

Antibiotic Research UK

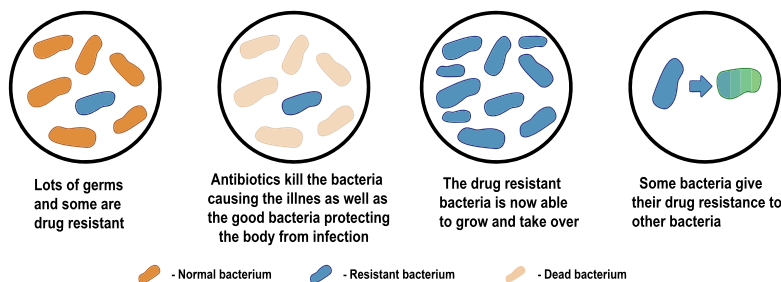
www.antibioticresearch.org.uk

ANTIBIOTIC RESEARCH UK

While antibiotics have transformed modern medicine, helped to extend life expectancy in the UK by as much as 20 years and saved millions of lives around the world, the rapid rise of resistance to these drugs presents an imminent global health disaster if not adequately managed in the very near future. In this exclusive interview, we speak with **Professor Colin Garner**, founder and Chief Executive of Antibiotic Research UK, the world's first charity focussing on bacterial antibiotic resistance, to hear about their vital efforts targeted at overcoming the challenge of antibiotic resistance.



HOW ANTIBIOTIC RESISTANCE HAPPENS



To begin, can you tell us more about why antibiotic resistance is such a serious and urgent problem?

Bacterial antibiotic resistance is a natural phenomenon; in fact, resistant bacteria have been identified in Egyptian mummies long before the advent of antibiotics. Resistance is driven by the misuse and overuse of antibiotics, causing bacteria to evolve metabolic pathways to avoid the killing effects of antibiotics.

Antibiotics underpin most of modern medicine. Without effective antibiotics, life-saving treatments for cancer, heart disease, joint replacement, organ transplantation and even childbirth would become much riskier – if not impossible. Without effective antibiotics, we would go back to a pre-antibiotic age when even a simple scratch could kill. Antibiotic resistance,

where bacteria become resistant to antibiotic treatments, is on the rise around the globe. Today approximately 700,000 people a year die around the world from antibiotic-resistant infections. It has been proposed that if we don't deal with antibiotic resistance now, by 2050, 10 million people will die globally each year from a drug-resistant infection.

What are the main aims of Antibiotic Research UK?

