

## Tackling hypertension: AI-powered personalised treatments offer hope

STAR HEALTH DESK

High blood pressure, or hypertension, affects a staggering 1.28 billion people globally and is linked to serious health issues like heart disease and stroke. What is troubling is that it often goes unnoticed since symptoms are not always apparent. Regular check-ups are crucial for detection.

Typically, doctors recommend lifestyle changes as the first defence against hypertension, resorting to medications only when necessary. However, with so many factors at play, finding the right treatment can be challenging.

Researchers have developed an AI model to suggest personalised hypertension treatments. This model considers various factors like your health history, vital signs, and test results.

In a study published in the BMC Medical Informatics and Decision Making, involving over 47,000 hypertensive patients, personalised treatments based on this AI model consistently outperformed standard care by an impressive 70.30%. Patients transitioning to new therapies based on the model's recommendations saw even greater improvements.

Notably, doctors found 87% of the model's suggestions clinically sound, offering hope for more effective treatment. The model also highlighted trends, like recommending different medications for men and women or for patients of different races.

While promising, this approach has not been tested in real-world scenarios and does not account for all variables. Nevertheless, it is a significant step forward in using AI to enhance healthcare decisions and potentially improve patient outcomes.



# DENGUE PREVENTION

## What people and the government should do

HASAN MOHAMMAD AL-AMIN

Bangladesh's dengue situation is critical, with one of the highest mortality rates in the world and the worst outbreak in history. This outbreak stems from the abundance of *Aedes aegypti* mosquitoes and the presence of the virus in human populations.

A study from 2014 to 2016 found that up to 85% of people in certain areas of Dhaka were seropositive for dengue. Typically, initial or multiple infections with the same dengue virus serotype pose no problem. However, infection with a different serotype later significantly increases the risk and complexity due to antibody-dependent enhancement, where antibodies against one serotype can worsen another. This can explain why there are so many severe dengue cases in Dhaka and other areas of the country. This year, for the first time, there are more dengue patients outside Dhaka, possibly due to an unprecedented abundance of *Aedes aegypti* mosquitoes in previously unaffected areas.

As the treatment is only symptomatic and there is a lack of accessible vaccines, the focus is on controlling the vector mosquitoes. However, the mosquito distribution has surpassed a level where the government's efforts alone are insufficient. We must take action ourselves.

*Aedes aegypti*, which I refer to as the household mosquito, largely depends on humans for blood meals and breeds close to or even inside our homes. Despite our familiarity with mosquito breeding sites like stagnant water or containers, there is a reluctance



among people to take action. We must take responsibility for our homes and prevent mosquito larvae from growing in and around our living spaces.

In the fight against dengue, the government faces long-term challenges beyond their current efforts. Dengue cannot be eradicated overnight, and countries dealing with this issue offer valuable lessons. Since our 2019 recommendation, the use of malathion in the country is a positive step, but it is a short-term solution. Despite resource constraints, we can explore mosquito control methods.

The World Health Organisation recommends using 'Bendiocarb', an insecticide that is effective against *Aedes* mosquitoes, for indoor residual spraying. A recent success involves releasing

Wolbachia bacteria to control *Aedes* mosquitoes and dengue. Wolbachia can significantly reduce dengue virus transmission, and if infected males mate with females, no larvae emerge. Research on introducing Wolbachia in Bangladesh is promising but needs further testing.

Comprehensive health education in schools through various media channels and strict laws for mosquito breeding site destruction are vital. In extreme cases, even a larva control programme may be necessary. I urge the government to provide substantial research support, as dengue remains a major threat to lives and the country's economy.

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HAVE A NICE DAY

## STOICISM

embracing kindness & compassion in a philosophy of virtue - Part II

DR RUBAIUL MURSHED

Stoicism used to be practiced by the Roman emperor Marcus Aurelius and is still followed by today's social emperor Mark Zuckerberg, Amazon founder Jeff Bezos, and many others. It is a way of life planned to make people more resilient, happier, virtuous, and eventually better individuals and authorities.

Stoicism and Buddhism are two remarkably similar philosophies that were shaped independently thousands of miles apart. Stoicism is more than a definition; it is a practice. It deals with ethics, politics, and social matters. It seems that there are some links between stoicism and minimalism. Both lead to a simplified, focused, and value-driven lifestyle. A person with a stoic mindset may be described as someone who can tolerate pain or hardship without showing their feelings or complaining.

