Widespread drug-resistant bacteria detected, with alarming rates among newborns!

Recently, icddr,b held a dissemination seminar titled "Addressing Antimicrobial Resistance in Bangladesh: Insights from the ARCH Study" in Dhaka. Dr Fahmida Chowdhury, Associate Scientist and Lead of the Antimicrobial Resistance (AMR) Research Unit at icddr,b presented findings from the multi-country Antibiotic Resistance in Communities and Hospitals (ARCH) study, supported by the US CDC and The Task Force for Global Health.

ARCH 1.0 (2019) revealed widespread colonisation with drug-resistant pathogens in both community and hospital settings. Extended-spectrum cephalosporin-resistant Enterobacterales (ESCrE) were found in 78% of community members and 82% of hospitalised patients. Hospitalised patients also showed a higher prevalence of carbapenem-resistant Enterobacterales (CRE) at 37%, compared to 9% in the community. Worryingly, colistin-resistant strains (ColRE) and MRSA were also prevalent. Whole-genome sequencing showed a wide genetic diversity among resistant strains.

ARCH 2.0 highlighted alarming colonisation levels in critical care settings. In neonatal ICUs, 81% of admitted newborns were colonised with carbapenem-resistant Klebsiella pneumoniae, with most acquiring it after 48 hours in hospital. In adult ICUs, 60% carried CRE, with higher infection risks and extended hospital stays.

The study also tracked mother-infant pairs, showing nearly 90% of infants were colonised with ESCrE within the first year. Early antibiotic exposure was common, raising concerns about resistance development.

Encouragingly, infection prevention and control measures significantly reduced colonisation and bloodstream infections in NICUs.

Government and health officials at the event acknowledged the urgent need for policy changes, including restricting antibiotic misuse, strengthening hospital hygiene, and enhancing surveillance.

KNOWING YOUR BREASTS: How to check, early warning signs, and why it matters

STAR HEALTH DESK

Regular self examination of your breasts or chest can help you become familiar with what is normal for your body—and make it easier to spot changes that might require medical review. Everyone should check their breasts about once a month to notice any unusual signs.

WHAT TO LOOK FOR: EARLY WARNING SIGNS

1. Unusual lumps or thickened areas in the breast or underarm
2. Changes in breast shape or size
3. Skin dimpling or puckering, sometimes resembling "orange peel" texture
4. Nipple discharge (not related to breastfeeding)
5. Sudden or persistent breast pain

Other sources echo additional signs: changes in nipple appearance (such as inversion), redness or rash on the breast or nipple, swelling under the armpit, or visible distortions of breast contours.

It is important to remember that many changes are benign—but any new, persistent, or unusual symptom should prompt a clinical evaluation, especially if it does not resolve over time.

FIVE SELF EXAMINATION TECHNIQUES

1. Mirror inspection — Stand before a mirror with arms at sides, then raised, and observe for changes in shape, symmetry, or skin texture.

2. Manual check in the shower — Use soapy hands to feel the breast, armpit, and collarbone areas with gentle, circular motions.

3. Lay down palpation — Lying on your back, use flattened fingers to explore breast tissue in overlapping circular patterns, covering the full area.

4. Check nipples — Press gently around each nipple to see if any discharge emerges and if the shape or position has changed.

5. Consistent timing — For menstruating individuals, conduct self checks at the same phase of each cycle (often a few days after menstruation ends) to reduce hormone related fluctuations.

Other guidelines supplement this by recommending checks both lying down and standing or sitting, and using varying pressure (light, medium, firm) to assess different breast tissue depths.

HOW TO DO A SELF CHECK

- **Look:** Stand in front of a mirror with arms relaxed and then raised, inspecting for changes in size, shape, skin texture, or nipple irregularities.
- **Feel:** Use your fingers to scan all areas of each breast (including up to the collarbone and down to the ribs) and into the armpit, using both light and firmer pressure.
- **Check:** Gently press on each nipple and the surrounding area, noticing any discharge or alterations in contour.

WHY SELF CHECKS MATTER

Becoming familiar with your own breast tissue and its usual variations is key. This awareness helps you detect changes early, which can improve the chances of effective treatment if needed.

In addition, many health services adopt a "breast aware" or "five point" code:

- Know what is normal for you
- Know what changes to look for
- Use look and feel
- Report changes promptly
- Attend routine screening per eligible age groups

Self-breast examination is an accessible, no-cost tool to help you monitor your breast health regularly. While it does not replace professional screening or diagnostic tests, it empowers you to notice changes early. If you detect anything new or concerning—such as unusual lumps, skin changes, nipple discharge, or persistent discomfort—seek medical advice promptly. Your early attention could make a meaningful difference.

