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नमक का ज्यादा सेवन

सेहत पर भारी पड़ सकती है सोडियम की उच्च मात्र (Dainik Jagran:20190213)

https://epaper.jagran.com/epaper/article-13-Feb-2019-edition-delhi-city-page_22-5057-3443-4.html

एक नए अध्ययन का दावा है कि सोडियम की उच्च मात्र यानी नमक का ज्यादा सेवन कमजोरी या चक्कर आने की समस्या की रोकथाम की जगह उसे और बढ़ा सकता है। यह अध्ययन उस पारंपरिक सलाह के उलट है जिसमें चक्कर आने की समस्या के इलाज के लिए सोडियम की ज्यादा मात्र लेने की सलाह दी जाती है। खड़े होने पर कमजोरी और चक्कर आना सामान्य समस्या है। वयस्कों में ब्लड प्रेशर गिरने से भी यह समस्या पैदा होती है।

शोधकर्ताओं के अनुसार, चक्कर आने की समस्या की रोकथाम के लिए सोडियम की उच्च मात्र के सेवन की सलाह दी जाती है। इसके उलट अमेरिका के बेथ इजरायल डीकॉन्से मेडिकल सेंटर के शोधकर्ताओं ने पाया कि वास्तव में इसकी उच्च खुराक से समस्या बढ़ जाती है। इस अध्ययन से जुड़े बेथ इजरायल के शोधकर्ता स्टीफेन जुरेस्चेक ने कहा, 'हमारे अध्ययन का नतीजा सोडियम की उच्च मात्र लेने के प्रति आगाह करता है।' -प्रेट्र

ज्यादा वसा (फैट) वाले पश्चिमी आहार से सेप्सिस का खतरा बढ़ सकता है। इस तरह के आहार में फाइबर की मात्र कम और वसा और शुगर ज्यादा होता है। सेप्सिस दुनिया में मौत के प्रमुख कारकों में

है। यह समस्या किसी संक्रमण के प्रति शरीर की प्रतिक्रिया के चलते खड़ी होती है। इसके चलते कई अंग काम करना बंद कर देते हैं। यह संक्रमण किसी मामूली खरोंच या कट जाने से भी हो सकता है।

अमेरिका की पोर्टलैंड स्टेट यूनिवर्सिटी के शोधकर्ताओं के अनुसार, चूहों पर किए गए अध्ययन के आधार पर यह निष्कर्ष निकाला गया है। चूहों को खाने के लिए पश्चिमी आहार दिया गया। सामान्य आहार खाने वाले चूहों की तुलना में पश्चिमी आहार खाने वाले चूहों में सूजन में वृद्धि, सेप्सिस और उच्च मृत्यु दर पाई गई। पोर्टलैंड के प्रोफेसर ब्रुक नेपियर ने कहा, 'पश्चिमी आहार खाने वाले चूहों की प्रतिरक्षा प्रणाली अलग ढंग से काम करती पाई गई।' -प्रेट्र

चिरयुवा

खून में छिपा हो सकता है चिरयुवा होने का मंत्र, इस तरह पता लगाया (Dainik Jagran:20190213)

https://www.jagran.com/world/america-blood-cells-may-hold-key-to-fountain-of-youth-jagran-special-18943743.html

दूसरे के शरीर में पहुंचकर भी नहीं बदलती रक्तदाता की रक्त कोशिकाओं की उम्र, खुल सकता है हमेशा जवान रहने का राज।

वाशिंगटन, प्रेट्र। चिरयुवा बने रहना हमेशा से मनुष्य की इच्छा रही है। वैज्ञानिक भी लंबे समय से ऐसे रास्ते तलाश रहे हैं, जिनसे उम्र बढ़ाई जा सके और ज्यादा समय तक जीवित रहना संभव हो पाए। खानपान से लेकर व्यायाम तक हर बात का लक्ष्य मूलत: यही रहता है कि कैसे ज्यादा समय तक खुद को युवा और स्वस्थ रखा जाए। अमेरिका की केस वेस्टर्न रिजर्व यूनिवर्सिटी के वैज्ञानिकों ने अब खून की बूंदों में चिरयुवा रहने का मंत्र देखा है।

वैज्ञानिकों ने पाया है कि मनुष्य के खून की कोशिकाओं में एक आंतरिक घड़ी होती है, जिसमें उनकी उम्र दर्ज रहती है। सर्वाधिक चौंकाने वाली बात यह सामने आई है कि रक्त कोशिकाओं की उम्र बाकी सभी परिस्थितियों से बेअसर रहती है। एसोसिएट प्रोफेसर शिगेमी मत्सुयामा ने कहा, 'इस अध्ययन से चिरयुवा रहने का राज खुल सकता है। युवा रक्त कोशिकाएं बड़ी उम्र के लोगों के शरीर में पहुंचने के

बाद भी युवा ही बनी रहती हैं। रक्तदान के बाद शरीर बदलने से भी इन कोशिकाओं की उम्र पहले जैसी रहती है और उसी गति से बढ़ती है।'

इस तरह पता लगाया

वैज्ञानिकों ने ऐसे लोगों पर अध्ययन किया, जिनमें उनकी उम्र से अलग किसी रक्तदाता का खून चढ़ाया गया था। युवा व्यक्ति का खून किसी प्रौढ़ को चढ़ाने और प्रौढ़ का खून किसी युवा को चढ़ाने, दोनों ही मामलों में रक्तदाता के खून की कोशिकाओं की उम्र रक्तदान के बाद भी नहीं बदली। उम्र में 49 साल तक का अंतर होने पर भी कोशिकाओं की इस खूबी पर कोई फर्क नहीं दिखा। रक्तदान के दो दशक बाद तक रक्तदाता के खून की कोशिकाओं के उम्र का अंतर स्पष्ट दिखता रहा।

शुरुआती स्तर पर है अध्ययन

रक्त कोशिकाओं की उम्र नहीं बदलने से जुड़ा यह अध्ययन अभी शुरुआती स्तर पर है। वैज्ञानिकों का कहना है कि अभी यह दावा नहीं किया जा सकता है कि इन कोशिकाओं की मदद से किसी की उम्र को कम या ज्यादा करना संभव है। हालांकि इस जानकारी ने उम्मीद की नई किरण दिखाई है। कैंसर कोशिकाओं में उम्र की यह घड़ी काम नहीं करती। भविष्य में वैज्ञानिक इस रास्ते को अपनाते हुए कैंसर का इलाज खोजने की दिशा में भी शोध को अंजाम दे सकते हैं।

Superbug (Hindustan:20190213)

http://epaper.livehindustan.com/imageview_97447_64988852_4_1_13-02-2019_i_1.pagezoomsinwindows.php

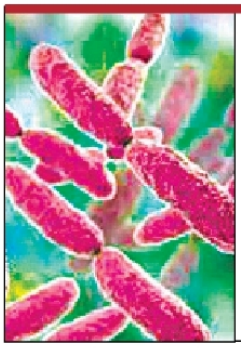
आईवीआरआई के प्रधान वैज्ञानिक का शोध, 4500 में से 699 मामलों में मिले खतरनाक बैक्टीरिया