Stoic ideology avoids strong emotions, leading to intermediate or low levels of hedonistic (pleasure-seeking) well-being. Stoicism considers that kindness is not a weakness; it is a strength. It expects one to be altruistic, helping others without the desire for personal gain or recognition. Stoicism teaches people to focus on the things that one can control, like thoughts, emotions, and actions, while accepting the things one cannot, such as the actions of others or the natural course of events going on in the world around us.

In some sense, stoicism is a mindset that maximises positive emotions along with reducing negative emotions and helps people improve their virtues of character. The Stoics realise that their thoughts create the world they inhabit, not external circumstances, so they need to take responsibility for their minds. In fact, nowadays, stoicism is also known in psychotherapy for depression and cognitive behavioural therapy (CBT).

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## World-class nuclear medicine facility can help Bangladeshi patients reduce travel to abroad for cancer diagnosis

Cancer is a major health problem in Bangladesh, with an estimated 156,775 new cases and 108,990 cancer deaths in 2020. The most common cancers in Bangladesh are lung cancer, breast cancer, and cervical cancer.

United Hospital, a leading private hospital in Bangladesh, has marked a major milestone in its nuclear medicine facility, having performed 10,000 PET-CT scans.

The PET-CT scanner is a revolutionary diagnostic tool that combines the power of two imaging techniques: positron emission tomography (PET) and computed tomography (CT). PET scans are used to detect cancer cells and other diseases by showing how tissues and organs are functioning. CT scans provide detailed images of the body's anatomy.

Early diagnosis and treatment are essential for improving the chances of survival for cancer patients. A PET-CT scan can be used to detect cancer cells at an early stage when they are most treatable; stage cancer, which



helps doctors determine the extent of the disease; plan treatment, such as surgery, chemotherapy, or radiation therapy; monitor the effectiveness of treatment and detect the recurrence of cancer.

The PET-CT scanner is one of the most advanced technique. It can provide accurate and detailed images of cancer cells, even in small or difficult-to-reach areas. Additionally, the facility has seasoned radiologists on staff who are specialists in reading PET-CT scans.

In addition to the PET-CT scanner, United Hospital also has a number of other advanced diagnostic

tools, including MRI scanners, CT scanners, and ultrasound machines. The hospital also has a team of experienced oncologists who can provide comprehensive cancer care.

Bangladeshi patients who used to travel abroad for cancer diagnosis now may consider the facilities available in the country as an alternative since, some of them has got the the JCI accreditation - with the facilities and expertise to provide people with the same level of care as any hospital in abroad.

Here are some of the benefits of getting a cancer diagnosis at United Hospital: Early diagnosis and treatment can improve the chances of survival for cancer patients. United Hospital has a world-class nuclear medicine facility that can provide accurate and detailed images of cancer cells. Experienced radiologists who are experts at deciphering PET-CT scans work in the hospital. United Hospital also has several other advanced diagnostic tools and a team of experienced oncologists who can provide comprehensive cancer care.

### AI-SAROSH workshop in sparks innovative AI projects for reproductive health in South Asia

DR MD SHAMIM HAYDER TALUKDER

AI-SAROSH, an AI-powered platform aiming to revolutionise access to Sexual Reproductive and Maternal Health (SRMH) resources and services in South Asia, hosted the 2023 Grant Cycle Co-Design Workshop on "Artificial Intelligence for Sexual and Reproductive Health for South Asia" from September 13 to 17, 2023, in Colombo, Sri Lanka.

Participants from Bangladesh, Sri Lanka, Nepal, and Pakistan attended the workshop and received the grants offered by the platform to carry out ground-breaking projects, research, and AI innovations. The International Development Research Centre (IDRC) is funding AI-SAROSH.

Eminence, along with the Obstetrical and Gynaecological Society of Bangladesh (OGSB), the National Institute of Mental Health, and the Department of Robotics and Mechatronics Engineering under the University of Dhaka, will be working on the model development of an AI tool to ensure timely and accurate detection of perinatal depression among pregnant and postpartum women in Bangladesh.

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## Cervical cancer prevention awareness programme held

Surjer Hashi Network recently organised counselling sessions to raise awareness about cervical cancer in its 134 clinics across the country, says a press release. About 2,500 women participated in the counselling session. Such sessions will help in both prevention and early detection of this deadly disease.

Cervical cancer is the second most common cancer in females (12%). About 8,000 new cases (10.6 cases per 0.1 million) and 5,000 deaths (7.1 cases per 0.1 million) were recorded in 2018. This occurs mostly among those women who have early marriages and who are financially disadvantaged.





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