Statins could help protect the heart in people with type 1 diabetes

Heart disease is the number one cause of death in people with type 1 diabetes, yet there has been uncertainty about whether cholesterol-lowering statin medications are effective for preventing it in this group. A recent study is helping to change that view — and it brings some hopeful news.

Published in the Journal of the American College of Cardiology, the research suggests that statins may lower the risk of both heart complications and early death in adults with type 1 diabetes who have elevated cholesterol levels.

While statins are widely used for preventing heart disease in people with type 2 diabetes or those at high cardiovascular risk, their role in type 1 diabetes has been less clear due to a lack of focused studies. This new research fills an important gap, showing that even among younger adults with type 1 diabetes, statin therapy can offer meaningful protection for the heart — and it appears to do so safely.

For individuals with type 1 diabetes, this means there is now stronger evidence to support the use of statins as part of a long-term strategy to reduce cardiovascular risk. If you live with type 1 diabetes and have higher cholesterol, it is worth discussing with your healthcare provider whether starting a statin could be right for you.

This study also reinforces the importance of a comprehensive approach to diabetes care — one that not only manages blood sugar but also protects the heart.

Mental health improvements found to be key driver of life satisfaction

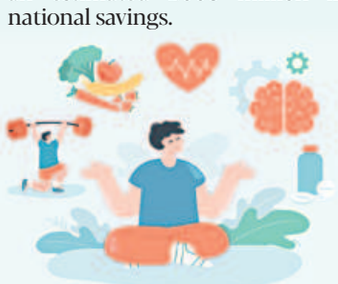
A new study published in PLOS Global Public Health found that improvements in mental health were the strongest predictor of increased life satisfaction. Researchers from Sheffield Hallam University, led by Professor Steve Haake, developed a new model to evaluate changes in life satisfaction, using participants of Parkrun—a free weekly 5k running event in the UK—as a case study.

Over 78,000 parkrun participants responded to a survey assessing life satisfaction, mental and physical health, and activity levels. The study revealed that while physical activity contributed to better health outcomes, it was the improvements in mental wellbeing—such as happiness, a sense of achievement, and enjoyment—that had the most significant impact on participants' life satisfaction.

Participants who started with poor health showed the greatest potential for improvement, suggesting that public health initiatives can yield substantial wellbeing benefits for those most in need. The research also confirmed known patterns, such as lower life satisfaction in early middle age and greater improvements among older adults and women.

The study's authors noted that their model can be applied beyond Parkrun to assess the effectiveness of various public health programmes, even those not directly health-related. They highlighted the model's potential to guide policy decisions in resource-limited settings by identifying which interventions most effectively boost wellbeing.

The findings supported not only the health benefits of community exercise but also its significant economic value, with an estimated £668 million in national savings.



Tens of thousands in Gaza face lifelong disabilities as health system nears collapse

STAR HEALTH DESK

Nearly 42,000 people in the Gaza Strip had sustained life-changing injuries caused by the ongoing conflict, according to the latest World Health Organisation (WHO) estimates released at the time. One in four of these injuries was in children.

Life-changing injuries accounted for one quarter of all reported injuries, out of a total of 167,376 people injured since October 2023. Over 5,000 people had undergone amputation. Based on a larger pool of data, the findings remained consistent with WHO's previous analysis.

Other severe injuries, including to arms and legs (over 22,000), the spinal cord (over 2,000), the brain (over 1,300), and major burns (more than 3,300), were also widespread, further increasing the need for specialised surgical and rehabilitation services and deeply affecting patients and their families across Gaza.

The report also highlighted the prevalence of complex facial and eye injuries, especially amongst patients listed for medical evacuation outside Gaza—conditions often leading to disfigurement, disability, and social stigma.

The updated analysis drew on data from 22 WHO-supported Emergency Medical Teams (EMTs), Gaza's Ministry of Health, and key health partners, providing a more comprehensive picture of rehabilitation needs resulting from severe trauma injuries.

As new injuries mounted and health needs rose, the health system teetered on the brink of collapse. Only 14 of Gaza's 36 hospitals remained partially functional, while less than one-third of pre-conflict rehabilitation services were operating, with several facing imminent closure. None were fully functional despite the efforts of EMTs and health partners.

The conflict had devastated the rehabilitation workforce. Gaza had once had around 1,300 physiotherapists and 400 occupational therapists, but many had been displaced, and at least 42 had been killed as of September 2024, according to the report.

On the day of the report's release, one rehabilitation health worker had reportedly been killed and one injured, along with two other health workers in the same attack. Those providing care were experiencing extreme stress and suffering. Despite the high number of amputations, Gaza had only eight prosthetists to manufacture and fit artificial limbs.

