



DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY
Monday 20190805

हार्ट अटैक

स्टेम सेल कॉम्बो से Heart Attack से हुए नुकसान की भरपाई में मिलेगी मदद (Navbharat Times:20190805)

<https://navbharattimes.indiatimes.com/lifestyle/health/new-study-says-that-stem-cell-combo-may-help-reduce-the-damage-done-by-heart-attack/articleshow/70529506.cms>

डैमेज टीशू वाले क्षेत्र को हार्ट मसल्स सेल्स और दिल की दीवार की बाहरी परत से ली गई सहायक कोशिकाओं के संयोजन के साथ प्रत्यारोपित कर, क्षतिग्रस्त दिल की मरम्मत में वे समर्थ हो सकते हैं।

हार्ट अटैक के नुकसान की भरपाई करेगा स्टेम सेल

शोधकर्ताओं ने मानव शरीर के स्टेम कोशिकाओं से उत्पन्न दिल की कोशिकाओं के एक संयोजन को ढूंढ निकाला है, जिससे दिल के दौरों से होने वाले नुकसान से उबरने में मदद मिल सकती है। पत्रिका 'नेचर बायोटेक्नॉलजी' में प्रकाशित एक स्टडी में भारतीय मूल के शोधकर्ता के नेतृत्व वाली एक टीम ने कहा है कि डैमेज टीशू वाले क्षेत्र को हार्ट मसल्स सेल्स और दिल की दीवार की बाहरी परत से ली गई सहायक कोशिकाओं के संयोजन के साथ प्रत्यारोपित कर, क्षतिग्रस्त दिल की मरम्मत में वे समर्थ हो सकते हैं।

लैब में विकसित मानव स्टेम कोशिकाओं का इस्तेमाल

वॉशिंगटन विश्वविद्यालय के शोधकर्ताओं संग कैम्ब्रिज विश्वविद्यालय के शोधकर्ताओं ने प्रत्यारोपित हृदय-कोशिकाओं को अधिक समय तक जीवित रखने में मदद करने के लिए मानव स्टेम

कोशिकाओं से विकसित हुई सहायक एपिकार्डियल कोशिकाओं का प्रयोग किया। शोधकर्ताओं ने कोशिका संयोजन का परीक्षण करने के लिए लैब में विकसित मानव स्टेम कोशिकाओं से 3डी मानव हृदय ऊतक का इस्तेमाल किया, जिसमें यह पाया गया कि सहायक एपिकार्डियल कोशिकाएं हार्ट मसल्स सेल्स को बढ़ाने और परिपक्व होने में मदद करती हैं।

करें ये एक्सर्साइज, हार्ट अटैक का खतरा होगा 80% कम

जीवन रक्षक हार्ट ट्रांसप्लांट पर निर्भर हैं हजारों लोग

कैम्ब्रिज विश्वविद्यालय के ब्रिटिश हार्ट फाउंडेशन (बीएचएफ) के शोधकर्ता और इस शोध के प्रमुख संजय सिन्हा ने कहा, “ब्रिटेन में हजारों की तादाद में लोग दिल की बीमारियों के साथ जी रहे हैं, इनमें से कई जीवन रक्षक हार्ट ट्रांसप्लांट या दिल का प्रत्यारोपण कराने की दौड़ में हैं, लेकिन ब्रिटेन में हर साल केवल 200 ही दिल प्रत्यारोपित किए जाते हैं। इस वजह से यह जरूरी है कि हम इसके वैकल्पिक उपचार की खोज शुरू करें।”

स्टेम सेल की शक्ति से दिल का उपचार करने में समर्थ

शोधकर्ताओं को उम्मीद है कि किसी मरीज की कोशिकाओं का उपयोग कर वे एक दिन स्टेम सेल्स की शक्ति को काम में लाकर इंसान के दिल का उपचार करने में समर्थ हो पाएंगे। बीएचएफ में मेडिकल निदेशक नीलेश समानी ने कहा, “बात जब डैमेज हो चुके दिल के उपचार की आती है तो स्टेम सेल्स अभी भी अपने शुरुआती वादे पर खरा नहीं उतरा है। हमें उम्मीद है कि यह नया शोध इस काम में हमारी मदद कर सकता है।”

हार्ट अटैक से 1 महीने पहले बाँडी देती है ये संकेत

एक वक्त था जब हार्ट अटैक किसी खास उम्र में जाकर हमला करता था, लेकिन आज हमारा लाइफस्टाइल और खान-पान ऐसा हो गया है कि हार्ट अटैक किसी को भी और किसी भी उम्र में हो सकता है। कई बार तो ऐसा होता है कि हेल्दी खान-पान वाला शख्स भी इसकी चपेट में आ जाता है।

इन संकेतों को न करें नजरअंदाज

क्या आप जानते हैं कि हार्ट अटैक आने से पहले ही हमारा शरीर इसकी दस्तक देने लगता है, लेकिन हम उसे नजरअंदाज कर देते हैं। आइए जानते हैं कि कैसे हार्ट अटैक आने से पहले ही इसके कदमों की आहट सुनाई देने लगती है और हमारी बाँडी क्या-क्या संकेत देती है:

जबड़े या फिर बाजू में दर्द

जब हार्ट में कोई परेशानी होती है और सही मात्रा में ऑक्सीजन नहीं मिलती तो यह दर्द संबंधी सिग्नल हमारे दिमाग और शरीर के अन्य हिस्सों को भेजने लगता है। यह दर्द जबड़ों और बाजुओं में महसूस होता है। दर्द के साथ सुन्न या फिर अकड़न भी हो सकती है।

थकान

क्या आपके साथ कभी ऐसा हुआ है कि बिना काम किए ही आपको थकान होने लगे और शरीर जवाब देने लगे? अगर ऐसा है तो नज़रअंदाज़ न करें और तुरंत डॉक्टर से संपर्क करें।

छाती में दर्द

अगर छाती में दर्द हो और सांस लेने में परेशानी हो तो फिर इसे यूँही न समझें। यह भी हार्ट अटैक से पहले का सिग्नल है, जो हमारी बॉडी भेजती है।

चक्कर आना

जब हार्ट कमज़ोर होता है और वह किसी भी तरह का प्रेशर बर्दाश्त करने योग्य नहीं होता तो चक्कर आने लग जाते हैं। कई बार हम इसे कमज़ोरी से ही जोड़कर देख लेते हैं, लेकिन चक्कर आना हार्ट अटैक की भी निशानी है।

स्टेम सेल का प्रयोग से हार्ट फेल होने के बाद भी सही से धड़केगा दिल, ये हैं हार्ट अटैक के लक्षण (Dainik Jagran:20190805)

<https://www.jagran.com/news/national-heart-failure-can-develop-suddenly-for-instance-after-a-heart-attack-jagran-special-19462628.html>

शोधकर्ताओं ने स्टेम सेल का प्रयोग कर नष्ट हुई हृदय की मांसपेशियों और रक्त वाहिकाओं को पुनर्जीवित किया जा सकता है।

नई दिल्ली [जागरण स्पेशल] । नेचर बायोटेक्नोलॉजी नामक पत्रिका में प्रकाशित एक अध्ययन के मुताबिक लंदन स्थित कैम्ब्रिज विश्वविद्यालय के शोधकर्ताओं ने हार्ट फेल के उपचार में बड़ी सफलता हाथ लगने का दावा किया है। शोधकर्ताओं ने स्टेम सेल का प्रयोग कर हृदय के क्षतिग्रस्त भागों को ठीक करने में सफलता हासिल की है।