बरेली में डॉक्टरों के हाथों पर सुपरबग मिले

बरेली | मृत्युंजय मिश्रा

उत्तर प्रदेश के बरेली में डॉक्टरों के हाथों में ऐसे बैक्टीरिया (सुपरबग) मिले हैं, जिन पर एंटी-बायोटिक भी बेअसर हो रहे हैं। भारतीय पशु चिकित्सा अनुसंधान संस्थान (आईवीआरआई) के प्रधान वैज्ञानिक डॉक्टर भोजराज के शोध में यह हकीकत सामने आई है।

यह सुपरबग शहर के तमाम सार्वजनिक स्थानों, इंसानों, जंगली व पालतू पशु-पक्षियों में भी मिले हैं। डॉक्टर भोजराज 2011 से इस तरह के बैक्टीरिया पर शोध कर रहे हैं। शोध के दौरान 4500 नमूनों की जांच की। इनमें से 699 मामलों में ऐसे खतरनाक सुपरबग मिले हैं, जिन पर कार्बापेनम नाम की उच्च-स्तरीय एंटी-बायोटिक भी असर नहीं कर रही है। शोध के दौरान 15 डॉक्टरों और 13 मेडिकल सहायकों के हाथों के नमूनों की जांच की गई। इनमें दो डॉक्टर और दो आईसीयू सहायकों में स्ट्रेन मिले। एक न्यूरोसर्जन, एक प्लास्टिक सर्जन और दो मेडिकल सहायकों के हाथ में सुपरबग मिले। डॉक्टर भोजराज कहते हैं कि डॉक्टरों के हाथ में ये बैक्टीरिया मिलना यह बताता है कि ये सुपरबग कहीं भी हो सकते हैं। एंटीबायोटिक के अंधाधुंध इस्तेमाल की वजह से बैक्टीरिया प्रतिरोधी क्षमता हासिल कर रहे हैं। यह स्थिति बेहद खतरनाक है।



पानी-पूरी, नल पर भी मिले

जांच में आरओ टैंक के पानी में, रेलवे स्टेशनों पर लगे नल और पानी-पूरी में भी सुपरबग मिले। ये बैक्टीरिया चिड़ियों, जंगली भैंस, काला हिरन, बिल्ली, गाय, बगुला, कौआ, हिरन, कुत्ता, बतख, केंचुए, बगुलों, हाथी, इमू, पशुओं के दाने, मछली, फार्म के फर्श, एफएमडी वैक्सीन के नमूने, बकरी समेत कई पशु-पक्षियों में भी मिले हैं।

क्या है सुपरबग

सुपरबग उन बैक्टीरिया को कहते हैं, जिन पर किसी भी एंटी-बायोटिक का असर नहीं होता। ये बैक्टीरिया इतने ताकतवर होते हैं कि ये नई पीढ़ी के एंटी-बायोटिक को भी विफल करने की शक्ति रखते हैं। सुपरबग दूसरी बीमारियों को खतरनाक और लाइलाज भी बना सकता है। यही नहीं यह एक से दूसरे के शरीर में भी फैल सकता है

Hearing Loss

Millennials' music habit puts their hearing at risk – UN (The Times of India:20190213)

https://news.abs-cbn.com/overseas/02/13/19/turn-it-down-millennials-music-habit-puts-their-hearing-at-risk-un

GENEVA - A generation of music-lovers are damaging their hearing with audio players that do not limit dangerously high noise levels, the UN health agency said on Tuesday.

Already 466 million people worldwide have debilitating hearing loss, up from 360 million in 2010 and the figure is expected to nearly double to 900 million, or 1 in every 10 people by 2050, the World Health Organization (WHO) said.

"Over 1 billion young people are at risk of hearing loss simply by doing what they really enjoy doing a lot - which is listening regularly to music through their headphones over their devices," Dr. Shelly Chadha of WHO's prevention of deafness and hearing loss program told a news briefing.

The WHO is urging manufacturers and regulators to ensure smartphones and other audio players have software that can ensure people do not listen to too loud music for too long.

"What we propose is certain features like automatic volume reduction and parental control of the volume so that when somebody goes over their sound limit they have the option that the device will automatically reduce the volume to a level which is not going to harm their ears," Chadha said.

"Our effort through this standard is really to empower the user to make the right listening choice or take the risk of developing hearing loss and tinnitus a few years down the line," Chadha said.

The European Union is the only part of the world to mandate output levels on personal audio devices be set to a standard of 85 decibels, with a maximum of 100, the WHO said.

The WHO is also looking at volume levels in places such as nightclubs and sporting arenas. It has some guidelines but they are not widely implemented, Chadha said.

"What we working on now in WHO is to develop that kind of regulatory framework about the different venues - which could be restaurants, bars, concerts, it could even be fitness classes which often have very high levels of sound being played and exposure for a long time."

Air Pollution

Air quality plummets to ‘very poor’ (The Hindu:20190213)

https://www.thehindu.com/news/cities/Delhi/air-quality-plummets-to-very-poor/article26253617.ece

The level of PM2.5 was recorded at 179 and the PM10 level was at 301 on Tuesday.

May show some improvement by Thursday, says SAFAR

The overall air quality in the national capital was in the “very poor” category on Tuesday and is likely to remain the same on Wednesday too, said authorities.

According to data from the Central Pollution Control Board (CPCB), the overall air quality index (AQI) of the city was 356.

The CPCB said 30 areas in the national capital recorded “very poor” air quality, while three areas had “poor” quality air.

The level of PM2.5 (particles in the air with a diameter of less than 2.5 micrometres) was recorded at 179 and the PM10 level was at 301, it said.

The Centre-run System of Air Quality and Weather Forecasting (SAFAR), said air quality is expected to improve on Thursday due to scattered rain.

“Expected western disturbance is visible in eastern Afghanistan as cyclonic circulation. It is expected to have an impact by Thursday... will improve air quality substantially to ‘moderate’ by February 14,” it said.

Coronary Heart Disease

‘Cholesterol-lowering interventions, whether diet or statins, should start early’ (The Hindu:20190213)

https://www.thehindu.com/opinion/interview/cholesterol-lowering-interventions-whether-diet-or-statins-should-start-early/article26252218.ece

The geneticist on her work on coronary heart disease, and why studying different races is critical

Geneticist Helen Hobbs’ work on coronary heart disease (CAD) led to the development of PCSK9 inhibitors – the most powerful cholesterol-lowering drugs to hit the market since statins. These drugs fight the PCSK9 protein, which prevents “bad” low density lipoprotein (LDL) cholesterol from being removed from blood. In the mid-2000s, Dr. Hobbs, director of the Eugene McDermott Center for Human Growth and Development at Dallas’ UT Southwestern Medical Center, found that a mutation in the PCSK9 gene, present mainly in African Americans, suppressed LDL levels. Consequently, it protected carriers from CAD. Importantly, people with two copies of this mutation had no side-effects of very low LDL, such as loss of adrenal function. A key innovation in Dr. Hobbs’ approach was to look for a rare gene variation with a large impact on cholesterol. Most scientists then were carrying out genome-wide association studies (GWAS), which look for common gene variants. Unfortunately, this strategy had mainly identified gene variants with a small impact on CAD risk. Dr. Hobbs’ approach bore fruit. Through research on the 3500-strong Dallas Heart Study cohort, she and colleague Jonathan Cohen discovered rare mutations in the PCSK9 gene. Eventually, drugmakers Amgen and Regeneron developed the PCSK9 inhibitors Evolocumab and Alirocumab, respectively, which mimic this mutation’s effects. In an interview in Hyderabad, where she spoke at the TNQ Distinguished Lectures in the Life Sciences, Dr. Hobbs discussed the way ahead. Excerpts:

How did the Dallas Heart Study begin?

