

## A simple blood test for Alzheimer’s? Promising results offer hope

Alzheimer's disease (AD), a devastating form of dementia, has long been diagnosed through invasive procedures like lumbar punctures or expensive PET scans. But what if a simple blood test could detect the disease with the same level of accuracy? A recent study offers exciting insights into this possibility.

Published in JAMA in July 2024, this groundbreaking research from Sweden involved over 1,200 patients who were being evaluated for cognitive issues. Using blood samples, researchers measured levels of amyloid-β and phosphorylated tau — proteins that are hallmarks of Alzheimer's. The goal? To see if blood tests could match the gold standard of cerebrospinal fluid testing or brain imaging for diagnosing the disease. The results were eye-opening: the blood test was able to identify AD with 90% accuracy.

This is not just a scientific breakthrough; it is a potential game-changer for patients. Clinical diagnoses by primary care physicians and dementia



specialists only reached accuracy levels of 61% and 73%, respectively, meaning that many people might be misdiagnosed or go undiagnosed until the disease has significantly progressed. The blood test, however, offered a far more reliable alternative, giving doctors a new tool to catch the disease earlier and more effectively.

Yet, there are still challenges ahead. The test was less accurate for patients with very mild cognitive symptoms, and it has yet to gain FDA approval. Additionally, as with any diagnostic tool, understanding how the test performs in populations with lower disease prevalence is crucial to avoid unnecessary misdiagnoses.

Still, the prospect of a simple blood test to diagnose Alzheimer's could transform how we approach this illness. For now, patients and clinicians alike will have to wait for further regulatory approvals and guidance — but the future of Alzheimer's diagnosis is looking brighter than ever.



## WORLD PHYSIOTHERAPY DAY 2024 Empowering you to beat LOW BACK PAIN

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World Physiotherapy Day, observed on September 8<sup>th</sup> each year, is a global event dedicated to recognising and promoting the significant contributions of physiotherapists to healthcare. In 2024, the theme is “*low back pain*,” a condition that affects a substantial portion of the population worldwide.

### Understanding low back pain

**Prevalence:** Low back pain is one of the most common musculoskeletal disorders, affecting approximately 80% of people at some point in their lives. It is a leading cause of disability and can impact daily activities, work, and overall quality of life.

**Causes:** Low back pain can arise from various factors, including poor posture, muscle strain, herniated discs, degenerative conditions, and sedentary lifestyles. It may be acute (short-term) or chronic (lasting more than three months).

**Impact:** The impact of low back pain is significant, leading to considerable economic burden due to healthcare costs and lost productivity. It can also result in emotional distress and reduced social participation.

### Role of a physiotherapist

**Assessment and diagnosis:** Physiotherapists are skilled in assessing and diagnosing the underlying causes of low back pain. They use a combination of physical examinations, patient history, and sometimes imaging studies to understand the condition.

**Treatment approaches:** Physiotherapy offers several effective treatment methods, including:

- **Exercise therapy:** tailored exercise programs to strengthen the back muscles, improve flexibility, and enhance overall function.
- **Manual therapy:** techniques such as spinal manipulation and mobilisation to relieve pain and improve mobility.
- **Education:** teaching patients about posture, body mechanics, and lifestyle modifications to prevent recurrence.
- **Pain management:** strategies to manage and reduce pain, including modalities like heat, cold therapy, and electrotherapy.

**Prevention:** Physiotherapists also play a crucial role in preventing low back pain by promoting ergonomic practices at work and home, encouraging regular physical activity, and advising on proper lifting

techniques.

### Importance of the theme

**Awareness:** Focussing on low back pain raises public awareness about the prevalence and impact of the condition. It helps people understand that effective treatment and management options are available.

**Education:** The theme provides an opportunity to educate both patients and healthcare professionals about best practices for managing and preventing low back pain.

**Advocacy:** Highlighting low back pain helps advocate for better resources, research, and policies to support individuals affected by this condition.

**Support:** It brings attention to the valuable work of physiotherapists and encourages those experiencing back pain to seek professional help for effective management and recovery.

By concentrating on low back pain for World Physiotherapy Day 2024, the global community acknowledges the widespread challenge it presents and emphasises the essential role of physiotherapy in addressing and alleviating this common issue.

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## Unhealthy commodities and their mental health impact

“Unhealthy commodities” like tobacco, alcohol, ultra-processed foods, social media, and fossil fuels are increasingly linked to mental health disorders such as depression, suicide, and anxiety, according to a study published in the PLOS Global Public Health journal. These commercial products and activities are also associated with broader impacts like climate change and air pollution, which further contribute to mental health issues, making the case for their recognition as significant determinants of health.