शोधकर्ताओं ने चूहों के बुरी तरह क्षतिग्रस्त हृदय का उपचार करने के लिए इंसानी हृदय के विभिन्न हिस्सों से ली गई दो प्रकार की स्टेम कोशिकाओं का प्रत्यारोपण किया। नतीजे चौंकाने वाले रहे। इस तकनीक की मदद से नष्ट हुई हृदय की मांसपेशियों और रक्त वाहिकाओं को पुनर्जीवित किया जा सकता है।

तेजी से होता स्टेम सेल का उपयोग

चिकित्सा विज्ञान में स्टेम सेल का उपयोग तेजी से किया जा रहा है। क्योंकि उनमें क्षतिग्रस्त या मृत ऊतकों को पुनर्जीवित करने की क्षमता होती है। ये कोशिकाएं हड्डी, मांसपेशियों, तंत्रिका, त्वचा, अंगों और शरीर के अन्य ऊतकों के आकार में विकसित हो सकती हैं।

यह रोगी हो सकते हैं लाभान्वित

संभावित रोगी जो एक दिन स्टेम सेल थेरेपी से लाभान्वित हो सकते हैं, उनमें रीढ़ की हड्डी में चोट, अल्जाइमर या पार्किंसंस रोग, स्ट्रोक, कैंसर और गठिया वाले लोग शामिल हैं।

इंसानों में विफल रहा प्रयोग

अतीत में हृदय की मांसपेशियों की कोशिकाओं को इंसानी हृदय में प्रत्यारोपित करने की कोशिश विफल रही है क्योंकि कोशिकाएं कुछ ही दिनों में मर गईं। लेकिन सहायक कोशिकाओं के जुड़ने से हृदय की कोशिकाओं को विकसित होने और परिपक्व होने में मदद मिली और नए ऊतक बने।

हार्ट फेल के मायने

हार्ट फेल होने का सीधा सा मतलब होता है कि ये पूरे शरीर में खून को पंप करने में अक्षम हो चुका है। हार्ट फेल आमतौर पर तभी होता है जब हृदय बहुत कमजोर या वसायुक्त (सख्त) हो जाता है। इसका मतलब यह नहीं कि आपका हृदय काम करना बंद कर देता है। ऐसी स्थिति में बेहतर काम करने के लिए इसे थोड़ी मदद की जरूरत होती है। यह किसी भी उम्र में हो सकता है, लेकिन अधिक उम्र होने पर इसकी आशंका ज्यादा होती है।

महिलाओं में हार्ट अटैक के दौरान कई तरह के लक्षण दिखाई देते हैं, जिन्हें अनदेखा करना महंगा पड़ सकता है। आइए जानते हैं क्या हैं वो लक्षण जिन्हें महिलाओं को भूलकर भी अनदेखा नहीं करना चाहिए।

शरीर के ऊपरी भाग में तेज दर्द

गर्दन, पीठ, दांत, भुजाएं और कंधे की हड्डी में दर्द होना हार्ट अटैक के लक्षण हैं। इसे 'रेडीएटिंग' दर्द कहते हैं। यह इसलिए होता है क्योंकि दिल की कई धमनियां यहां समाप्त होती हैं जैसे उंगलियों के पोर जहां दर्द केंद्रित होता है।

चक्कर आना

चक्कर आना या सिर घूमना हार्ट अटैक का एक अन्य लक्षण है। यह हृदय को जाने वाली एक शिरा में अवरोध होने के कारण होता है। जब महिलाओं को अपने अंदर ये बदलाव दिखे तो उन्हें सावधान हो जाना चाहिए। इसे काम के प्रेशर के चलते होने वाली कमजोरी या फिर कोई दूसरा कारण ना समझें। हार्ट अटैक के लक्षणों को अक्सर लोग मामूली समझ कर नजरअंदाज कर देते हैं। जिसके परिणाम बाद में झेलने पड़ते हैं।

सीने में दर्द

महिलाओं में हार्ट अटैक का लक्षण केवल सीने में दर्द नहीं हो सकता परंतु निश्चित तौर पर ऐसा होता है। लक्षणों पर ध्यान देने के बजाय यदि आप को कुछ नए लक्षण महसूस हो रहे हैं और वे दूर नहीं हो रहे हैं तो तुरंत डॉक्टर के पास जाएं। डॉक्टरों के अनुसार बाद में पछताने से अच्छा है कि सुरक्षित रहें।

जी मिचलाना, उलटी, पेट खराब होना

हार्ट अटैक के समय पुरुषों की तुलना में महिलाओं में जी मिचलाना, उलटी या अपचन जैसे लक्षण अधिक दिखाई देते हैं। यह अक्सर इसलिए होता है क्योंकि दिल को रक्त पहुंचाने वाली दायीं धमनी जो दिल में गहराई तक जाती है, अवरुद्ध हो जाती है।

सांस लेने में परेशानी

एक अध्ययन से पता चला है कि लगभग 42% महिलाएं जिन्हें हार्ट अटैक आया उन्हें सांस लेने में परेशानी की समस्या का सामना करना पड़ा। हालांकि पुरुषों में भी यह लक्षण होता है परंतु महिलाओं में सीने में दर्द के बिना सांस लेने में परेशानी जैसी समस्या का सामना करना पड़ सकता है।

पसीना आना

यदि आप रजोनिवृत्ति के दौर से नहीं गुजर रही हैं और फिर भी आपको अचानक पसीना आने लगे तो संभल जाएं। इस लक्षण की अनदेखी ना करें तुरंत अपने नजदीकी अस्पताल या डॉक्टर से संपर्क करें।

अक्यूट कोरोनरी सिंड्रोम

दिल के लिए खतरनाक हो सकता है Acute Coronary Syndrome (Navbharat Times:20190805)

<https://navbharattimes.indiatimes.com/lifestyle/health/acute-coronary-syndrome-know-everything-about-it-as-well-symptoms-and-cure/articleshow/70507736.cms>

Acute Coronary Syndrome एक ऐसी स्थिति होती है जिसमें कोरोनरी आर्टरी में ब्लड का फ्लो अचानक ही कम हो जाता है। जानें इससे हार्ट के लिए क्या खतरा होता है, कैसे इससे बचा जा सकता है। साथ ही जानें इसके कारण।

Acute Coronary Syndrome एक ऐसी स्थिति होती है जिसमें कोरोनरी आर्टरी में ब्लड का फ्लो अचानक ही कम हो जाता है। इस वजह से ब्लड पर्याप्त मात्रा में हार्ट तक नहीं पहुंच पाता। इसके परिणास्वरूप व्यक्ति को स्ट्रोक, एंजाइना या फिर हार्ट अटैक आ सकता है। यह आमतौर पर कोरोनरी आर्टरी की दीवारों पर फैट जमा होने की वजह से होता है। इन्हीं आर्टरी की वजह से हार्ट को जरूरी पोषक तत्वों और ऑक्सीजन पहुंचती है। अगर हार्ट तक पर्याप्त मात्रा में ऑक्सीजन पहुंचे तो हार्ट मसल्स के सेल्स की मृत्यु हो सकती है। ऐसी स्थिति में हार्ट अटैक की संभावना अधिक होती है।

अक्यूट कोरोनरी सिंड्रोम के लक्षण

- 1- छाती में दर्द होता है, जिसे एंजाइना भी कहा जाता है। कई बार छाती में दर्द के अलावा, दबाव और जलन भी महसूस होती है।
- 2- यह दर्द छाती से होता हुआ कंधों, बाजूओं और गर्दन तक पहुंच जाता है।

3-उल्टी आने लगती है और पाचन सही तरह से नहीं हो पाता।

4- सांस लेने में दिक्कत होने लगती है।

5- अचानक ही खूब पसीना आने लगता है और थकान होने लगती है।

हालांकि ये लक्षण व्यक्ति की उम्र, लिंग और मेडिकल कंडीशन के हिसाब से अलग-अलग हो सकते हैं।

की-बोर्ड पर लगातार टाइपिंग से हो सकता है कार्पल टनल सिंड्रोम

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इसके कारण क्या हैं और किन्हें खतरा है?