The question we were trying to answer was if elevated LDL is necessary for heart disease. You can’t ask that question by looking at Mendelian disorders (in which defects in a single gene trigger heart disease), because everyone who has these disorders is sick. We were looking for mutations that would protect people from heart disease. Such healthy people wouldn’t be in the clinic. So, we developed the Dallas Heart Study. One of the premises was that there were going to be low-frequency or rare variations associated with major changes in lipids.

Our population was designed to maximise the probability of finding such rare variations. It was a multi-ethnic cohort, in which half the individuals were of African descent, while 15% were Hispanic, and the rest were of European ancestry. Africans, being the most ancient

population, are the most genetically diverse. Our approach of looking for rare variations was really key to our findings. As a scientist, you are always looking for things that have large effects, since they are easier to study.

If looking for rare gene variants with large effects could be such a powerful approach, why was everyone else doing the opposite at that time?

Honestly, I couldn't figure it out. Maybe my approach had something to do with my medical background. Maybe it was because I had worked on Mendelian disorders. In some ways, I benefited from being in Texas, away from the epicentre where everyone was doing the same thing. With our approach, everywhere we went, we found things. PCSK9 is the biggest story. But that's not the only one. We also found variants in a gene called ANGPTL4, which lowered plasma triglycerides. Mutations in ANGPTL3 were found to lower levels of both cholesterol and triglycerides, and antibodies to this protein are now being developed into a drug as well. What people hadn't known until then was how riddled healthy individuals are with rare mutations that have major effects. What we did then has now become routine. Companies do it all the time today.

One of the problems in genetics is "missing heritability". GWAS that look for common gene variants to explain disease risk have only been able to explain a small part of disease inheritance. Do you think rare-gene variants explain this gap in heritability?

There are definitely many more common variants than there are rare. But for an individual who has a rare variant, the rare variant can mean everything. That's the problem.

In our first experiment, we found that people with low HDL ("good" cholesterol) have a major gene defect which is contributing to it.

While this was going on, a woman in France had identified families that had very high cholesterol due to a new gene PCSK9. She found two missense mutations in this gene (missense mutations alter the make-up of a protein coded for by a gene; in contrast, nonsense mutations stop the production of the protein). Individuals with the missense mutations had high plasma levels of LDL. To figure out what the PCSK9 mutations did, three groups over-expressed the mutant forms of the PCSK9 gene in the livers of mice. And in those mice, the LDL receptor, which removes LDL from the blood, disappeared. The mice became hypercholesterolemic (developed high cholesterol). We thought, if you didn't have PCSK9, you would have a lot of LDL receptors on the cell's surface, and low LDL. So, we went to the blacks and the whites in the Dallas Heart Study, and we sequenced the individuals who had LDL less than the 5th percentile. We found three sequence variations. One missense mutation was in whites, associated with a modest reduction in LDL. But there were two nonsense mutations, which introduced stop codons in individuals of African descent. Those stop codons are a gift to geneticists, because they are almost invariably a loss-of-function mutation. This means that they kill the (PCSK9) protein.

These two nonsense mutations were only seen in black people. And they were associated with about a 40% reduction in LDL cholesterol. We wanted to know what it meant to be born

with such a mutation, and to have low LDL throughout one's life. If LDL is an important factor in heart disease, this mutation should really change one's risk of developing heart disease. So, we went to the only biracial study in the world — the ARIC (Atherosclerosis Risk in Communities) Study — and asked a simple question. Did people who hadn't had a heart attack and were not on lipid-lowering agents have the mutations we found? Among black people in this study, we found that the mutation lowered the risk of heart disease by almost 90% — higher than what we had found in the Dallas Heart Study.

We knew that we had made a significant observation. If you have low LDL for years, you are not going to get heart disease. Atherosclerosis starts early and develops gradually.

You have talked previously about the need to lower cholesterol earlier in life. Should people start taking statins earlier then?

The best way to lower cholesterol is through diet, but it must start at an early age.

In 2015, the U.S.'s Dietary Guidelines Advisory Committee said dietary cholesterol may not be a "nutrient of concern for overconsumption", given that there wasn't enough evidence to show its impact on LDL. What did you think of this?

I don't believe it. Of course, cholesterol is a nutrient of concern, and its effects are compounded by saturated fat. The benefits of lowering your cholesterol are indisputable now. We have so many studies. But the problem is that you cannot take 50-year-olds, who have had high cholesterol their whole life, lower it, and eliminate risk of heart disease. Atherosclerosis is already in their arteries.

If you look at the statin trials, a large percentage of those who get treated still have a cardiac event. Statins are not a cure; it's not like giving antibiotics for an infection. You have to start young. Either you have to consume a different diet, which gets you on a different trajectory, or you have to start statins at a younger age. What age that should be is still disputed, because there haven't been clinical trials. It's hard to start people on a drug and follow them for 30-40 years.

PCSK9 inhibitors are very promising, but their use is greatly limited by their high cost. Do you think the cost will come down in the future?

It can only come down. It already has. When they first came out in the market, they were priced too high at $14,000 per year. It really was a mistake. Then they did a cost benefit analysis, and brought the price down to about $5,000 a year. Now, a lot more people are getting the drugs. The hope is that competition will eventually bring down the price even further.

One reason for the high cost of Evolocumab and Alirocumab is that they are monoclonal antibodies. Are there any alternative strategies that target the PCSK9 protein, but are less expensive or easier to use?

There is Inclisiran, a small interfering RNA, which is being tested in humans. Because PCSK9 is made in the liver, you can inhibit it at the level of messenger RNA. Inclisiran, which does this, requires an injection every six months. This is terrific because one of the major problems with statins is compliance; people stop taking them. An injection every six months is much easier to adhere to. People are also thinking about CRISPR-Cas9 strategies, but as everyone knows, that's not going to happen tomorrow.

In your ongoing work, you have identified genetic mutations (in PNPLA3 and TM6SF2) for fatty liver disease (FLD). Is there scope for therapeutics here?

I think it's pretty clear that there is.

Again, this disease is burgeoning in frequency, and is huge in India. When we started, almost nothing was known about its pathogenesis, except that when people are obese or have diabetes, they have a higher incidence of fatty liver disease.

However, we saw in the Dallas Heart Study that 50% of people who were obese did not have FLD. This suggests that there might be genes involved in the propensity to deposit fat in liver. In this case, we did a GWAS, and found that the Hispanics had a common sequence variation associated with high triglyceride content.

