gene may help keep the liver healthy in people with HIV.

To find out which cells are harboring HIV, the team decided to look at a different virus with a similar behavior that affects 95 percent of people living with HIV: cytomegalovirus (CMV).

"The immune system spends a lot of time keeping CMV in check," explains study co-author Charles Rinaldo, Ph.D., chair of the Department of Infectious Diseases and Microbiology at the University of Pittsburgh.

"In some people, 1 one out of every 5 T cells are specific to that one virus," adds Rinaldo. "That got us thinking — maybe those cells that are specific to fighting CMV also make up a large part of the latent HIV reservoir."

"So we engineered our immunotherapy to not only target HIV but to also activate CMV-specific T helper cells."

Dragging HIV out of its hiding place

So, the researchers took blood from almost two dozen participants who had HIV but were keeping it in check with antiretroviral therapy.

"You have to collect a lot of blood to find T cells latently infected with functional HIV in people on [antiretroviral therapy] — it could be as few as 1 out of every 10 million cells," explains first study author Jan Kristoff.

The researchers also isolated another type of immune cell called dendritic cells. Mailliard describes these cells using a sports analogy; they are the "quarterbacks" of the immune system, he says, as "they hand off the ball and dictate the plays, telling other immune cells where to go and what to fight."

In previous studies, scientists used dendritic cells to "make" the immune system kill HIV. Before this study, however, nobody had used them to drag the latent HIV out of its hiding place.

In this research, Mailliard and his team designed "antigen-presenting type 1-polarized, monocyte-derived dendritic cells" (MDC1). They engineered these MDC1 cells to look for and activate CMV-specific T helper cells in the hope that these CMV-specific cells would also hide latent HIV.

Then, the team added MDC1 back to the T helper cells containing latent HIV. This successfully reversed the latency. The virus had to leave its hiding place, making it vulnerable and easy to kill.

"Without adding any other drug or therapy," explains Mailliard, "MDC1 were then able to recruit killer T cells to eliminate the virally infected cells."

"With just MDC1, we achieved both kick and kill — it's like the Swiss Army knife of immunotherapies. To our knowledge, this is the first study to program dendritic cells to incorporate CMV to get the kick, and also to get the kill."

Robbie Mailliard, Ph.D.

Mailliard and his colleagues are now trying to test MDC1 in human clinical trials.

Dental Health

How whitening strips can damage your teeth (Medical News Today: 20190411)

https://www.medicalnewstoday.com/articles/324921.php

Teeth are an important part of physical appearance for many people, and they want to show a bright white smile. However, a new study reveals that many tooth whitening products can damage the teeth.

New research reveals why we should treat tooth whitening products with caution.

Studies have shown that most human teeth are not naturally pearl-white. In reality, most teeth are different shades and hues that tend towards yellow. Nor are teeth uniformly colored.

Despite this, there is an idea — which is especially prominent in North American societies — that perfectly white teeth are a symbol of beauty and self-care.

For this reason, many people opt to whiten their teeth, either on their own or with the help of a cosmetic dentist.

Statistic reports indicate that about 40.5 million people in the United States used tooth whitening products in 2018.

Various studies now show that whitening teeth with bleaching products that contain hydrogen peroxide can endanger tooth health.

Researchers from Stockton University in Galloway, NJ, aimed to find out exactly how hydrogen peroxide harms the teeth, and which part of a tooth it attacks.

The research — which was led by Kelly Keenan, an associate professor of chemistry at Stockton University — will feature at the Experimental Biology 2019 meeting, which is part of the annual meeting of the American Society for Biochemistry and Molecular Biology in Orlando, FL.

Bleach attacks sensitive tooth layer

Specifically, the researchers looked at how whitening strips, which people can buy over-the-counter, damage one of the teeth's three layers.

Dental whitening strips typically contain hydrogen peroxide as the main active ingredient. This substance is an oxidizing agent that some people use a sterilizer, although more people may know it as a color-lightening agent. This is also the main substance that people use to bleach hair.

If a person overuses or uses too much of this substance to lighten hair color, it can cause "significant damage" to the hair and scalp.

Home remedies for sensitive teeth

Now, Keenan and team have discovered how hydrogen peroxide damages dentin, the "middle" layer of teeth. A tooth contains three different layers: a shiny enamel external one, a dentin layer in the middle, and an inner layer that is mainly connective tissue, which helps keep the tooth safely in place.

Hydrogen peroxide, Keenan explains, can pierce through the enamel and infiltrate dentin, which contains about 90–95 percent of the protein collagen.

In this study, "We sought to further characterize what the hydrogen peroxide was doing to collagen," notes Keenan. "We used entire teeth for the studies and focused on the impact hydrogen peroxide has on the proteins," the researcher adds.

Keenan and team found that the collagen present in dentin becomes fragmented when exposed to hydrogen peroxide, which leads to the loss of collagen mass in that layer.

"Our results showed that treatment with hydrogen peroxide concentrations similar to those found in whitening strips is enough to make the original collagen protein disappear, which is presumably due to the formation of many smaller fragments."

Kelly Keenan

The team is not yet sure whether this damage is permanent or if there is any way of reversing it. In the future, the researchers also plan to find out whether hydrogen peroxide affects not just collagen, but also other proteins that dentin contains.