जब कोरोनरी आर्टरी की दीवारों पर फैट जमा हो जाता है, तो वे ब्लॉक हो जाती हैं। इससे हार्ट तक न तो सही तरह से ब्लड का फ्लो हो पाता है और न ही पोषक तत्व वहां तक पहुंच पाते हैं। ऐसी स्थिति में हार्ट मसल्स की कोशिकाओं की मृत्यु तो हो ही जाती है, लेकिन अगर मृत्यु न भी हो तो भी ये कोशिकाएं इतनी कमजोर हो जाती हैं कि सही तरीके से काम नहीं कर पातीं।

करें ये एक्सर्साइज, हार्ट अटैक का खतरा होगा 80% कम

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इलाज

अक्यूट कोरोनरी सिंड्रोम के इलाज के लिए पहले इसका पता लगाया जाना जरूरी है। इसके लिए ईसीजी किया जाता है, जिसे इलेक्ट्रोकार्डियोग्राम के नाम से जाना जाता है। इसके अलावा ब्लड टेस्ट और कार्डिएक परफ्यूजन स्कैन के जरिए भी इस सिंड्रोम का पता लगाया जाता है। इन टेस्ट के आधार पर ही डॉक्टर यह निर्णय लेते हैं कि लक्षण एंजाइना के हैं या फिर हार्ट अटैक के। फिर इसी हिसाब से इलाज शुरू किया जाता है।

बता दें कि अक्यूट कोरोनरी सिंड्रोम एक मेडिकल इमर्जेंसी है। यानी इसके लिए तुरंत इलाज की जरूरत होती है। अगर किसी भी व्यक्ति में ऊपर बताए गए लक्षण दिखें तो उसे जल्द से जल्द इलाज डॉक्टर से संपर्क करना चाहिए।

डॉक्टरी इलाज के अलावा डायट में बदलाव करके भी अक्यूट कोरोनरी सिंड्रोम से बचा जा सकता है। इसके लिए:

स्मोकिंग न करें और शराब भी न पीएं।

हेल्दी डायट लें और कम फैट का सेवन करें

जंक फूड और फैड डायट से दूरी बनाएं। फल, सब्जियों के अलावा लीन प्रोटीन खाएं।

नियमित रूप से अपना कलेस्ट्रॉल और ब्लड प्रेशर का लेवल चेक करें।

फिटनेस पर ध्यान दें। रोजाना एक्सर्साइज करें और बाँडी को ऐक्टिव रखें।

अपना वजन भी समय-समय पर चेक करते रहें और उसे कंट्रोल में रखें।

डार्क चॉकलेट खाते हैं, तो कम होगा डिप्रेशन

■ **एनबीटी** : अगर आप डार्क चॉकलेट खाने के शौकीन हैं, तो एक खुशखबरी है। रिसर्च से पता चला है कि किसी भी किस्म का डार्क चॉकलेट आपका मूड सकारात्मक रख सकता है। सबसे बड़ी बात यह कि इसे खाने से आपका डिप्रेशन कम हो सकता है। यूनिवर्सिटी कॉलेज लंदन के रिसर्च में यह बात सामने आई। यह रिसर्च पेपर 'डिप्रेशन ऐंड एन्जाइटी' पत्रिका में छपी है। इसमें अलग-अलग तरह की चॉकलेट खाने वाले कुल 13, 626 लोगों पर सर्वे किया गया था। सर्वे में पाया गया कि चॉकलेट न खाने वालों की तुलना में जिन लोगों ने 24 घंटे में कोई डार्क चॉकलेट खाई थी, उनके डिप्रेशन संबंधी लक्षणों



में 70 % की कमी पाई गई। यही नहीं जिन लोगों ने डार्क चॉकलेट से फर्क कोई दूसरा चॉकलेट खाया था, उनके डिप्रेशन सिम्प्टम में भी 25 % की गिरावट आई थी।

शाकाहारी भोजन कैंसर के इलाज में कारगर

नई दिल्ली | एजेसी

खुद को स्वस्थ रखने और बीमारियों से बचने के लिए खानपान में बदलाव करना बेहद जरूरी होता है। हालांकि, कुछ ऐसी गंभीर बीमारियां होती हैं जिनमें शाकाहारी भोजन फायदेमंद होता है।

अभी हाल ही में एक अध्ययन में पता चला है कि खानपान में बदलाव करने से कैंसर जैसी जानलेवा बीमारी पर काबू पाने में मदद मिल सकती है। अगर लाल मांस, मछली और अंडों का सेवन कम कर दिया जाए तो कैंसर के उपचार में काफी हद तक मदद मिल सकती है।

अध्ययन

- मांसाहारी भोजन कम करने से कैंसर के इलाज में होगा फायदा
- अमीनो एसिड की अधिक मात्रा से बढ़ता है कैंसर का ट्यूमर

चूहों पर अध्ययन : नेचर पत्रिका में प्रकाशित यह अध्ययन चूहों पर किया गया। शोध में पाया गया कि यदि कोई व्यक्ति रेड मीट, मछली और अंडों का सेवन कम कर दे जिनमें अमीनो एसिड की मात्रा अधिक होती है तो कैंसर ट्यूमर के विकास में कमी आने लगती है।

How a dietary change might boost cancer therapy (Medical News Today:20190805)

<https://www.medicalnewstoday.com/articles/325939.php>

In a recent study, mice that ate a diet with reduced levels of a particular amino acid responded better to cancer treatments. The findings are intriguing, but the authors call for caution.

Meat and eggs contain particularly high levels of methionine.

Doctors and other experts now understand the significant role that nutrition plays in health.

In fact, it is possible to manage some conditions, such as diabetes and hypertension, through diet alone.

However, the role of nutrition in preventing or treating cancer is not so clear cut.

Jason Locasale, the senior author of a recent study, explains: "Cancer is, in many ways, more difficult, because it's different diseases with multiple forms, and often defined at a molecular level, so we're just beginning to understand how diet and nutrition are influencing that."

Their paper, published in the journal *Nature*, looks at the role of an amino acid called methionine in cancer treatment.

What is methionine?

Methionine is necessary for our cells to function. Experts refer to it as an essential amino acid because our bodies cannot make it. People need to take it in through the food that they eat.

Many foods contain methionine, but meat and eggs contain particularly high levels.

This amino acid has intrigued researchers for many years. For instance, a study published in 1993 found that restricting methionine consumption extended the lifespan of rats.

Later studies found a role for the amino acid in metabolic conditions. One of these studies showed that it could prevent diet induced obesity in an animal model.

Some researchers have begun to examine its potential role in cancer treatment. Methionine piqued researchers' interest because it plays an important role in a cellular mechanism that some chemotherapy drugs and radiation therapy target. Scientists know this pathway as one-carbon metabolism.