How big a problem is the under-representation of certain ethnicities in genetic research? Most genome-wide association studies have involved Europeans. What opportunities are we missing because of this?

I think the opportunities are huge. We need to study more groups, especially Indians. It is an incredibly genetically diverse population, which has poorly understood susceptibilities to coronary heart disease and to diabetes at a lower body mass index.

Studying different races is very critical. In PCSK9's case, if we had not had blacks in our population, we would never have discovered the gene mutations that led to new cholesterol-lowering therapy. In the FLD study, if we didn't have Hispanics, we would never have discovered PNPLA3, which is currently the most important risk factor for fatty liver disease.

Healthcare

Delhi: 52 of 400 ventilators in govt hospitals not functional, HC told (The Indian Express:20190213)

https://indianexpress.com/article/cities/delhi/delhi-52-of-400-ventilators-in-govt-hospitals-not-functional-hc-told-5580955/

The information was submitted by Delhi government's additional standing counsel (civil) Satyakam in response to the High Court's January 30 query regarding the status of ventilators available in hospitals under them.

The Delhi government informed the Delhi High Court Tuesday that of at least 400 ventilators in the city's government hospitals, 52 are non-functional and that efforts are being made to get them repaired.

A bench of Chief Justice Rajendra Menon and Justice V K Rao was also told that the government has ordered procurement of more than 18 ventilators for their hospitals.

The information was submitted by Delhi government's additional standing counsel (civil) Satyakam in response to the High Court's January 30 query regarding the status of ventilators available in hospitals under them.

The information was sought after it was told that a three-year-old boy, admitted in LNJP Hospital since January 24 and suffering from a critical neurological condition, was in dire need of the breathing apparatus but was making do with a manual resuscitator.

The critical medical condition of the boy and his need for a ventilator was brought to the court's attention by advocate Ashok Agarwal. The child died on February 10, the Delhi government's status report said.

The court, while seeking to know the status of ventilators, had also expressed dissatisfaction with the manner in which the Delhi government had responded to the issue of putting online the details of medical facilities available at its hospitals.

The bench had, subsequently, directed the Delhi government to file a status report indicating the steps taken to make people aware about the facilities.

In its report, the government has said that "a control room is presently functional in the Directorate General Health Services which collects data regarding availability of ventilator beds, H1N1/dengue beds from all public hospitals and provides the information to the public at large"."The information from control room can be accessed round the clock at 011-22300012/22307145," the report said.

The government said that the state programme officer, Delhi State Health Mission of the Delhi government, has been requested to prepare a web portal for online bed/ventilator availability information in public hospitals under it. It said that efforts are being made to make the web portal functional within two months.

In September 2017, the High Court took cognisance of a news report that a newborn had died as the family did not get a ventilator-fitted bed in four government hospitals in the Capital.

Since then, it is monitoring the issue of providing online information about medical facilities, including ventilators and beds at the hospitals.

A newborn girl had died at the Jag Pravesh Chandra Hospital in northeast Delhi because it had no ventilator support, while the three other government hospitals where the family had gone had refused admission, saying no critical care beds were available.

Only 3.4% beds in govt hospitals have ventilator facilities, HC told (Hindustan Times:20190213)

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

The govt also told the court that 52 out of 400 beds with ventilator are ‘not functional and efforts are being made to get them repaired’

NEW DELHI: Only 3.4% of the beds available in the 33 Delhi government hospitals have ventilator facilities against the minimum requirement of 10% in every state-run medical centre, the Aam Aadmi Party (AAP) government has informed the Delhi High Court. In an affidavit filed in the court, the state government submitted that it has 400 ventilator beds available in the government hospitals.

A bench of chief justice Rajendra Menon and justice V Kameswar Rao was also told that 52 out of the 400 ventilator beds are “not functional and efforts were being made to get them repaired”. It added that the procurement of 18 ventilators was under process.

The government’s affidavit comes in response to a direction by the high court. Earlier this month, the court had directed the Delhi government to file a status report regarding the number of beds and other facilities on the government website. The order had come after a letter was written to the chief justice of the high court by advocate Ashok Agarwal, highlighting the death of a toddler due to the lack of ventilator support.

Advocate Agarwal had informed the court that threeyear-old Farhaan was struggling for his life as he was given a manual ventilator.

According to the affidavit, the minor died on February 10.

According to Delhi Health Services (DHS) data of February 2019, there are a total of 10,059 beds in the 33 state-run hospitals.

Out of these, only 348 beds have functional ventilators in the hospitals, which makes it just 3.45% against the minimum requirement of 10%.

The affidavit filed through advocate Satykam, additional standing counsel of Delhi government, stated that state programme officer of Delhi State Health Mission had been requested by a letter written on January 31 to prepare a web portal for online bed/ventilator availability information in public hospitals and efforts are being made to make it functional within two months.

Regarding availability of real time information about vacant beds in Delhi government hospitals, the report said “it may not be feasible to implement it” in the initial phase wherein hospitals would upload details about the availability of beds every morning on the portal.

The reply also stated that authorities had been requested to complete the repair and procurement of the ventilators at the earliest.

Jhajjar cancer institute to treat 5 lakh a year: Nadda (The Tribune:20190213)

https://www.tribuneindia.com/news/haryana/jhajjar-cancer-institute-to-treat-5-lakh-a-year-nadda/728148.html

Union Minister for Health and Family Welfare JP Nadda on Tuesday said the National Cancer Institute (NCI), which was digitally inaugurated by Prime Minister Narendra Modi, would treat over five lakh patients every year.

“A memorandum of understanding has been signed with the US, England and France to carry out a research on cancer treatment with modern healthcare facilities. The 250-bed hospital will be extended to the 500-bed facility in the second phase. In the third phase, 710 beds will be provided,” said Nadda while inspecting the new buildings of the institute.

The NCI would have facilities such as surgical oncology and radiation oncology.

Swine Flu

Swine flu death toll mounts to 21 (The Tribune:20190213)

https://www.tribuneindia.com/news/himachal/swine-flu-death-toll-mounts-to-21/728180.html

Number of deaths resulting from swine flu has touched 21

The number of deaths resulting from swine flu has touched 21 and a total of 174 cases testing positive from various parts of the state.

Though Vidhan Sabha Speaker Rajeev Bindal, who underwent swine flu treatment at the PGI, returned to attend the budget session today positive cases are still pouring in from all over the state.

“So far 21 people have lost their lives to swine flu and 174 people have tested positive but there appears to be a slight decline in the number of positive cases,” said Dr Sonam Negi.

He said the testing facilities were available at Indira Gandhi Medical College (IGMC), Tanda Medical College, Kangra; Central Research Institute, Kasauli; and at District Public Health Centre in the Zonal Hospital, Mandi.

The issue of swine flu was raised even in the Assembly with legislator, cutting across party lines had expressed concern over the issue.

Testing resumes at Mandi zonal hospital today

Mandi: The H1N1 testing lab will become functional at zonal hospital, Mandi, from Wednesday. It had become dysfunctional for the past many days as the testing machine had developed snag.