Globally, about one in eight people lives with a mental health disorder, including conditions like depression, anxiety, and suicidal tendencies. While many factors contribute to mental illness, the study focusses on the role of commercial determinants of health — the ways in which products marketed and consumed on a mass scale negatively affect both individual and public health. The researchers performed an umbrella synthesis of 65 review studies, examining the impact of six specific commodities: tobacco, alcohol, ultra-processed foods, gambling, social media, and fossil fuels. They also explored the mental health effects of fossil fuel consumption, including climate change and air pollution.

The review found consistent evidence linking alcohol, tobacco, gambling, social media, ultra-processed foods, and air pollution to depression. Additionally, alcohol, tobacco, gambling, social media, climate change, and air pollution were associated with suicide, while social media also had ties to self-harm. Climate change and air pollution were linked to increased anxiety.

The findings call for greater attention to the mental health consequences of these commercial activities.



## WORLD SUICIDE PREVENTION DAY Changing the narrative on suicide

### STAR HEALTH DESK

Suicide poses a significant public health challenge, with over 700,000 deaths globally each year. The profound social, emotional, and economic repercussions of suicide affect individuals and communities worldwide. Globally, 10 September 2024 is observed as Suicide Prevention Day.

For the period 2024-2026, World Suicide Prevention Day (WSPD) has adopted the theme “Changing the narrative on suicide” with the call to action “*Start the conversation*.”

This theme focusses on transforming perceptions of suicide by shifting from a culture of silence and stigma to one of openness, empathy, and support. The aim is to encourage individuals, communities, organisations, and governments to engage in open and honest discussions about suicide and suicidal behavior. By starting these crucial conversations, barriers can be broken down, awareness can be raised, and supportive cultures can be created.

Changing the narrative involves fostering empathy and understanding. Recognising that suicidal thoughts and feelings signify profound distress and ensuring that discussions about these thoughts do not exacerbate the issue is essential. Providing a listening ear without judgement and guiding individuals towards appropriate help are key steps.

### Individual actions

1. **Check-In with loved ones:** Reaching out to community members, family, friends, or colleagues and enquiring about their well-being can significantly impact those struggling. Offering empathy and support and encouraging them to seek professional help can make a difference.
2. **Stay informed:** Engaging in training opportunities related to suicide prevention can enhance one's ability to support those experiencing suicidal thoughts.
3. **Share personal stories:** Individuals who have experienced suicide attempts or loss can offer unique perspectives. Sharing these stories in a supportive environment can inspire others to seek help and understand they are not alone.
4. **Advocate for mental health:** Promoting mental health awareness through social media, local events, or conversations helps spread the message and reduce stigma.

### Community initiatives

1. **Organise events:** Hosting awareness events such as seminars, workshops, or community walks can educate people about mental health and support those in need. Memorial events can provide spaces for shared grief and support.
2. **Provide resources:** Developing and distributing informational materials on mental health services, hotlines, and crisis centres can enhance accessibility to support.

3. **Create safe spaces:** Facilitating support groups and forums for open discussions about mental health issues can help individuals in distress find a non-judgemental environment and access necessary support.

### Organisational efforts

1. **Training and education:** Providing access to workshops or training sessions for employees to recognise signs of suicidal thoughts and mental health issues can be beneficial.
2. **Promote supportive workplaces:** Implementing policies that support mental health, such as flexible working arrangements and mental health days, can foster a positive work environment. Encouraging open discussions about mental health helps reduce stigma.
3. **Corporate social responsibility:** Supporting mental health organisations through funding and employee volunteer initiatives can contribute to



awareness and prevention efforts.

### Government actions

1. **Policy development:** Developing and strengthening policies that address suicide prevention with evidence-based interventions is essential.
2. **Funding and resources:** Allocating funds for mental health services, research, and prevention programs ensures comprehensive support for suicide prevention efforts.
3. **Public awareness campaigns:** Launching national and local campaigns to educate the public about suicide prevention and mental health issues helps reduce stigma and promotes help-seeking behaviours.

By addressing these areas and collaborating across sectors, a supportive and compassionate society can be fostered where suicide is preventable and everyone feels valued and understood.



## Update on RSV vaccines

Respiratory Syncytial Virus (RSV), previously known for causing cough primarily in young children, has been recognised as a significant threat to adults aged 60 and older, potentially leading to severe Lower Respiratory Tract Disease (LRTD).