Also, some earlier studies have hinted that restricting methionine in the diet might have an anticancer effect. The authors explain:

"We, therefore, reasoned that methionine restriction could have broad anticancer properties by targeting a focused area of metabolism and that these anticancer effects would interact with the response to other therapies that also affect one-carbon metabolism."

Testing methionine restriction

To investigate, the researchers used a variety of cancer models. Firstly, they tested two types of treatment resistant cancer tissue taken from humans and grafted onto mice.

When the scientists fed mice a diet with reduced levels of methionine, tumor growth slowed compared with mice fed a standard diet.

When they looked into the metabolic details, as expected, they found that restricting methionine reduced tumor growth by hindering one-carbon metabolism.

Next, the scientists used a common chemotherapy drug in combination with a methionine restricted diet. They used a low dose of the drug, which was insufficient to shrink the tumor. However, according to the authors, the low methionine diet combined with the drug led to a "marked inhibition of tumor growth."

Schizophrenia: Common amino acid could hold key, study finds

A recent study links schizophrenia with an overload of methionine in pregnant mothers.

When the researchers investigated a type of mouse sarcoma that does not respond to radiation therapy, they found that a methionine restricted diet alone was not sufficient to slow tumor growth. However, when these mice also received a dose of radiation, tumor growth was significantly slowed.

In the next phase of their study, the scientists fed six healthy humans a diet with low levels of methionine for 3 weeks. They measured similar metabolic effects to those seen in the mice models.

"This study suggests that dietary restriction of methionine induces rapid and specific metabolic profiles in mice and humans that can be induced in a clinical setting."

Senior author, Jason Locasale

Locasale believes that "[b]y disrupting metabolic pathway with the dietary restriction of methionine, it might be possible to enhance the effects of chemotherapies that target these aspects of cancer metabolism."

As the authors explain, these results are preliminary, and this approach might not be effective in humans or for all cancer types. In fact, they believe that methionine restriction could, perhaps, boost the growth of some cancers.

In short, the researchers make it clear that this is not a call for people to become vegan.

Although this type of dietary restriction will not reach the clinic for some time, this is an important step in understanding how diet can influence cancer growth. As the authors conclude:

"This study may help to further establish principles of how dietary interventions may be used to influence cancer outcomes in broader contexts."

Medical Commission Bill

Explained: Why Medical Commission Bill bothers doctors (The Indian Express:20190805)

<https://indianexpress.com/article/explained/national-medical-commission-bill-what-changes-in-medical-education-5843397/>

National Medical Commission (NMC) Bill explained: The existing Act provides for the Medical Council of India (MCI), the medical education regulator in India.

Telling Numbers: The extent of groundwater over-exploitation, state by state

National Medical Commission, NMC Bill, MBBS, MMBS Students, National exit test, NEXT, NEXT test, National Medical Commission replacing Medical Council of India, Medical Council of India, Lok Sabha, Medical sector in India, Harsh Vardhan, Medical Council Act 1956, Indian Express explained

On the National Licentiate Examination, the Committee (in 2018) recommended that the relevant clause be redrafted “so as to make the final year MBBS examination as the licentiate examination”.

On Thursday, Rajya Sabha passed the National Medical Commission (NMC) Bill that seeks to overhaul the medical education regulation infrastructure. Since then, doctors have struck work in Delhi and other cities. What is the Bill about and why is it controversial?

Bill status

An earlier version of the NMC Bill was introduced during the previous Lok Sabha and later referred to the Parliamentary Standing Committee on Health and Family Welfare. It lapsed with the dissolution of that Lok Sabha. In the current session, the Bill was reintroduced with changes based on the Committee’s recommendations. After Lok Sabha passed it, it was sent to Rajya Sabha with two new amendments and passed. It is now headed back to Lok Sabha, where the government enjoys a brute majority.

Licence to practice

Section 32 of the NMC Act 2019 allows the proposed NMC, which will replace the Medical Council of India, to grant “limited licence to practice medicine at mid-level as a community health provider”. The Indian Medical Association (IMA) sees it as encouraging quackery. In a letter to Prime Minister Narendra Modi on July 30 calling for the Bill to be redrafted, the IMA wrote: “We are deeply concerned about granting non medical ‘persons connected with modern scientific medical profession’, licence to practise modern medicine... This is nothing but legalising and promoting quackery in India... Who will guarantee that these ‘legalised

quacks' will work in villages only?... National Medical Commission Bill will open the floodgates for licencing 3.5 lakhs 'legalised quacks'. This amounts to 'licence to kill'."

Bridge course

Doctors have expressed concerns about the licence mentioned in Section 32 being another name for a contentious "bridge course". Such a course has been proposed in the original version of the Bill. It would have allowed practitioners of homoeopathy and Indian systems of medicine to go on to practice allopathy. In the new Bill, the bridge course has been dropped as per the recommendations of the Parliamentary Standing Committee on Health and Family Welfare, which wrote: "The Committee is of the view that the bridge course should not be made a mandatory provision in the present Bill. However, the Committee appreciates the need to build the capacity of the existing human resources in the healthcare sector, to address the shortage of healthcare professionals so as to achieve the objectives of the National Health Policy, 2017... The Committee, therefore, recommends that the State Governments may implement measures to enhance the capacity of the existing healthcare professionals including AYUSH practitioners, BSc (Nursing), BDS, B Pharma etc to address their State specific primary healthcare issues in the rural areas."

Exit examination

The original Bill had proposed a licentiate examination for doctors, and the IMA had expressed concerns about it then too. The new Bill proposes a single exit exam – the final MBBS exam, which will work as a licentiate examination, a screening test for foreign medical graduates, and an entrance test for admission in postgraduate programmes. It also provides for just one medical entrance test across the country

In the letter, IMA wrote: "The Bill condenses final year MBBS exam, Licentiate exam. and PG NEET into one examination. This effectively removes the opportunity to reappear for PG selection. Moreover, the examination being objective in nature, increases the workload and stress level of the students manifold. Allowing foreign medical graduates to take the same examination will be an injustice... The current system allows medical graduates to practise irrespective of the status of his/her PG NEET."

Arguments in favour

Dr K S Reddy, president of the Public Health Foundation of India and former professor of cardiology at AIIMS, said: "The NMC Bill opens the path to a long-awaited reform of medical education... Mid-level health workers like Community Health Providers are very much needed but their training programmes, competencies and roles have to be clearly defined to differentiate them from medical graduates. The Allied Healthcare Professionals Bill, which is to be examined by the Standing Committee, is the right place to position them. A common exit examination is needed for standardisation and postgraduate course selection but must be preceded by a college-level testing of practical clinical skills as a qualifier for the theory-based NEXT (National Exit Test)."

Harsh Vardhan: ‘MCI was plagued by corruption, led to diminishing respect for medical profession’ (The Indian Express:20190805)

<https://indianexpress.com/article/india/crime/harsh-varadhan-mci-was-plagued-by-corruption-led-to-diminishing-respect-for-medical-profession-5877993/>

Union Health Minister Harsh Vardhan speaks to Abantika Ghosh on why the NMC Bill is a historic reform and why he thinks India is set to see a brain gain in the medical profession.

National Medical Commission is no cure-all, many important questions remain

NMC Bill, National Medical Commission bill, HarshVardhan interview, Harshvardhan on NMC bill, You called the National Medical Commission Bill a historic legislation in Parliament, but doctors have been very upset about it. What do you have to say to those who did not get a direct audience with you but still nurture doubts about many aspects of the Bill?