The machine was set up at the laboratory on Tuesday for the purpose and required kit was purchased to conduct the test for the swine flu virus.

So far, 18 deaths have been reported because of swine flu in the state, and five victims were natives of Mandi district. According to the latest update from the district health authorities, 17 patients have tested positive for the H1N1 virus.They are undergoing treatment at medical College at Ner Chowk, Mandi, the IGMC, Shimla, and Tanda medical college in Kangra district.

Confirming the development, Jeevanand Chauhan, Chief Medical Officer, Mandi, said the testing machine had been repaired and required kit purchased. The test for swine flu detection will be resumed at the zonal hospital on Wednesday onward.

He said, “It will be a great help to doctors if the patients are diagnosed with the swine flu virus well in time. Earlier, we were sending the blood samples for lab testing to the IGMC Shimla, which took a lot of time and delayed the treatment.”

“There is no need to panic and people are advised to keep themselves warm to avoid contracting cold. Those having high fever, cold, are more prone to contracting H1N1 virus. It generally affects people with low immunity, especially the elderly and children” he added.

The CMO said “it has been observed that people suffering from cold are visiting private clinics or quacks, which delays the detection of H1N1 virus and may sometimes prove fatal for the patient. So people suffering with high fever, cold and body ache are advised to visit government hospitals in time for the treatment, which are well equipped for the purpose.”

Public Health

Smartphone-based mindfulness training reduces loneliness (The Asian Age:20190213)

Washington, Feb 12 (PTI) Smartphone-based mindfulness training may help people feel less lonely and motivate them to interact with more people, a study has found.

The researchers from Carnegie Mellon University in the US also found acceptance skills training to be a critical active ingredient for improving these social functioning outcomes.

The study, published in the journal Proceedings of the National Academy of Sciences, showed a novel approach that harnesses widely available technology to address loneliness and social isolation, a growing public health concern across age groups.

“When we talk about mindfulness interventions, we talk about two key components,” said J David Creswell, associate professor at Carnegie Mellon University.

“The first is learning to use your attention to monitor your present-moment experiences, whether that’s noting body sensations, thoughts or images. The second is about learning to adopt an attitude of acceptance toward those experiences — one of openness, curiosity and non-judgment,” said Creswell.

For example, someone engaging in meditation might notice pain in his or her knee. Mindfulness training programs instruct participants to mentally note the sensation but not alter their physical state.

For the study, participants receiving training in acceptance skills were encouraged to respond to these uncomfortable experiences by saying “yes” in a gentle tone-of-voice to maintain an open and welcoming state of mind.

“Learning to be more accepting of your experience, even when it’s difficult, can have carryover effects on your social relationships. When you are more accepting toward yourself, it opens you up to be more available to others,” Creswell said.

In the study, 153 adults were randomly assigned to one of three 14-day smartphone-based interventions.

For 20 minutes each day, one mindfulness training group received training in monitoring and acceptance skills.

A second mindfulness group received training in monitoring skills only, and a third group received no mindfulness content and instead received guidance in common coping techniques.

In addition, they were instructed to complete brief homework practice lasting no more than 10 minutes daily.

For three days before and after the intervention, participants completed periodic assessments throughout the day to measure loneliness and social contact.

Participants that received training in monitoring and acceptance skills saw the greatest benefits: they reduced daily life loneliness by 22 per cent and increased social contact by an average of two interactions each day.

The monitoring only mindfulness group, which did not get acceptance skills training, did not show these benefits — suggesting that acceptance skills training may be a critical ingredient for the social benefits of mindfulness training programmes.

“Loneliness and social isolation are among the most robust known risk factors for poor health and early death. But so far, few interventions have been effective for reducing loneliness and increasing social contact,” said Emily Lindsay, who led the study.

“Our research shows that a 14-day smartphone-based mindfulness program can target both, and that practice in welcoming and opening to all of our inner experiences — good or bad — is the key ingredient for these effects,” said Lindsay. PTI

MHN

Smoking

How safe are e-cigarettes? The debate continues (Medical News Today:20190213)

https://www.medicalnewstoday.com/articles/324430.php

A recent clinical review has now summarized the latest evidence concerning the use of e-cigarettes as aids to smoking cessation.

A new review weighs up the benefits and health risks of vaping.

Do electronic cigarettes cause less harm than smoking, and will they help me quit?

These are the key questions that people who smoke but wish to quit raise with their healthcare professionals.

They are also hot topics in the ongoing debate about the potential benefits and harms of e-cigarettes and their regulation.

The authors of the new review, who work at Aberdeen Royal Infirmary in the United Kingdom, say that their aim is to inform this discussion.

The Journal of the Royal College of Physicians of Edinburgh has now published a paper on their findings.

"Fewer people," says corresponding study author Abhi Mathur, of the Department of Respiratory Medicine, "are smoking conventional tobacco cigarettes and more people are vaping."

E-cigarettes are battery-operated devices that people use to inhale, or vape, substances — one of which is nicotine. There are several types across hundreds of brands, and the market is growing.

Conventional cigarettes also deliver nicotine into the lungs through inhalation of tobacco smoke. However, they also deliver toxins such as tar and carbon monoxide deep inside the lungs.

Vaping does introduce some of the harmful substances that accompany cigarette smoke into the body, but research suggests that the levels present in e-cigarettes are much lower.

Smoking in decline, vaping on the up

Figures from the World Health Organization (WHO) confirm that the number of people worldwide who smoke tobacco is falling.

However, while the trend may be in decline, large numbers of people continue to smoke, and the impact on public health is still huge.

In 2015, more than 1.1 billion people smoked tobacco products, and the habit "remains the leading preventable cause of illness and premature death," note the review authors.

Against this backdrop, the trend in use of e-cigarettes, or vaping, is on the rise, with millions of people using a range of products.

In the United States, the Centers for Disease Control and Prevention (CDC) estimate that 6.9 million adults, or 2.8 percent of all adults, were using e-cigarettes in 2017. This was the same year in which use of conventional cigarettes fell to its lowest level.

Vaping 'pumps' cancer-causing substances into the lungs

People who vape could be absorbing high amounts of carcinogens from e-liquids and vapors into their lungs.

In the U.K., about 6 percent of the population, or 2.9 million adults, used e-cigarettes in 2017. The vast majority of people who use e-cigarettes in the U.K. either smoke or used to smoke, with the latter now outstripping the former.

The rate of e-cigarette use among people who currently smoke in the U.K. stopped rising by 2017, while that among people who used to smoke continued to rise.

In that year, 52 percent of vapers used to smoke, compared with 45 percent who were using both e-cigarettes and conventional tobacco cigarettes.

Only 3 percent of e-cigarette users have never smoked, note the authors. An independent review by an English public health body concluded that while people who have never smoked appear to be trying e-cigarettes, it was unlikely that e-cigarettes were "undermining the long-term decline in cigarette smoking" among young people in the U.K.

Vaping and smoking

People who smoke who switch to e-cigarettes can expect to reduce their cancer risk because they are reducing their exposure to more than 70 known carcinogens in tobacco smoke, note the authors.

