

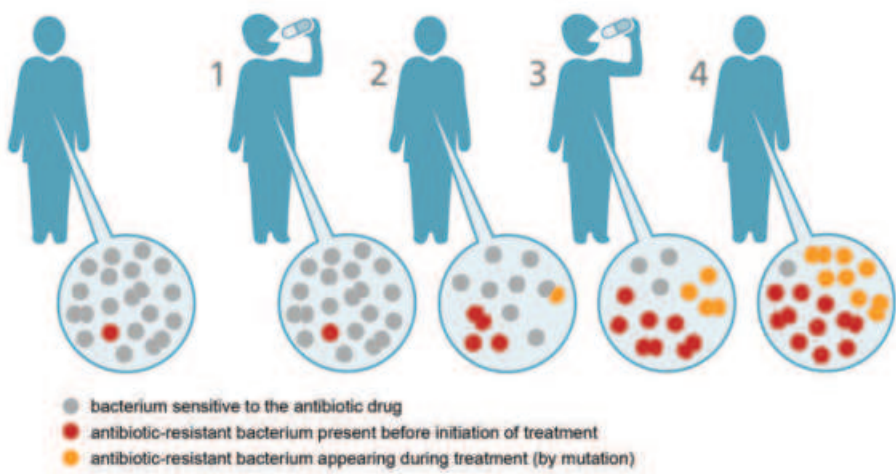
Post-antibiotic era: what are the alternatives?

DR SABBIH RAHMAN SHUVO

Alexander Fleming accidentally discovered antibiotics almost ninety years ago. He noticed that some molds had grown on a Petri plate wherever bacteria could not grow. This unintentional invention led to the prevention of infectious diseases by an antimicrobial compound that is commonly known as penicillin. This ‘magic bullet’ has eliminated several previously lethal infections and increased the life expectancy of the patients. Many antibiotics had been discovered at that time, and inappropriately used in various medical conditions whether or not they would be particularly useful. Gradually, bacteria learned how to fight against antibiotics and became resistant to several antibiotics.

The World Health Organisation (WHO) cited antibiotic resistance as a serious global health issue for every part of the world by publishing its first comprehensive report on antibiotic resistance in 2014. The situation in Bangladesh is not different from this perspective. Isolations of multi-drug resistance (MDR) bacteria from the patients have been increased sharply in recent years in Bangladesh.

Over the counter selling of antibiotics and inappropriate use of antibiotics in agriculture has worsened the situation. Alarming some of these bacteria are resistant to the new class of antibiotics also.



Antibiotics either kill the bacteria or inhibit the growth of the bacteria so that our immune system can kill the bacteria to clear the infection. Antibiotics can be divided into several groups based on their modes of action in the bacterial cells, chemical structures, and the types of bacteria they are active in. However, bacteria can employ various mechanisms to become resistant against antibiotics like modification of the enzymes, changing the expression of the target, reducing the permeability of the membrane, destroying the antibiotics, and antibiotic efflux.

Lately, the discovery of the new antibiotic class has been slow. Only a few antibiotics came to market in the

last 18 years compared to the early age of antibiotic development. One of the reasons for the slowing down of the discovery of new antibiotics is that several billion dollars are required for the research and extensive testing before the release of an antibiotic in the market.

In the context of the current situation, few alternatives have been proposed by scientists. A study published in The Lancet Infectious Diseases journal in 2016 suggested several alternative methods to fight against microbial infections. One of the alternatives is antibodies. Antibodies can play a significant role in this situation. Antibodies either bind to the virulence factors of the microorganisms or bind to the pathogen to inactivate

it. Antibody therapy is a low-risk and historically safe to use technology. Raxibacumab is a monoclonal antibody that was approved in 2012 to treat inhaled anthrax.

Another method is to use viruses (also known as bacteriophages) to eliminate bacteria. The practice of using bacteriophages to reduce bacterial infection is an old technique and has been utilised before the era of antibiotics. Recently, in the USA and Canada, phage therapy has been used on patients with cystic fibrosis in an experimental basis.