Three FDA-approved RSV vaccines are now available: two protein subunit vaccines (CSK's Arexvy and Pfizer's Abrysvo) and one mRNA vaccine (Moderna's mResvia). The Advisory Committee on Immunisation Practices (ACIP) recommends that adults aged 75 and older, as well as those aged 60 to 74 at higher risk for severe RSV disease, receive a single dose of any of these vaccines.

The optimal vaccination period is September through October, and RSV vaccines can be administered alongside other vaccines, such as the influenza vaccine.

Effectiveness data from the first RSV season after immunisation showed that the subunit vaccines prevented serious LRTD with effectiveness ranging from 75% to 82% across targeted age groups, including those with immunocompromising conditions. The mRNA vaccine demonstrated an initial efficacy of about 79%, though protection decreased to below 50% after a median of 19 months.

## A minimally invasive breakthrough in brain surgery

### STAR HEALTH REPORT

Currently, diagnosing and treating brain disorders often requires a craniotomy—a procedure where a large portion of the skull is removed to place electrodes directly on the brain. This invasive method comes with risks of prolonged recovery and infection, making it a daunting experience for patients. To address these issues, a pioneering study led by researchers from the University of Oxford and the University of Cambridge has unveiled a groundbreaking advancement in brain surgery: ‘origami-inspired’, the Japanese art of paper folding.

This novel technology could significantly change how conditions like epilepsy are diagnosed and treated by minimising the invasiveness of traditional procedures.

Published in Nature Communications, the study reveals how these innovative electrodes work. The device starts as a thin, flat silicone wafer about 70 microns thick—approximately the width of a human hair. It is embedded with 32 electrodes and initially folded into a compact form, allowing it to fit through a small 6 mm incision. Once inside the brain, a fluid-filled chamber in the device inflates and unfolds it, expanding the electrode array to cover an area up to five times larger than the initial incision would allow.

This technology significantly reduces the size of the incision required, potentially transforming the way brain

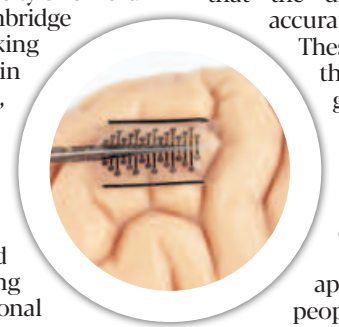
surgeries are performed. Traditional methods require removing a large section of the skull, but the new electrodes allow for a much smaller entry point while still providing comprehensive coverage of the brain's surface. This reduction in surgical invasiveness could lead to shorter recovery times and a decreased risk of postoperative complications.

The research team conducted successful tests on anaesthetised pigs, demonstrating that the unfolded electrodes could accurately record brain activity.

These results suggest that the technology could be a game-changer not only for diagnosing epilepsy but also for developing brain-computer interfaces and treating other neurological conditions.

Epilepsy affects approximately 50 million people worldwide, and its impact is profound, increasing the risk of premature death and significantly affecting the quality of life. The need for less invasive diagnostic and treatment options is critical. The new electrodes offer a promising solution, potentially providing better outcomes for patients while reducing the risks associated with traditional brain surgery.

The origami-inspired electrodes could also revolutionise brain-computer interfaces, which have the potential to improve interactions for people with disabilities and enhance communication methods. The ongoing research aims to expand the applications of this technology and further explore its benefits.



## A promise for personalised treatment of cancer

Cancer of Unknown Primary (CUP) is a challenging condition where doctors cannot identify the original source of the cancer, leading to generally poor outcomes with standard treatments. Typically, patients receive broad chemotherapy regimens that target common cancer types, such as those based on platinum or taxanes. Unfortunately, these treatments have not significantly improved overall survival.

A recent study explores a new approach using molecularly guided treatment (MGT) to potentially improve outcomes for CUP patients.

Patients initially received three cycles of standard chemotherapy. Those whose cancer either responded to or remained stable after the initial treatment were then

randomly assigned to two groups: one continued with standard chemotherapy, while the other group received MGT. For those in the MGT group without specific genetic targets, treatment included chemotherapy plus a drug.

After a median follow-up of 24 months, the results showed that patients in the MGT group had a median progression free survival (PFS) of 6.1 months, compared to 4.4 months for those receiving continued chemotherapy.

This study suggests that personalised treatment based on genetic profiling may offer better results than traditional chemotherapy alone and could further improve as more targeted treatments become available.

Source: The Lancet