They also cite research that puts the "cancer potency" of vaping at less than 0.5 percent of that of tobacco-smoking.

Conventional smoking also raises the risk of developing heart problems and of death associated with them. In fact, more people who smoke die of cardiovascular disease than of cancer.

Smoking just one conventional cigarette per day can increase the risk of heart disease to half that of smoking 20 per day.

The main contributor to this risk is the presence of ultrafine particles that can enter the bloodstream from inhaled cigarette smoke. These can trigger inflammation that harms the heart and circulation system.

Research suggests that vaping can also introduce ultrafine particles into the bloodstream, and the authors cite evidence from several studies about their effects.

Those results may explain why a recent survey of nearly 70,000 people in the U.S. has tied vaping to heart disease. That study suggests that people who vaped every day had a higher risk of heart attack than those who vape occasionally or those who used to vape. This risk persisted when the researchers ruled out the possible effects of also smoking conventional cigarettes.

Another study of cell cultures also revealed that e-cigarette vapor can make a type of immune cell in the lung more likely to promote inflammation and potentially block the clearance of bacteria.

Vaping and smoking cessation

The authors note that while it is highly addictive, at typical inhalation doses, nicotine doesn't cause clinical harm.

The substances that accompany nicotine into the body are what make smoking harmful to health, giving rise to the saying that people "smoke for the nicotine but die from the tar."

The authors say that manufacturers originally designed e-cigarettes as a way to help people quit smoking conventional cigarettes, and the devices have even formed part of national guidelines on smoking cessation.

They note that "[i]t is plausible that e-cigarette use has contributed" to the fact that quit rates reached their highest levels in 2017. They summarize a number of studies that support this.

For example, a study that tracked take-up of e-cigarettes saw that it was strongly linked to quitting rate success. Another revealed that quitting smoking was the most common reason that people gave for taking up e-cigarettes.

A third study said that there was evidence to suggest that quit rates were higher when people took up vaping. In addition, a fourth study found that vaping was more effective at helping people stay off cigarettes for 1 year or longer than other quitting aids or giving up without aids.

It appears that some experts in public health believe that the rise in vaping is a good thing, as long as it is due to people who smoke exchanging a harmful habit for a less harmful one. They can claim, note the authors, that there is potential for significant "harm reduction."

Emerging concerns and limited evidence

Other researchers, however, do not agree with this view and point to concerns such as people who have never smoked taking up vaping, and people continuing to both smoke and use e-cigarettes.

They suggest that e-cigarettes may be a vehicle for "renormalizing smoking in a society that should ideally be smoke-free." In addition, taking up e-cigarettes could also undermine "complete abstinence."

Given the limited amount of evidence on the benefits and harms of e-cigarettes, it is very difficult to say which view is most valid.

One review of smoking cessation studies that included e-cigarettes concluded that vaping nicotine can help people quit smoking conventional cigarettes for up to 1 year. Two others came to similar conclusions.

However, the authors point out that in terms of hard evidence, all three reviews have relied on the results of just two randomized controlled trials.

Evidence from observational studies — that is, those that followed people who smoke over time — is mixed. Their results have differed from those of controlled trials, which researchers put down to small sample sizes, range of devices used, and other factors.

Most observation studies have examined quit rates among people who smoke and who did and did not vape. Some showed no benefit from e-cigarettes, whereas others concluded that e-cigarette use actually reduced quitting rates. A follow-up analysis came to the same conclusion: People who smoke and vape "are less likely to quit."

However, differences in vaping patterns may account for such a result. For instance, there could be differences in quit rates among those who vaped on a daily basis compared with those who only vaped occasionally.

Another topic of concern is the increasing number of young people who have never smoked who take up vaping. In the U.K., e-cigarette use in this group rose 18–29 percent during 2014–2016.

There is growing evidence, such as from the U.S., that vaping among people aged 14–30 years is associated with a higher likelihood of taking up tobacco-smoking.

The debate continues

However, as long as millions of people continue to smoke conventional cigarettes, it seems that the main public health focus on e-cigarettes is likely to remain on their use as an aid to help people quit smoking tobacco.

Statements such as that recently put out by NHS Health Scotland, and signed by the Royal College of Physicians of Edinburgh, reflect this view.

Compared with how long tobacco-smoking has been around and the huge amount of evidence on its harms, research on e-cigarettes is very much in its infancy.

It could be many years before there is enough evidence to make an absolute judgement about the benefits and harms of vaping.

"Debate continues regarding safety of e-cigarettes, but NHS Scotland and England have concluded that vaping e-cigarettes [is] less harmful than smoking tobacco."

Abhi Mathur

Diet/ Nutrition

Ultraprocessed foods may increase death risk (Medical News Today:20190213)

https://www.medicalnewstoday.com/articles/324423.php

According to one large new study, eating more ultraprocessed foods — such as sugary drinks and ready-made meals — increases the risk of all-cause mortality.

Turkey microwave dinner

Ultraprocessed foods are the new and dangerous norm.

There has never been a closer eye watching the average diet of people in the United States than there is today.

Rising obesity and diabetes rates have spurred furious research into the exact role of the "Western diet."

We already know that high levels of sugar and fat can have a detrimental impact on various systems of the body.

However, the full scale of the damage is only coming into focus now.

As part of this new push to examine the impacts of diet on health and longevity, a group of French scientists focused on ultraprocessed foods.

The term "ultraprocessed" refers to food products that manufacturers have put through industrial processes and contain a range of ingredients. Some examples include sugary drinks, breads, ready-made meals, confectionaries, and processed meats.

The dangers of ultraprocessed foods

According to the authors of the latest study, scientists have already linked ultraprocessed products with a range of conditions, including "obesity, hypertension, and cancer."

They are generally high in energy, fat, and sugar or salt, and low in fiber, which helps explain their links to disease risk. However, on top of this, they tend to contain a range of artificial ingredients that might also play a role in some conditions.

Cancer: 'Ultra-processed' foods may increase risk

One recent study concluded that eating more ultraprocessed foods could increase cancer risk.

Such products tend to be cheap to produce and affordable for consumers; and, according to some research, ultraprocessed foods "dominate the food supplies of high-income countries."

In fact, ultraprocessed foods account for around 57.9 percent of the energy intake for the U.S.

Although scientists had previously linked ultraprocessed foods to many health conditions, until now, none had examined their impact on overall mortality.

A new study, which now appears in JAMA Internal Medicine, set out to fill this gap.

Impact on lifespan

To investigate, the scientists took data from the French NutriNet-Santé Study. In total, they followed 44,551 individuals aged 45 or older for an average of 7.1 years.

Each volunteer completed a web-based form that asked about their food intake, and they provided information about their lifestyle, weight, height, levels of physical activity, and socioeconomic status.

The scientists saw that consuming higher levels of ultraprocessed foods was associated with being younger, earning less, having a lower level of education, living alone, exercising less, and having a higher body mass index (BMI).

As they expected, even after adjusting for a range of factors, higher levels of ultraprocessed foods in the diet were associated with an increased risk of all-cause mortality.