The National Medical Commission Bill, 2019 is in line with Hon’ble Prime Minister Narendra Modiji’s vision of providing universal healthcare to each and every citizen of India. I have no doubt that the NMC Bill, 2019 will go down in history as the biggest reform of the 21st century in the field of medical education. The Bill is student-friendly and aims to rid medical education of vested interests that were subverting qualitative improvements in this sector. The Medical Council of India (MCI) was plagued by corruption and had become the reason for the diminishing respect of medical profession in the country. Replacing it with the NMC has been one of the greatest achievements of my life.

As I have been an ENT surgeon for 35 years, I would like to assure all doctors that if they haven’t already realised the benefits of the Bill, they will definitely realise the benefits of this change in the near future. The reluctance to accept the need for change is natural and human, sometimes there are vested interests in maintaining a status quo. All this is now a thing of the past as NMC Bill has been passed and has become a reality. It opens up new horizons for the medical fraternity. I am honoured to have been a part of piloting this Bill and setting medical education free of corruption.

New Delhi: Doctors and students from Indian Medical Association (IMA) shout slogans as they stage a protest against the National Medical Commission Bill (NMC) outside Nirman Bhavan in New Delhi. (PTI Photo/File)

The Bill has a provision for a limited licence to practice modern medicine which some people say is actually the contentious bridge course with a different name. What do you say to concerns that it will encourage quackery?

The provision for a cross-pathy bridge course has been completely deleted in the NMC Bill. The provision for Community Health Providers is confined to professionals related to modern medicine only and having the qualifications prescribed by NMC. These qualifications will be

prescribed in regulations that will be framed after careful analysis of the proficiencies required by CHPs and the curriculum of the allied health professionals being considered. They will be finalised after public consultation and debate. Quacks will have no role in this scheme of things and the punishment for quackery has actually been enhanced to up to one year imprisonment and fine of Rs 5 lakh.

There are concerns that the provision of fee fixation for just 50 per cent seats would end up compromising merit as only those who can pay will be able to afford the rest of the seats.

Please understand that there was no provision for fee fixation by MCI. In view of this glaring omission, the Hon'ble Supreme Court had to appoint committees in each state to regulate the fees until a system was evolved and set in place. Now, NMC Bill has introduced fee regulation by the government for the first time. It is unprecedented, of course, and a most welcome step to my mind.

In a federal polity, it is not appropriate for the central government to assume control of 100 per cent seats. States are free to bring state amendments about the remaining 50 per cent seats as per need, since medical education is in the concurrent list.

However, directly and indirectly through the states, the central government does have the power to regulate fee structure in all medical colleges. I think that is a cause enough for celebration as it ends the misery of students who were at the mercy of a corrupt system.

Resident doctors protest against the NMC Bill in New Delhi. (Express Photo: Tashi Tobgyal/File)

The main problem in medical education is the demand and supply gap. How will the Bill tackle that?

The NMC Bill simplifies procedures and eliminates repeated inspections of colleges. NMC is also mandated to reduce the cost of medical education, thereby facilitating setting up of more medical colleges. Our government has already increased 28,000 MBBS seats and 17,000 PG seats in the past five years, which is a record of sorts. We have rationalised teacher-student ratio, simplified physical infrastructure requirements of medical colleges, taken a number of steps to increase the availability of faculty and reformed the process of inspections of colleges. The result has been that the approval percentage of new colleges has gone up very significantly (from 21 per cent to 50 per cent) after formation of the Board of Governors of MCI and 37 new colleges were approved this year as against 21 last year. We hope to see an era of even more rapid growth with the setting up of NMC. If we are able to maintain this trend, then we are hopeful of achieving doctor-population ratio of 1:1000 within the next 7-8 years.

Explained: Why aren't cars selling?

On the final year MBBS examination being the licentiate exam, PG entrance the screening test for foreign graduates, there are some who feel that standards of medical education across

states are not uniform and, therefore, such a system would end up giving undue advantage to students from some states

On the contrary, it will ensure uniformity of standards throughout the country. All citizens of India need to be treated by good doctors, not only citizens of a few states.

Leaders from Tamil Nadu have been agitating in Parliament against NEET, demanding that it is discriminating against rural Tamil-speaking students. How would you address their concerns?

This issue has already been decided by the Supreme Court.

Despite a relaxation in norms that used to bar profit-making sometime back, only a few private hospitals have come forward to open medical colleges. Why? That is a vast medical education infrastructure waiting to be tapped. How do you intend to rope them in?

The major reason for hesitation on part of private hospitals to go ahead and set up medical colleges was the arbitrary, unpredictable and rent-seeking approach of MCI. However, things will change incredibly now. NMC is proposed to be totally transparent and objective in its approach and genuinely interested persons will have no reason to refrain from investing in medical education infrastructure. This will help us to tap the vast medical education infrastructure already available and encourage private hospitals to set up medical colleges and add to the number of MBBS seats in the country.

Are you also mulling a speciality-specific, common exit exam for PG students?

I think this is a very difficult proposition. Unlike MBBS, where a single exit exam can be conducted, there are over 30 broad specialities at the PG level. An exit exam would, therefore, be quite complicated at the PG level. Of course, the experts in NMC have to take a call on this and a host of other issues connected to medical education after widespread consultation and debate and we cannot indulge in speculation at this juncture.

How will you stop medical brain drain? The best Indian doctors work abroad.

I have no doubt that doctors working in India are among the best in the world. Those who go abroad also excel there and earn a good name for our country. Instead of trying to stop our doctors from going abroad, we would prefer to focus on increasing the number of seats in the country and improving working conditions in the country. We would like to welcome OCI doctors and even foreign doctors to come to India and engage in practice, teaching and research. Given the size of our population and the vast opportunities that our country presents, I have no doubt that we will see a net brain gain rather than brain drain in the years to come.

I congratulate the Hon'ble Prime Minister Shri Narendra Modi ji, who is our guiding light, for his vision on universal healthcare, the ambitious targets that he has set forth for us to achieve and most of all for the PM Jan Arogya Yojana which is popularly called Ayushman Bharat that has already benefited crores of citizen from the economically weaker section and

changed their lives. I am a mere footsoldier and here to implement Modiji's dream of a disease-free, healthy India. Notwithstanding the steep challenges ahead, I am committed to ensuring good health for each and every Indian. I believe in the lines of Robert Frost .

Cure in progress (The Indian Express:20190805)

<https://indianexpress.com/article/opinion/editorials/national-medical-commission-nmc-bill-india-healthcare-system-harsh-varadhan-5878374/>

New medical authority to replace MCI is welcome. But it will have to connect several dots, learn from past experiences.

Dogged by several controversies in the past 15 years, the internal regulator of the medical profession, the Medical Council of India (MCI), has failed its mandate of “ensuring excellence in medical education”.

Several medical emergencies in the past five years, including the AES outbreak in Bihar in June, have shone the light on the deficiencies of India's healthcare sector. It's clear that the country lacks quality medical professionals at the panchayat and district levels. Medical research in the country has not kept up with the changing disease burden. Dogged by several controversies in the past 15 years, the internal regulator of the medical profession, the Medical Council of India (MCI), has failed its mandate of “ensuring excellence in medical education”. The National Medical Commission (NMC) Bill — passed by the Rajya Sabha last week — that envisages an overhaul of the country's medical education system, therefore, promises to address a critical challenge. However, the 25-member NMC, that will take over the regulation of medical education from the MCI, will need to connect several dots to fulfil its promise.