Vaccines have the potential to fight against bacterial infections. There are several types of vaccines, and those vaccines help our immune cells to generate memories so that those cells can effectively recognise the infectious agents and clear the infection.

Antibiotic-resistant bacteria increase the fatality rate in bacterial infections. It is a public health problem of substantial magnitude. Proper uses of the antibiotics help us to reduce the bacterial resistance to the antibiotic and increase the efficacy of the existing antibiotics. Although the discovery of a new class of antibiotics dried up, some alternative methods can be implemented to fight against bacterial infections. These alternative methods may serve as a ray of hope in the dark age of the post-antibiotic era.

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DID YOU KNOW?



Blood pressure rises at a faster rate in women than men

Women experience steeper increases in blood pressure (BP) than men as they age, according to a JAMA Cardiology study.

Researchers examined data from four community-based cohorts, comprising nearly 33,000 participants in whom longitudinal BP measurements were taken over 40 years. They found that age-associated BP increases occurred at a faster rate in women than men, sometimes beginning when participants were still in their third decade of life. After adjustment for confounders like diabetes and smoking, BP increases were steeper in women than men throughout adulthood.

The researchers write, "In contrast with the notion that important vascular diseases in women lag behind men by 10 to 20 years, our findings indicate that certain vascular changes not only develop earlier but also progress faster in women than in men. ... Sex differences in physiology, starting in early life, may well set the stage for later-life cardiac as well as vascular diseases that often present differently in women compared with men."

HEALTH bulletin



Intermittent fasting may help slow ageing and diseases like cancer and diabetes

Intermittent fasting (IF) has become one of the fastest-growing nutrition trends of the year, topping lists ranging from of celebrity-endorsed eating plans to Google searches by curious dieters.

There is also an increasing number of studies that back up the hype with scientific evidence, suggesting IF can ward off disease, help control blood sugar, and lead to weight loss even without cutting calories, according to a review article published recently in the New England Journal of Medicine.

For the article, researchers reviewed more than 70 published studies about the most common types of IF — the 5:2 method (eating normally for five days a week and fasting the other two days), fasting every other day, or limiting meals each day to a smaller time period (often six to eight hours and fasting the other 16 to 18 hours of the day).

The authors found that IF of all types can help slow ageing and age-related illnesses like cancer, heart disease, and diabetes. It can also help with weight and fat loss.

The findings mark "a transition point where we could soon consider adding information about intermittent fasting to medical school curricula alongside standard advice about healthy diets and exercise," lead author Mark Mattson, a neuroscientist at John Hopkins Medicine, said in a press release.

Autism spectrum disorder and its care in Bangladesh

MD SHAIKHUL HASAN

Autism or autism spectrum disorder (ASD) refers to a group of neurodevelopmental disorders, which is characterised by the challenges of social behaviour, speech, language, and communication. Nowadays it is becoming a major concerning issue worldwide. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5, published in 2013), it includes Asperger's syndrome, childhood disintegrative disorder and pervasive developmental disorders not otherwise specified (PDD-NOS) as part of ASD rather than as separate disorders. Through a required substantial support an ASD child or adult can perform and manage his/her daily activities.

In the Southeast Asia region, it is estimated that every 1 in 160 children has ASD. Recently, the Bangabandhu Sheikh Mujib Medical University (BSMMU) in Bangladesh confirmed that almost 2 in 1000 children have been suffering from ASD in Bangladesh. Wherein, the urban prevalence is higher than the rural areas.

Usually, all symptoms of ASD appears between 18 to 36 months of age. In this case, the awareness and skills of primary health care service provider play a vital role to ensure appropriate referral systems for exact intervention in the healthcare services delivery system for children with autism. Because early intervention can change the course

of life of an autism affected child.

A child with ASD first visits the primary health care centre with his/her parents for checking developmental milestones. Based on the developmental milestone checklist the responsible primary health care provider screens a child's development and refers



to a paediatrician at the district level when something abnormal is detected. A paediatrician who is specialised in paediatric neurology screens the child and refers the child to the specialised hospital at the tertiary level of healthcare for combined screening and therapeutic services. The tertiary level healthcare

facility has health care professionals specialised in several fields which is necessary for the diagnosis and therapy of ASD.