Overall, a 10 percent increase in the amount of ultraprocessed food consumed equated to a 14 percent increase in mortality risk.

The authors conclude:

"Findings from this prospective study of a large French cohort suggest for the first time, to our knowledge, that an increased proportion of ultraprocessed foods in the diet is associated with a higher risk of overall mortality."

Why the risk?

The scientists believe that the negative impact of ultraprocessed food on longevity is likely due to the factors mentioned above — namely, high sodium, fat, sugar, and salt content, low fiber, and a range of artificial additives.

These additives commonly include emulsifiers, which, according to some studies, might be linked with metabolic syndrome and obesity.

Also, there may be a role for chemicals that are produced during the manufacture of these foods. For instance, when people cook some foods at a high temperature, it can produce acrylamide, which some experts think may be carcinogenic.

The authors also note some shortfalls in the study. For instance, participants in the NutriNet-Santé Study tend to be more health conscious than the population at large.

They also mention the risk of reverse causation — in other words, if somebody develops a chronic disease, their dietary patterns might change. For instance, if someone developed a condition that made it harder for them to move around their kitchen, they might become more reliant on ready-made meals.

As ever, more research is needed to knock the kinks out of these data. That said, this is the largest study of its type and is confirmed by earlier studies examining health-related questions.

As the age of ultraprocessed foods marches on, this type of research is more necessary than ever.

Infectious Disease

Researchers discover almost 2,000 new gut bacteria (Medical News Today:20190213)

https://www.medicalnewstoday.com/articles/324418.php

According to numerous recent studies, human gut bacterial populations are capable of influencing various aspects of our physical and mental health. Despite this, many bacteria remain "unmapped" by scientists. A new study has now uncovered approximately 2,000 previously unknown gut bacteria.

A new study has uncovered just under 2,000 new species of gut bacteria.

Recent studies covered by Medical News Today have shown that the gut microbiota could have a role in Parkinson's disease and dementia, and they may explain why type 2 diabetes medication works well for some but not for others.

New research — appearing yesterday in the journal Nature — has now identified almost 2,000 new gut bacterial species that scientists have never cultured in a lab before.

The team of investigators, from the European Bioinformatics Institute (EMBL-EBI) and the Wellcome Sanger Institute, both in Hinxton, United Kingdom, used computational analysis to assess gut microbiome samples from participants across the world.

"Computational methods allow us to understand bacteria that we cannot yet culture in the lab," explains study author Rob Finn, from EMBL-EMI.

"Using metagenomics [the analysis of genetic material] to reconstruct bacterial genomes is a bit like reconstructing hundreds of puzzles after mixing all the pieces together, without knowing what the final image is meant to look like, and after completely removing a few pieces from the mix just to make it that bit harder," he continues.

However, Finn goes on to note, "Researchers are now at a stage where they can use a range of computational tools to complement and sometimes guide lab work, in order to uncover new insights into the human gut."

A new approach

The team was able to reconstruct 92,143 genomes out of samples from 11,850 diverse gut microbiota.

This allowed the researchers to identify 1,952 species of gut bacteria that they and others had not known about until this point.

Finn and colleagues explain that many bacterial species have "maintained a low profile," so to speak, because scientists have only found them in very low numbers in the gut, or they cannot survive outside of the gut environment.

Gut bacteria might influence depression, and this is how

New research suggests that gut bacteria could play a role in depression symptoms.

This, they note, has thus far prevented scientists from adding such species to their list of gut bacteria they know about. This reason is also why the team that conducted the current study decided to take a new route — and use a combination of computational methods to try and come up with a more comprehensive "map" of the human microbiota.

"Computational methods allow us to get an idea of the many bacterial species that live in the human gut, how they evolved, and what kind of roles they may play within their microbial community," says study co-author Alexandre Almeida.

Towards creating 'a solid blueprint'

"In this study," Almeida explains, "we leveraged the most comprehensive public databases of gastrointestinal bacteria to identify bacterial species that have not been seen before. The analysis methods we used are highly reproducible and can be applied to larger, more diverse datasets in the future, enabling further discovery."

In the future, the researchers hope that this and similar studies will further aid their understanding of the human gut, which, in turn, will contribute to developing better treatments of a variety of conditions.

"Research such as this is helping us create a so-called blueprint of the human gut, which, in the future, could help us understand human health and disease better and could even guide diagnosis and treatment of gastrointestinal diseases."

Study co-author Trevor Lawley, of the Wellcome Sanger Institute

At the same time, the team notes that the present study has made the researchers more aware of a large gap in research around gut bacteria.

Scientists currently know relatively little about bacterial species that are characteristic of populations other than those inhabiting Europe and North America, the investigators emphasize.

"We are seeing a lot of the same bacterial species crop up in the data from European and North American populations. However, the few South American and African datasets we had access to for this study revealed significant diversity not present in the former populations," notes Finn.

"This suggests that collecting data from underrepresented populations is essential if we want to achieve a truly comprehensive picture of the composition of the human gut," he adds, urging researchers to keep focusing on more diverse cohorts, going forward.

Alzheimer's disease

Alzheimer's: How do tau tangles grow? (Medical News Today:20190213)

https://www.medicalnewstoday.com/articles/324425.php

New research in the Journal of Biological Chemistry breaks down the process through which tau tangles grow as long as they do. The findings may lead to new therapies that target the formation of tau aggregates in Alzheimer's disease.

Researchers knew that Alzheimer's-related tau aggregates consisted of a small number of long tau fibrils.

One of the hallmarks of Alzheimer's disease is the so-called tau tangles. Tau is a protein contained within the axons of the nerve cells.

More specifically, tau helps form microtubules — essential structures that transport nutrients within nerve cells.

In a healthy brain, the tau protein helps these microtubules remain straight and strong. But in Alzheimer's, tau collapses into aggregates called tangles. When this happens, the microtubules can no longer sustain the transport of nutrients and other essential substances in the nerve cells, which eventually leads to cell death.

How toxic and damaging these tau tangles can be, and how far they can spread, depends on their length. However, until now, scientists did not know why some tau tangles are longer than others in Alzheimer's, or how these aggregates grow so long in the first place.

But now, scientists at the Ohio State University in Columbus have devised a mathematical model that has helped them explain what biological processes lie behind the formation of tau tangles.

The new research, conducted by Carol Huseby, Jeff Kuret, and Ralf Bundschuh, explains how the tangles grow and reach various lengths.

How tau fibrils elongate

Huseby and colleagues started with a basic two-step model of tau aggregation. Step one consists of two tau proteins slowly binding together, and step two involves additional tau molecules attaching themselves to the two proteins.

The researchers expanded this basic model to include additional ways in which tau fibrils behave. Scientists have previously described fibrils as "the tangles untangled."

The amended model predicted that the tau protein would break down into several short fibrils. However, the researchers knew that under the microscope, tau tangles reveal long fibrils, not short ones.

Alzheimer's: 9 new genetic risk factors found

Scientists uncover new genetic risk factors for this neurodegenerative condition, as well as novel biological mechanisms that may drive it.