The government will appoint 20 members of the new regulatory body. This has not gone down well with the Indian Medical Association (IMA). Controversies over the MCI elections and the agency's tarnished record have, no doubt, exposed the frailties of self-governance. But the IMA's fears of further compromise in standards are not unfounded, given that past experience shows that the party in office often rewards its loyalists whenever the government arrogates to itself the task of constituting a body of professionals. The search committee mandated by the Bill to recommend the names of the NMC's non-elected members must, therefore, go strictly by the new agency's credo: “Enforcing high ethical standards in medical services”. Clause 32 of the Bill provides for granting “limited licenses” to 3.5 lakh community health providers (CHPs), who can then operate at the primary healthcare level

and prescribe preventive medicines. Given the dearth of MBBS doctors in rural and far-flung areas, this measure could fill a major void in the country's healthcare system. The IMA, however, apprehends that the move would "result in quackery", especially because the Bill does not delineate the qualifications of the CHPs. Past initiatives to integrate CHPs in the healthcare systems of states have produced mixed results, at best. For instance, the Chhattisgarh government's scheme — launched in 2001 — to place such medical practitioners in the state's healthcare system lasted only four years. Courses introduced for CHPs did not get the required traction because the students were reportedly not sure of their career path. Assam has had similar experiences with CHPs. The process of framing rules of the new legislation should, therefore, be attentive to such experiences.

NMC Bill: Address the concerns of the doctors (Hindustan Times:20190805)

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

Ensure colleges produce skilled doctors, and monitor community health providers

The National Medical Commission (NMC) Bill 2019, which was passed by Rajya Sabha last week, is being called visionary by its supporters and catastrophic by its detractors. One of the key points of disagreement between the two groups is Section 32 that provides for licensing of 3,50,000 non-medical persons, or community health providers (CHPs), to practise modern medicine. This has been done to help bridge the shortfall of doctors and nurses in the country. Doctors warn that the section will fuel quackery, and lead to untrained providers offering treatment to patients. But trained and licenced CHPs can be the gamechangers by offering healthcare that accounts for 80%-90% of the needs of a population, and free doctors for secondary and advanced care.

Junior doctors and medical students are also protesting against the common National Exit Test (NEXT). The NEXT results will determine the selection of students for post-graduate medical courses, and also provide qualifying graduates with a licence to practice medicine in India. This, say medical students, puts too much at stake in a single exam. But a centralised exit exam will standardise the competencies and skills of doctors. Along with addressing the concerns of the medical fraternity, the State must ensure that medical colleges focus on producing skilled doctors, and not indulge in profiteering; and, also institute proper monitoring of CHPs so that they don't start functioning like doctors.

Biotechnology

Biotechnology Department will scan 20,000 Indian genomes (The Hindu:20190805)

<https://www.thehindu.com/sci-tech/science/biotechnology-department-will-scan-20000-indian-genomes/article28815520.ece>

Data sets compared by machine learning techniques can predict risk of cancer and other diseases

The Department of Biotechnology (DBT) plans to scan nearly 20,000 Indian genomes over the next five years, in a two-phase exercise, and develop diagnostic tests that can be used to test for cancer.

The first phase involves sequencing the complete genomes of nearly 10,000 Indians from all corners of the country and capture the biological diversity of India, Renu Swarup, Secretary-DBT told The Hindu.

Vast troves

In the next phase, about 10,000 “diseased individuals” would have their genomes sequenced. These vast troves of data sets would be compared using machine learning techniques to identify genes that can predict cancer risk, as well as other diseases that could be significantly influenced by genetic anomalies.

While 22 institutions, including those from the Council of Scientific and Industrial Research (CSIR) and the DBT would be involved in the exercise, the data generated would be accessible to researchers anywhere for analysis. This would be through a proposed National Biological Data Centre envisaged in a policy called the ‘Biological Data Storage, Access and Sharing Policy’, which is still in early stages of discussion.

‘Major thrust area’

“Genomics research is a major thrust area for the Department. What is unique about this programme, called the Genome India Initiative, is its scale. The deliverables are genomic-based diagnostics that can be affordably made available through a lab,” Dr. Swarup added.

The programme is expected to formally launch in October, with an estimated budget of ₹250-350 crore for the Phase-1, she added.

Along with genome samples, the Pune-based National Centre for Cell Sciences — also involved in the project — will also collect samples of the microbiome from the human gut. The diversity of the bacterial samples is at the frontier of global research, and scientists have said there is an intimate connection between the genome, the gut microbiome and disease.

Declining costs

There is interest among private and public companies in sequencing genomes thanks to the declining costs for the process. From China to the United Kingdom and Saudi Arabia, several countries have announced plans to sequence their population. Currently, genomic data sets under-represent Asia, particularly India, whose population and diverse ethnicity make it an attractive prospect for genome-mining efforts. The CSIR already has an effort underway to scan 1,000 genomes from healthy Indians.

Fungal Infection (The Asian Age:20190805)

<http://onlinepaper.asianage.com/articledetailpage.aspx?id=13515470>

Recurrent fungal infections and antibiotic resistance are fast becoming a growing public health concern, with certain groups of people falling in the high-risk category

FIGHTING AGAINST FUNGAL INFECTIONS



KANIZA GARARI

THE ASIAN AGE

Resistance to fungal infections is an emerging public health problem, with recurrent infections noted in those who are immune-compromised, suffering from cancer, organ transplants or severely diabetic in nature. Apart from genetic mutations in the aging body, climate change also plays a major role in recurrent fungal infections along with resistance to antibiotics, making it very important for those in the immune-compromised state to be extra careful, explains Dr Shiva Raju, senior consultant physician and diabetologist at KIMS Hospitals.

Q Why is there a rise in antibiotic resistance when dealing with fungal infections?

Antibiotic resistance is a serious issue, making it necessary to use higher doses of antibiotics for treating regular infections. Antibiotics are normally used to treat bacterial infections. When they are used in excess, for longer duration or inappropriately, then fungal infections make their appearance.

Resistance of fungal infections is an emerging public health problem. Excess use of anti-fungal medication, low doses and varying durations in treatment lead to fungal resistance. Some fungi are inherently resistant while some acquire resistance through different mechanisms. Azole resistance is very common in the present scenario.

Q How are fungal infections classified?

Fungal infections are classified as follows:

- Common infections occurring in humans include Candida infections, ringworm and toenail fungal infections
- Infections when travelling to specific areas — Blastomycosis, Histoplasmosis and



Dr Shiva Raju, senior consultant physician and diabetologist

Coccidioidomycosis

- Infections occurring in people with low immunity — Oral Candidiasis, Vaginal Candidiasis, Aspergillus fumigates and Mucormycosis

Q Which category and type of fungal infection is becoming a cause of concern in terms of treatment?

Fungal infections which are of particular concern are Candida glabrata, Candida non albicans group, invasive Candidiasis, Aspergillus fumigates and Mucormycosis. These fungal infections are seen more in diabetic, immune-compromised patients, those suffering from cancer and those who have undergone organ transplants.

Q Which parts of the body do fungal infections regularly occur in and why?

Common fungal infections that occur are:

- **Candida infections:** Oral cavity, oesophagus, vaginal (Moniliasis)
- **Ringworm infections:** Tinea cruris (groin, armpits); Tinea capitis (scalp)
- **Toenail infections:** Onychomycosis
- Fungal skin infections etc.