The earlier children with autism spectrum disorder get help, the greater their chance of treatment success. Early intervention is the most effective way to speed up your child's development and reduce the symptoms of autism over the lifespan. When your child has autism:

- **Learn about autism.** The more you know about autism spectrum disorder, the better equipped you will be to make informed decisions for your child.
- **Become an expert on your child.** Figure out what triggers your child's challenging or disruptive behaviours and what elicits a positive response. If you understand what affects your child, you will be better at troubleshooting problems and preventing or modifying situations that cause difficulties.
- **Accept your child.** Rather than focusing on how your autistic child is different from other children and what he or she is "missing," practice acceptance. Feeling loved and accepted will help your child more than anything else.
- **Do not give up.** It is impossible to predict the course of autism spectrum disorder. Like everyone else, people with autism have an entire lifetime to grow and develop their abilities.

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Wuhan coronavirus: How to protect yourself

The deadly Wuhan coronavirus, officially called 2019-nCoV, has killed 41 people and infected at least 1300 others in China. The Centres for Disease Control and Prevention (CDC) has released guidance on the symptoms of the virus. A person could be at risk if they have:

- Fever and symptoms of lower respiratory illness, such as coughing or difficulty breathing, after travelling to Wuhan or having close contact with someone who was ill and is now under investigation for the virus in the past two weeks.
- Fever or symptoms of lower respiratory illness after having close contact in the past two weeks with someone who's been confirmed to have the virus.



The CDC defined "close contact" as being within about 6 feet (1.8 m) "or within the room or care area" of a person with the coronavirus for a prolonged period without appropriate protective clothing, or "having direct contact with infectious secretions" of a person with the virus without protective clothing.

Coronaviruses like 2019-nCoV are particularly dangerous for people who have weaker immune systems, like young children and older adults. There are no vaccines to protect people from contracting a coronavirus. Pets are also at risk of catching coronaviruses, which can lead to disease and even death.

How to protect yourself

- Try to avoid contact with people who display symptoms similar to those of pneumonia or the common cold, like coughing or a runny nose.
- Do not touch your eyes, nose, or mouth with unwashed hands.
- Wash your hands frequently with soap and water, and scrub for at least 20 seconds.
- Use alcohol-based hand sanitiser when possible.
- Avoid animals and animal markets.

/StarHealthBD

Reasons You May Have Brain Fog

What Is It ?

"Brain fog" isn't a medical condition. It's a term used for certain symptoms that can affect your ability to think. You may feel confused or disorganized or find it hard to focus or put your thoughts into words.

Pregnancy

Many women find it's harder to remember things during pregnancy. Carrying a baby can change your body in lots of ways, and chemicals released to protect and nourish your baby may bring on memory problems.

Multiple Sclerosis (MS)

This disease affects your central nervous system and can change the way your brain "talks" to the rest of your body. About half the people who have MS have issues with memory, attention, planning, or language. Learning and memory exercises can help, and a therapist can give you new ways to handle the tasks you have trouble with.

Medication

Some kinds of drugs -- over-the-counter and prescribed -- can cause brain fog. If you take medicine and notice that your thinking isn't as clear as it should be or you suddenly can't remember things, call your doctor. Be sure to let him know all the medications you take.

Cancer Treatment

Chemotherapy -- a treatment for cancer that uses strong drugs -- can lead to what's sometimes called "chemo brain." You may have trouble remembering details like names or dates, have a hard time multi-tasking, or take longer to finish things. It usually goes away fairly quickly, but some people can be affected for a long time after treatment.

Depression

You may not remember things well or be able to think through problems easily. It's hard to know if this is linked to the loss of energy and motivation that comes with depression, or if depression affects your brain in a way that causes the fog. Treatment for your depression, which includes medication and talk therapy, should help get you back on track.

Sleep

You need sleep to help your brain work the way it should, but too much can make you feel foggy, too. Aim for 7 to 9 hours. To get good rest at bedtime, you may want to avoid caffeine and alcohol after lunch and keep the computer and smartphone out of your bedroom. It also can help to get to bed and wake up at the same time every day.



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