Rehabilitation was deemed vital not only for trauma recovery but also for people with chronic conditions and disabilities, which were not reflected in the report. Displacement, malnutrition, disease, and the lack of assistive products meant that the true rehabilitation burden in Gaza was far greater than the figures presented. Conflict-related injuries also carried a profound mental health toll, as survivors struggled with trauma, loss, and daily survival, while psychosocial services remained scarce. Mental health and psychosocial support needed to be integrated and scaled up alongside rehabilitation.

WHO, EMTs, and other health partners remained on the ground, working to meet urgent health needs. But to ensure access to care and scale up services—including rehabilitation—the report highlighted the urgent need for protection of health care, unhindered access to fuel and supplies, and the removal of restrictions on the entry of essential medical items, including assistive devices.

Above all, WHO called for an immediate ceasefire. The people of Gaza deserved peace, the right to health and care, and a chance to heal.

SOURCE: **WORLD HEALTH ORGANISATION**

Exercise: A brain changer in Parkinson's disease

Exercise may help protect or even enhance the function of the neurones in Parkinsonian brains. Researchers have begun to show that engaging in structured, high-intensity exercise can activate neuroplasticity and increase dopaminergic signalling in the brain. In trials, patients who carried out vigorous workouts—such as interval training or fast cycling—demonstrated improvements not only in motor symptoms but also in biomarkers of neuronal activity.

The article notes that exercise triggers beneficial molecular pathways, including improved

mitochondrial function, reduced oxidative stress, and greater production of neurotrophic factors (which support neurone survival). These changes may help strengthen and preserve the functionality of dopamine-producing cells—the very cells compromised by Parkinson's disease.

Moreover, the piece emphasises that timing and consistency of exercise are crucial. Early initiation of an exercise regimen appears more effective, and sustained activity over months or years may yield the greatest neuroprotective effects. The commentary underscores that exercise is not just symptomatic therapy in Parkinson's disease—it has the potential to be disease modifying.

AI in infectious disease control and AMR: Promise and challenges

Artificial intelligence (AI) is rapidly transforming healthcare, and its impact on infectious disease prevention, diagnosis, and treatment is drawing growing attention. A new series in *The Lancet Infectious Diseases* presents a comprehensive look at how AI can be harnessed to manage infectious diseases and combat antimicrobial resistance (AMR), highlighting both the potential and the barriers to widespread adoption.

AI technologies are proving valuable across multiple aspects of infectious disease management. These include outbreak detection, real-time disease surveillance, infection control, clinical diagnostics, and antimicrobial stewardship. Leveraging data from pathogens, human hosts, and environmental sources, AI can detect subtle patterns and trends that are often beyond the capacity of traditional methods. The series proposes a conceptual framework that identifies key domains where AI can be integrated across research, public health, and clinical care.

One of the most promising areas of AI application is in diagnostics. By supporting clinical decision-making, optimising laboratory workflows, and enhancing the speed and accuracy of pathogen detection, AI is reshaping the way infectious diseases are diagnosed and monitored. This is especially critical for managing antimicrobial resistance. AI can assist in identifying resistant pathogens quickly and suggest personalised treatments, contributing to more targeted and effective use of antibiotics — a cornerstone of antimicrobial stewardship.

Despite the potential, challenges remain significant. High-income countries, while more technologically advanced, struggle with fragmented health data systems, algorithmic biases, and difficulties in integrating AI into clinical practice. On the other hand, low- and middle-income countries face even more fundamental barriers, such as lack of digital infrastructure, standardised data, and financial resources. These disparities risk widening the existing global health inequities if not addressed through targeted policy and investment.

In the context of antimicrobial resistance, AI could play a critical role in achieving the recently defined UN General Assembly targets, which call for a global, multisectoral approach to address AMR. AI's ability to process and analyse vast amounts of clinical and microbiological data can improve antimicrobial surveillance, support the development of new antibiotics, and enhance public health responses. Moreover, AI tools can provide early warning systems for emerging resistance patterns.

However, for AI to reach its full potential in infectious disease management and AMR, several systemic issues must be resolved. These include ensuring data interoperability across systems, protecting patient privacy, managing cybersecurity risks, and navigating complex regulatory environments. Ethical concerns, such as ensuring algorithmic fairness and transparency, are also key considerations.

The Lancet Series underscores the need for coordinated global efforts to overcome these challenges. Investments in digital infrastructure, particularly in lower-resource settings, will be essential. Equally important is the development of harmonised data-sharing policies and training for healthcare professionals to effectively use AI-driven tools.