Q Recurrent fungal infections are seen in both men and women post 40 years of age. Why is this so?

Due to aging, the immunity level decreases, making men and women more susceptible to fungal infections. Some studies have shown genetic mutations in CARD 9 gene make some people susceptible. Family members need to be careful as such mutations lead to invasive fungal infections which are also recurrent in nature and cause death. Patients with HIV, cancer and organ transplants are more susceptible to both recurrent and invasive fungal infections.

Q Are fungal infections and climate change related to one another?

Yes, there is a correlation between the two. Few fungal infections like nail infections, Tinea cruris etc. occur in particular seasons. Fungi usually grow in damp, moist, dark areas and more so, in the rainy and winter season. Fungal infections impact the body with a change in climate, global warming and varying temperatures. In the rainy and winter seasons, fungi thrive well. Moreover, poor hygiene, diabetes and low immunity are high risk factors.

Q Are home remedies a good way to deal with fungal infections?

Home remedies are not very helpful in the treatment of fun-

ANTIBIOTIC RESISTANCE IS A SERIOUS ISSUE, MAKING IT NECESSARY TO USE HIGHER DOSES OF ANTIBIOTICS FOR TREATING REGULAR INFECTIONS. ANTIBIOTICS ARE NORMALLY USED TO TREAT BACTERIAL INFECTIONS. WHEN THEY ARE USED IN EXCESS, FOR LONGER DURATION OR INAPPROPRIATELY, THEN FUNGAL INFECTIONS MAKE THEIR APPEARANCE

gal infections.

Q What are the precautions that one must take for preventing fungal infections?

Here are some of the precautions:

- Observe hand hygiene
- Avoid wearing wet clothes to prevent common fungal infections
- Maintain proper hygiene in the surroundings
- Avoid anti-fungals unless indicated as it can cause resistance
- Reduce usage of antibiotics as far as possible
- Develop anti-fungal stewardship programme
- Ensure proper monitoring at regular intervals
- High risk groups like those with low immunity, cancer, HIV and organ transplants need special care and close monitoring as they have a high risk of invasive fungal infections.

RESISTANCE OF FUNGAL INFECTIONS IS AN EMERGING PUBLIC HEALTH PROBLEM. EXCESS USE OF ANTI-FUNGAL MEDICATION, LOW DOSES AND VARYING DURATIONS IN TREATMENT LEAD TO FUNGAL RESISTANCE

Depression

Is this red wine compound the future of depression treatment? (Medical News Today:20190805)

<https://www.medicalnewstoday.com/articles/325908.php>

Resveratrol, a compound that occurs naturally in red wine, has intrigued researchers for decades. A recent study in mice investigates how doctors might be able to use this chemical to reduce depression and anxiety.

Could a red wine compound be useful in the treatment of depression?

In the United States and further afield, anxiety and depression are substantial challenges.

About 1 in 5 adults in the United States have experienced an anxiety disorder in the past year.

In addition, an estimated 7.1% of adults experienced a major depressive episode in 2017.

Some people who have anxiety or depression may benefit from medications, but they do not work for everyone.

As the authors of the current study write, "only one-third of individuals with depression or anxiety show full remission in response to these medications."

For this reason, researchers are keen to find new drugs to treat depression and anxiety.

Enter resveratrol

Currently, most of the drugs that doctors prescribe for depression and anxiety interact with serotonin or noradrenaline pathways in the brain.

Researchers are trying to find other possible drug targets, and some have turned to a natural compound called resveratrol.

Resveratrol occurs in the skin of grapes and berries, and, most famously, it is in red wine. Over recent years, it has received an increasing amount of attention from medical scientists.

Earlier studies have shown that resveratrol appears to have antidepressant activity in mice and rats.

The latest study, which appears in the journal *Neuropharmacology*, takes a closer look at the mechanisms contributing to resveratrol's antidepressant activity. The researchers also question whether resveratrol might provide the basis of future treatments for anxiety and depression.

The team, from Xuzhou Medical University in China, paid particular attention to the role of phosphodiesterase 4 (PDE4) and cyclic adenosine monophosphate (cAMP).

Why PDE4 and cAMP?

Important in many biological processes, cAMP is a second messenger. These molecules respond to signals outside the cell, such as hormones, and pass the message on to the relevant regions within the cell. The authors of the current study explain:

"Considering that cAMP is a primary regulator for intracellular communication in the brain, it is an attractive target for therapeutic intervention in mental disorders."

Earlier studies have shown that resveratrol increases levels of cAMP in a number of cell types.

PDE4 is a family of enzymes that break down cAMP, helping regulate the levels of this molecule within cells. Higher levels of PDE4 lead to an increased breakdown of cAMP. Some earlier studies have hinted at the role of PDE4 in depression and anxiety.

How a fruit compound may lower blood pressure

A recent study investigates whether resveratrol might help battle hypertension.

For instance, one study showed that inhibiting PDE4 increased cAMP signaling, which reduced anxiety- and depression-like behavior in mice.

The current study used animal models and cultured mouse neurons (similar to those in the human hippocampus) to help explain resveratrol's effect on rodent behaviors.

The stress model of depression

Experts still do not fully understand what causes depression and why it affects some people but not others.

One theory is called the glucocorticoid hypothesis. The body releases glucocorticoids, which include cortisol, when a person feels stressed. In the short term, these hormones help ready the body for an impending crisis.

However, if the stress lasts for a longer time, glucocorticoids can begin to cause harm.

In this way, some scientists believe that chronic stress damages neurons in the hippocampus, which are particularly sensitive. This damage then paves the way for anxiety and depression.

The authors of the current study were particularly interested in understanding whether resveratrol could reverse the damaging effects of stress and how this might work.

In their study, they found that increased levels of corticosterone (the rodent equivalent of cortisol) produced cell lesions in the brain and increased levels of PDE4D — a member of the PDE4 family that scientists believe to be particularly important in cognition and depression.

They also showed that treatment with resveratrol reversed the increase in PDE4D and reduced the number of cell lesions. Resveratrol also prevented the decrease in cAMP.

In engineered mice that could not produce PDE4D, resveratrol boosted cAMP's protective effects even further than in mice with functioning PDE4D.

The authors write that "[t]hese findings provide evidence that the antidepressant- and anxiolytic-like effects of resveratrol are predominantly mediated by PDE4D inhibition."

Only the beginning

These findings provide another small piece of the puzzle. Resveratrol, which appears to reduce anxiety and depression in mice, seems to work by inhibiting PDE4D and activating cAMP signaling.

"Resveratrol may be an effective alternative to drugs for treating patients suffering from depression and anxiety disorders."

Co-lead author Dr. Ying Xu, Ph.D.

Despite Dr. Xu's excitement, there is little evidence of resveratrol's ability to fight depression in humans. Although evidence of its effects in animal models is growing, data from clinical trials are lacking.

Also, extrapolating findings from animal studies to humans can be tricky, never more so than when dealing with mental health conditions. Whether animal models of depression are relevant is a hotly debated topic.

However, any step toward a new understanding of the chemical ins and outs of depression and anxiety is beneficial.

It goes without saying, but drinking red wine will not afford you the theoretical benefits of resveratrol. The compound is present in very low quantities and, of course, the alcohol in wine will negate any benefits.

To conclude, we now know more about the molecular mechanisms underpinning resveratrol's effect on depression and anxiety in mice. We must now await clinical trials to find out whether it can benefit humans too.