So, in an attempt to explain the discrepancy between what the model predicted and the microscopic reality, the researchers wondered whether shorter fibrils joined together to form long fibrils, in a similar way to hair extensions.

Further experiments in which the scientists labeled tau fibrils with fluorescent colors revealed that indeed long fibrils were made up of shorter, differently-colored fibrils that had joined at the ends.

To the authors' knowledge, these findings show for the first time that tau fibrils can grow in size by adding more than just a single protein at a time. Rather, shorter fibrils can attach to each other, elongating a fibril more quickly.

Study co-author Kuret explains that the findings may shed light on how tau tangles — and implicitly the disease itself — can spread from one cell to another. Once a long fibril is "broken up into little pieces, those can diffuse, facilitating their movement from cell to cell," he says.

Furthermore, say the researchers, the findings help elucidate how tau fibrils can grow to be hundreds of nanometers long. Also, such knowledge can lead to a new class of drugs, which could stop tau from aggregating.

In the future, the scientists plan on amending their model to account for the many nuances that make the tau protein so complex. For instance, this series of experiments only used one type of tau, but there are six isoforms of the protein. Also, chemical processes, such as phosphorylation, can further change the structure of the protein.

HIV/AIDS

Transgender women at higher risk of being in HIV transmission network (New Kerala:20190213)

https://www.newkerala.com/news/read/100986/transgender-women-at-higher-risk-of-being-in-hiv-transmission-network.html

Washington D.C, Feb 12 : The HIV virus evolves quickly with genetic variations arising frequently and local health departments and the Centers for Disease Control and Prevention (CDC) in USA use those HIV genetic sequences to trace the virus' transmission history.

This information allows researchers and public health officials to build transmission networks, clusters of people with genetically similar HIV. Transmission networks help determine which groups might be at increased risk for transmitting HIV, but they do not reveal who contracted the infection from whom.

Recently, researchers from the University Of California San Diego School Of Medicine, in association with the Los Angeles County Department of Public Health used this data to look for HIV infection trends in the region.

While they expected to find many transmission clusters with men who have sex with men, a group that makes up 62 per cent of new HIV cases each year in the US, they were surprised to find more transgender women (people assigned male at birth, but who identify as female) and heterosexual cisgender men (people who were assigned male at birth and identify as male) in these clusters than they had anticipated.

The results of the study, published February 11 in Lancet HIV, suggest transgender women are at higher risk of being in an HIV transmission network than men who have sex with men.

The researchers further elaborate that, in addition, cisgender men in these clusters should be considered at higher risk for HIV.

Speaking about it, senior author Joel Wertheim, said, This is a pattern of HIV transmission that we didn't know about before, and the information could help us slow the spread of the virus.

Wertheim led the study with first author Manon Ragonnet-Cronin, PhD, who was a postdoctoral researcher in his group at the time of the study.

According to reports, transgender women, who make up 27.7 per cent of new HIV cases each year in Los Angeles County and, in addition, are known to have high rates of undiagnosed infections.

Yet, according to the Wertheim and Ragonnet-Cronin, HIV transmission networks for transgender women have never before been studied.

The researchers found that transgender women in Los Angeles County were distributed across 126 HIV transmission clusters. These women were very likely to cluster with each other (i.e., be linked to at least one other transgender woman), indicating shared risk activities. Transgender women were also linked to more cisgender men than expected.

The approach allowed researchers to characterise the partners of transgender women across USA.

Now Wertheim is working with the CDC and public health departments in Chicago, New York City and Houston to employ this same molecular epidemiology approach to identify local groups at highest risk for HIV, and greatest need for intervention and support.

Tuberculosis

New TB drug may shorten treatment duration: Study (New Kerala:20190213)

https://www.newkerala.com/news/read/100975/new-tb-drug-may-shorten-treatment-duration-study.html

New York, Feb 12 : A new experimental antibiotic for tuberculosis (TB) has been shown to be more effective against TB than Isoniazid, a decades old drug which is currently one of the standard treatment for the disease, finds a study on mice.

The new drug, called AN12855, has several advantages over Isoniazid as Isoniazid requires conversion to its active form by a Mycobacterial enzyme, KatG, in order to kill the pathogen, which creates some problems.

In some M. tuberculosis, KatG is nonfunctional. That does not make M. tuberculosis any less pathogenic, but it prevents the drug from working. Consequently, this creates an easy avenue for the development of drug resistance.

In the study, the new drug showed a much lower tendency to develop resistance, and it remains in the tissues where the Mycobacterium tuberculosis bacteria reside for longer, killing them more effectively.

The goal of TB drug development programmes is to develop universal treatment regimens that will shorten and simplify TB treatment in patients, which typically takes at least six months, and sometimes more than a year, said lead author Gregory T. Robertson, Assistant Professor at the Colorado State University in Fort Collins in the US.

For the study, the researchers used a new TB mouse model that develops these M. tuberculosis-containing granulomas to compare Isoniazid and AN12855.

Granuloma refers to a mass of granulation tissue, typically produced in response to infection, inflammation, or the presence of a foreign substance.

"We discovered that the drugs differed dramatically with respect to their abilities to kill the pathogen in highly diseased tissues," said Robertson.

AN12855 proved more effective, "without selecting for appreciable drug resistance", added Robertson in the study published in the journal Antimicrobial Agents and Chemotherapy.

Despite significant progress in combating tuberculosis, it remains the leading infectious cause of death worldwide, he said.

"Multidrug resistance is a further challenge to the mission to control TB globally. Collectively, our group has pioneered the use of new TB mouse efficacy models to help advance innovative new therapies designed to shorten the length of TB treatment."

Hepatitis B

Novel humanised mouse model to study hepatitis B (New Kerala:20190213)

https://www.newkerala.com/news/read/100852/novel-humanised-mouse-model-to-study-hepatitis-b.html

Beijing, Feb 12 : Researchers have developed a humanised mouse model to study liver cirrhosis development induced by hepatitis B virus infection.

Developing an ideal animal model of hepatitis B virus (HBV) infection is difficult because the virus has an extremely narrow host range and almost exclusively infects humans, Xinhua news agency reported.

Previous studies show that mesenchymal stem cells from human bone marrow (hBMSCs) have the potential to differentiate into hepatocyte-like cells in vitro and continue to maintain essential hepatocyte functions in vivo after being transplanted into host mouse livers.

Hepatocytes make up 70 to 85 per cent of the liver mass, the researchers from Xiamen University and Zhejiang University, said.

For the study, the research team transplanted hBMSCs into mice.

The mice show robust differentiation and proliferation of functional human hepatocytes and multiple immune cells, according to the research paper published in the British Journal of Gut.

After HBV infection, the humanised mice developed specific immune and inflammatory responses and showed progression to chronic hepatitis and liver cirrhosis.

The researchers said the new humanised mouse model recapitulates the liver cirrhosis induced by human HBV infection, providing opportunities for better understanding the immune pathophysiology of HBV and testing promising antiviral therapies in vivo.

According to the World Health Organisation, an estimated 257 million people are living with HBV infection, which can cause chronic infection and put people at high risk of death from cirrhosis and liver cancer.