



Penicillin_G_molecule

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PRESS RELEASE:

Antibiotics – the disappearing miracle drugs.

Today we all are so used to taking antibiotics without very much thought other than wishing to recover from, or prevent, infection. Yet how many realise we have only benefited from these life-saving ‘wonder drugs’ since they were introduced in the 1940s? **70 years ago 9 out of 10 people who contracted pneumonia died. After penicillin was discovered 1 out of 10 died.** Hailed as miracles of modern medicine they cured widespread infections that previously caused the death of many millions of people every year. Major diseases, like syphilis, gonorrhoea, leprosy, and tuberculosis, became treatable. The risk of death from something as common as strep throat or a child’s scratched knee virtually vanished. The discovery in 1928 and ensuing mass availability of antibiotics in the 1940s ushered in a dramatic improvement in human health and life expectancy.

During the recent decade there has been much media coverage of patients contracting drug-resistant ‘superbugs’ while in hospital. Despite hospitals improving and now constantly monitoring infection control procedures, the emergence and spread of drug-resistant pathogens has accelerated. More than 70 per cent of the bacteria that cause hospital-related infections are already resistant to at least one type of antibacterial drug. The World Health Organisation (WHO) estimates there are at least 440,000 individual cases of multi-drug resistant tuberculosis across the globe, resulting in over 150,000 deaths annually. An untreatable form of gonorrhoea is spreading across the world and has been detected in Britain. During the past decade alone there has been a marked increase in antimicrobial resistance to certain diseases.

Bacteria will naturally mutate and develop resilience in response to any threat posed; it is a natural biological process. The use of any antimicrobial for any infection, in any dose, and over any time period, forces microbes to either ‘adapt or die’ in a phenomenon known as selective pressure.



Andrew Fleming, who discovered penicillin, warned the world to handle the use of antibiotics with great care. The world did not listen. We have mistakenly assumed that our life-saving antibiotics will last forever and newer, better and even more powerful drugs will be discovered. Unfortunately during recent years we have fallen behind the ‘mutation curve’ and bacterial resilience has accelerated dramatically. There are no newer variations of these drugs in the research and development pipeline, largely due to the reluctance of the pharmaceutical industry to commit further research and development for new antimicrobial agents, diagnostics and vaccines.

The world is heading into a post-antibiotic era in which many common infections will no longer have a cure and, once again, kill unabated. **Antibiotic resistance is now one of the three greatest threats to human health.** The trends are clear and ominous yet most people are unaware of the very real risk posed by the increasing resistance to

antibiotics. Urgent corrective and protective actions must be taken at all levels.

The US Center for Disease Control and Prevention, has warned governments of a “*limited window of opportunity*” to deal with the nightmare presented by the rise of a family of bacteria highly resistant to Carbapenem antibiotics which are our last-resort drugs used when all else fails. Carbapenem-Resistant Enterobacteriaceae (CRE) were first identified in 1996 and have since spread around the world. CRE are frightening for three reasons. They are resistant to all or nearly all antibiotics; they kill up to half of the people who develop serious infections with them; they can spread their resistance genes to other bacteria enabling them to become resistant also.

Belatedly governments have realized the scale of risk to life and are recognizing major policy changes are required, together with multisectorial planning and coordinated action on a global scale. Surveillance must be expanded, drug regulatory and supply systems controlled, use of medicines for human and animal health improved, infection controls in hospitals and health services strictly monitored and the development of new antimicrobials, diagnostics and vaccines stimulated. The UK’s chief medical officer, Dame Sally Davies, has described an apocalyptic future when people will be dying from infections because we have run out of effective antibiotics. Major interventions like organ transplants, chemotherapy, hip replacements and care for premature babies will become impossible. The treatment of trauma, heart attacks, strokes and other illnesses requiring extensive care with catheters, intravenous feeding and mechanical ventilation cannot proceed without access to antimicrobial drugs.

Defensive action

Irrational and inappropriate use of antimicrobials is supporting the development of drug resistance. Antibiotics are dispensed too easily, sometimes to “*be on the safe side*”, sometimes in response to patient demand, but often for doctors and pharmacists to make more money. In many countries economic hardship encourages patients to stop treatment as soon as they feel better, rather than complete the treatment course needed to fully kill the pathogen.

Governments everywhere should ensure that antimicrobials are dispensed only by a licensed prescriber, and over-the-counter sales of individual pills are stopped. Urgent action is needed to improve control over the use of antibiotics to promote growth and for prophylaxis in food-producing animals. Evidence shows that pathogens that have developed resistance to drugs in animals can be transmitted to humans.

Playing your part

We all must assume a responsible role in the fight against life-threatening bacterial resistance. [Three key points:](#)

- (1) Antibiotics do not work against viruses so do not take them for influenza or colds.
- (2) Take antibiotics only when prescribed by your GP and complete the dose.
- (3) Drug resistance is accelerated when patients do not complete their full course of an antibiotic.

Playing your part by monitoring your personal use of antibiotics will help slow the rate of resistance. Humankind is locked into a permanent and invisible war against some dangerous microbes and we need to urgently research and find new classes of antibiotics. Leaving development of our future antibiotic defences in the hands of private sector pharmaceutical companies - reluctant to invest in the necessary research and development - exposes our greatest weakness. Each of us can help by promoting greater awareness of the threat, by campaigning for sustained robust policy and demanding speedy action be taken by governments at national and global levels.

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*Published by CombatAMR.org to mark European Antibiotic Awareness Day, 18 November .
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