Multiple sclerosis

Vaccinations do not raise risk of multiple sclerosis (Medical News Today:20190805)

<https://www.medicalnewstoday.com/articles/325941.php>

A large study has concluded that vaccinations are not a risk factor for multiple sclerosis. Instead, the findings reveal a consistent link between higher vaccination rates and a lower likelihood of developing the disabling condition.

There is no evidence that vaccinations increase the likelihood of MS.

Researchers at the Technical University of Munich (TUM) in Germany studied data on more than 200,000 people who were representative of the general population.

The data came from the Bavarian Association of Statutory Health Insurance Physicians records covering the period 2005–2017.

The records held people's vaccination history and diagnosed conditions and included data on 12,262 people with a diagnosis of multiple sclerosis (MS).

The dataset included dates of vaccinations for chickenpox, measles, mumps, rubella, influenza, meningococci, pneumococci, human papillomavirus (HPV), tick-borne encephalitis (TBE), and hepatitis A and B.

The researchers used statistical tools to assess any links between MS and vaccinations in the 5 years leading up to diagnosis.

The results did "not reveal vaccination to be a risk factor for MS," the authors conclude in a recent Neurology paper on the study.

An unpredictable autoimmune disease

MS is a long term disease that damages the central nervous system (CNS) by destroying the insulation around nerve fibers.

Experts believe that MS is an autoimmune condition in which the immune system attacks the CNS in the same way as it defends against threats, such as viruses and bacteria.

According to the National Multiple Sclerosis Society, MS affects more than 2.3 million people worldwide.

Estimates suggest that there could be nearly 1 million adults living with MS in the United States.

While it can strike at any age, MS usually develops between the ages of 20 and 50 years. Women are three times more likely to develop MS than men.

The symptoms of MS are unpredictable and vary from person to person, depending on where the damage to the CNS occurs. There can be a pattern of flare-ups that come and go, or the symptoms can worsen with time.

People with MS typically experience fatigue, numbness, disturbed vision, problems with balance and coordination, and speech difficulties. People can also experience problems with memory and concentration. Occasionally, the disease can cause blindness and paralysis.

Findings true for all vaccinations

Senior study author Prof. Bernhard Hemmer, who is the director of the Neurology Department at TUM's hospital Klinikum rechts der Isar, and his colleagues set out to test the hypothesis that vaccination is a risk factor for MS.

They analyzed the data in various ways, using "different time frames, control cohorts, and definitions of the MS cohort."

In analyzing different control cohorts, they compared individuals with MS with those without MS. They also compared those with MS with individuals with two other autoimmune diseases: Crohn's and psoriasis.

The results revealed that in the 5 years before receiving a diagnosis, participants who developed MS had received fewer vaccinations than those who did not develop the condition.

"The odds of MS were lower in participants with a recorded vaccination," write the authors.

The finding was true for all the vaccines that they investigated, and "most pronounced for vaccinations against influenza and tick-borne encephalitis."

Potential immune system reasons

The researchers suggest that one reason for the finding could be that people who develop MS notice their symptoms long before they receive a diagnosis and perhaps avoid vaccinations in order not to stress their immune systems.

"Such effects are, in fact, evident in our data," says lead study author Alexander Hapfelmeier of the Institute of Medical Informatics, Statistics, and Epidemiology at TUM.

Another possible reason behind the findings is that vaccinations somehow prevent the immune system from mounting an attack on the CNS. The authors call for further studies to investigate this effect.

"In any case, given the large volume of data analyzed, we can conclusively state that there is no evidence that recent vaccination increases the likelihood of MS or the onset of an initial MS episode."

Alexander Hapfelmeier

Alzheimer's disease

'New wave of Alzheimer's research' looks to the liver for clues (Medical News News:20190805)

<https://www.medicalnewstoday.com/articles/325934.php>

In the race to gain a better understanding of the drivers behind Alzheimer's disease, one research team looks to the link between the brain, the gut, and the liver.

To understand Alzheimer's, we must also look to organs other than the brain, a new study urges.

Alzheimer's disease is the most common form of dementia, affecting approximately 50 million people worldwide.

Currently, there is no way of reversing the condition, and treatments focus on symptom management. This necessity is largely because researchers still do not know what exactly causes Alzheimer's or other forms of dementia.

Now, investigators from the Alzheimer's Disease Metabolomics Consortium (ADMC) at Duke University in Durham, NC, and the Alzheimer's Disease Neuroimaging Initiative (ADNI) have begun collaborating, looking for clues about Alzheimer's in a seemingly unlikely place: the liver.

The researchers decided to start taking liver function into account — in the context of Alzheimer's disease — because of the organ's role in the body's metabolic processes.

In their new study paper, which appears in JAMA Network Open, the authors explain that, recently, specialists have increasingly begun to acknowledge a strong association between Alzheimer's disease and various forms of metabolic dysfunction.

"Metabolic activities in the liver determine the state of the metabolic readout of peripheral circulation," the authors explain in the study paper.

"Mounting evidence suggests that patients with Alzheimer disease display metabolic dysfunction," they continue, adding that the "evidence highlights the importance of the liver in the pathophysiological characteristics of [Alzheimer's disease]."

'No stone can be left unturned'

In the current study, Prof. Kwangsik Nho — from the Indiana University School of Medicine in Indianapolis — and colleagues analyzed blood samples, assessing levels of enzymes they associated with liver function.

The blood samples came from 1,581 participants who also agreed to undertake brain scans, assessing for changes that indicated the development of Alzheimer's disease.

Moreover, researchers also checked them for other signs of Alzheimer's, including cognitive measures, cerebrospinal fluid biomarkers, brain atrophy, and levels of beta-amyloid, a protein that forms sticky, toxic plaques in the brain in Alzheimer's disease.

In this way, the investigating team was able to identify associations between changes in liver function and markers of affected cognitive functioning in the brain.

"This study was a combined effort of the ADNI, a 60-site study, and the ADMC. It represents the new wave of Alzheimer's research, employing a broader systems approach that integrates central and peripheral biology," explains co-author Andrew Saykin.

"In this study, blood biomarkers, reflecting liver function, were related to brain imaging and [cerebrospinal fluid] markers associated with Alzheimer's. No stone can be left unturned in our attempt to understand the disease and to identify viable therapeutic targets."

Andrew Saykin

Is spicy food linked to dementia risk?

A recent study points out an intriguing correlation between the regular intake of hot peppers and the risk of dementia.

First author Prof. Nho calls this approach "a new paradigm for Alzheimer's research."

He argues that, in the future, scientists may be able to identify different biomarkers of this condition in the blood, making diagnosis quicker and easier.

"Until now, we only focused on the brain. Our research shows that by using blood biomarkers, we can still focus on the brain but also find evidence of Alzheimer's and improve our understanding of the body's internal signaling," says Nho.

No more 'studying the brain in isolation'

The researchers argue that to understand the causes of Alzheimer's disease better, as well as improve diagnosis and treatment, specialists should look at the brain as part of a system that influences — and is influenced by — different mechanisms in the body.

"While we have focused for too long on studying the brain in isolation, we now have to study the brain as an organ that is communicating with and connected to other organs that support

its function, and that can contribute to its dysfunction," says study co-author Rima Kaddurah-Daouk.

"The concept emerges that Alzheimer's disease might be a systemic disease that affects several organs, including the liver," she adds.

In the future, the current findings plus other related investigations may help perfect a more personalized approach to treating Alzheimer's, as precision medicine keeps on gaining ground.