Diabetes

Diabetes: Could targeting this protein prevent hypoglycemia? (Medical News Today:20190411)

https://www.medicalnewstoday.com/articles/324905.php

People with type 1 or type 2 diabetes who take insulin have a higher risk of developing hypoglycemia, or low blood sugar. Now, a study of how a protein works in the pancreas could lead to new treatments for protecting against the potentially life-threatening condition.

Researchers may have found a way to prevent hypoglycemia in people with diabetes.

Dr. Gina L. C. Yosten, who is an assistant professor of pharmacology and physiology at Saint Louis University in Missouri, and her team discovered the protein, which has the name neuronostatin, in earlier work.

They found that neuronostatin could prevent hypoglycemia by getting the pancreas to raise blood sugar in two ways. One way is to make less insulin, which is a hormone that reduces blood sugar, and the other is to produce more glucagon, a hormone that increases blood sugar.

In the more recent investigation, the scientists showed that injecting rats with neuronostatin raised the animals' blood sugar levels.

They also found that low blood sugar causes human pancreatic tissue to release more neuronostatin and that treatment with glucagon triggers more neuronostatin release.

The team says that, with more research, these findings could lead to neuronostatin becoming a target for drugs to prevent and treat hypoglycemia in people with type 1 and type 2 diabetes.

The study has featured at the annual meeting of the American Physiological Society during the Experimental Biology 2019 interdisciplinary meeting, which is taking place from April 6–9 in Orlando, FL.

"There are very few options," says Stephen Grote, a doctoral student in Dr. Yosten's group, "for preventing hypoglycemia or treating hypoglycemia unawareness other than avoiding low blood sugar as much as possible."

"Understanding what neuronostatin does and how it works will provide valuable information for preventing hypoglycemia and provide more complete knowledge into how the pancreas manages blood sugar normally," he adds.

Diabetes and the pancreas

Diabetes arises because the body has problems making or using insulin, which is a hormone that helps cells to take in glucose, or blood sugar, and use it for energy.

Without effective treatment, diabetes results in high blood sugar, or hyperglycemia, which can lead to kidney failure, blindness, stroke, heart attack, and amputation of feet and lower legs.

Diabetes and Alzheimer's: What's the link?

Impaired insulin signaling in the brain could tie diabetes to Alzheimer's disease.

There are two main types of diabetes: type 1 and type 2. The vast majority of people with diabetes have type 2.

In type 1 diabetes, the body does not make enough insulin, and so people with this type need to take insulin every day to stop their blood sugar rising to dangerous levels.

In type 2 diabetes, the cells of the body cannot use insulin effectively. The pancreas tries to make up for it by making even more insulin, but, eventually, this is not enough, and people need to take extra insulin to control their blood sugar.

According to the World Health Organization (WHO), the number of people worldwide with diabetes rose from 108 to 422 million during 1980–2014.

In the United States, there are around 30 million people with diabetes of which 90–95 percent have type 2.

A need for better treatments

People with diabetes who take too much insulin may experience low blood sugar that can leave them dizzy and sleepy. If their sugar levels continue to drop, there is a high risk that more severe symptoms will follow, including seizures and loss of consciousness.

There is also a risk that episodes of hypoglycemia can develop into a vicious cycle of increasing severity, as the condition can reduce people's ability to notice the symptoms and, consequently, the chance to intervene.

There is a need, therefore, for improved treatments and a deeper understanding of how hypoglycemia develops in diabetes.

In the new study, Dr. Yosten and her team showed how neuronostatin increased glucagon by interacting with certain types of receptor proteins in the pancreatic alpha cells that release the hormone.

In addition, they demonstrated that, in response to higher glucose levels, neuronostatin reduced insulin production by pancreatic beta cells.

In a meeting abstract about the study, the team notes that this suggested that neuronostatin "is a pancreatic component of the counterregulatory response to hypoglycemia."

To confirm this, the researchers then showed that infusing male rats with neuronostatin for 30 minutes "substantially increased" their blood glucose levels.

Also, treatment with neuronostatin slowed down the clearance of glucose and reduced the production of insulin in response to hyperglycemia.

Further tests also revealed that pancreatic cells exposed to low glucose released neuronostatin, and that fasting blood glucose raised blood levels of neuronostatin in rats.

Potential to protect against hypoglycemia

The researchers say that scientists need to do further studies now to confirm that neuronostatin can prevent or reverse hypoglycemia, and to find out which mechanisms and signaling pathways the body uses.

"We propose," they note, "that [neuronostatin] could represent a novel therapeutic target for the treatment and prevention of hypoglycemia in diabetes."

The team is carrying on with its work to find out how the body controls neuronostatin and how it interacts with mechanisms of insulin and glucagon release in the pancreas.

"Neuronostatin is a truly novel factor," Grote explains, "and everything we find about it pushes our knowledge of its therapeutic potential just a bit further."

"We believe that studying neuronostatin could ultimately reveal a way to use it to help prevent and reverse vicious cycles of hypoglycemia by helping the body respond appropriately to the low blood sugar with more glucagon."

Stephen Grote