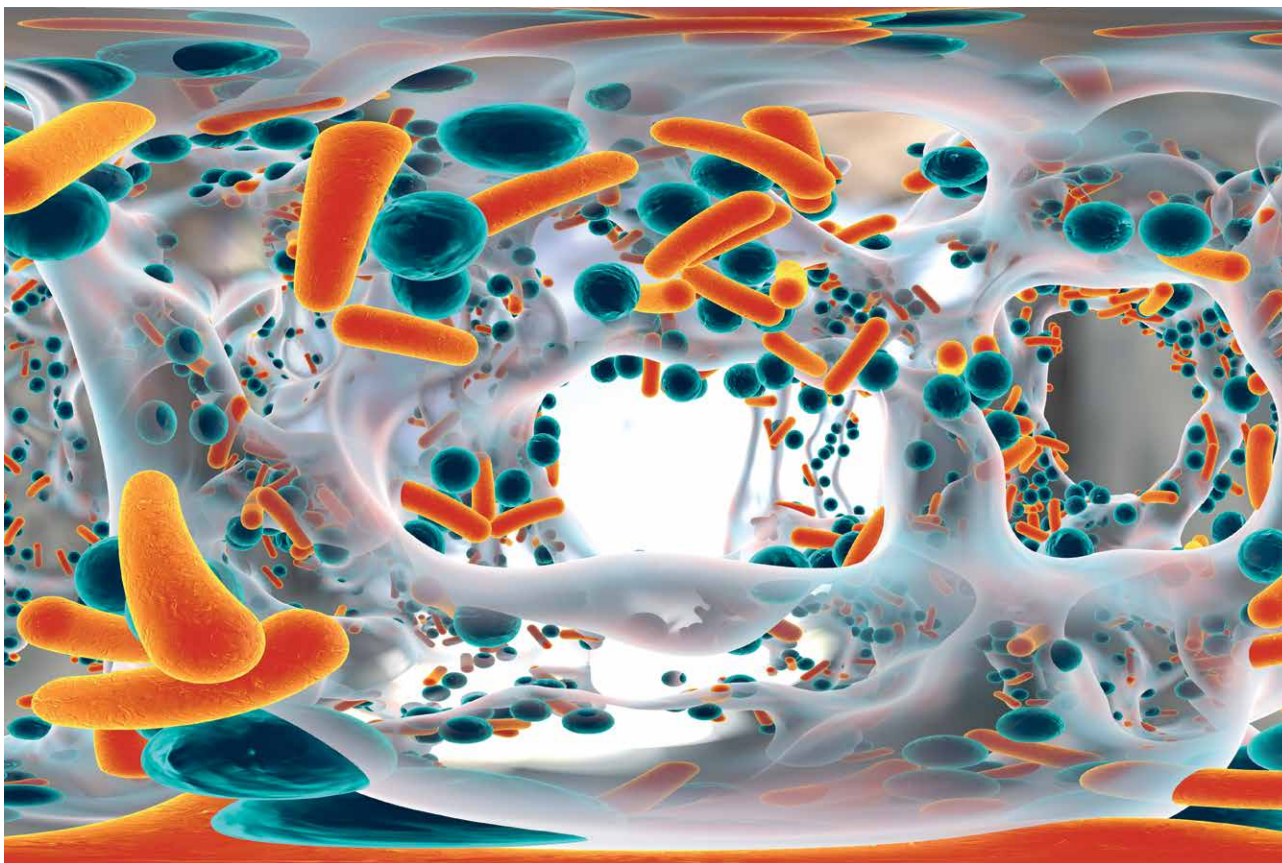
Antibiotic Research UK (ANTRUK) was formed in 2014 by a concerned group of expert Antimicrobial Resistance (AMR) scientists and clinicians who felt that not enough attention was being paid to this problem in comparison with other diseases such as cancer. The charity takes a holistic view of the problem. Our primary goals are to support research into new antibiotic treatments, educate

the public about the dangers of drug-resistant infections and provide the UK's first patient support service for patients with a resistant infection. All the charity's activities are supported by public donation; we receive no government funding.

How does Antibiotic Research UK support research? What types of research do you fund?

Since the charity's inception we have taken the view that, as we are working with limited funds, we should focus on specific areas. For this reason, we decided to concentrate our research efforts on gram-negative bacterial infections, the most common cause of urinary tract infections, pneumonia and bloodstream infections. Multidrug-resistant gram-negative infections are on the rise around the world, including here in the UK. Our funding consists of both commissioned research on, for example, antibiotic resistance breakers, β -lactam antibiotics/ β -lactamase inhibitors and non-antibiotic alternatives to treat infection.

Through response mode funding we have funded a Small Research Grant programme in which UK academics applied on a competitive basis for funding. To date, we have funded ten Small Research Grants but because of COVID, we had to postpone our 2020 call for proposals. Funding permitting, we hope to have a further call in 2021.



How is the general public involved in your work?

As a charity, the public form are our primary stakeholders and funders. Our charity is what is known as a Charitable Incorporated Organisation with members. This means, rather like a company with shareholders, our charity is controlled by our members who can join for a small membership fee.

We are currently in the process of reaching out to the public to gain a better understanding of their knowledge of antibiotic resistance to ensure we provide the most beneficial information in an easy to access format. If anyone feels that they want to see their children and grandchildren enjoy the same benefits of antibiotics that we have enjoyed, they should join '[the resistance against resistance](#)'.

We are, of course, in the midst of the COVID-19 pandemic. What specific challenges and opportunities has this brought to the work of Antibiotic Research UK?

COVID-19 is the most serious health crisis the world has faced in the past 100 years. The word pandemic was unknown to most people until COVID struck. As an infectious disease charity, we no longer have to explain the term but there are still gaps in the public's knowledge.

Some people don't realise the additional risk that COVID-19 patients are exposed to in hospital where, due to their lowered immunity, they are in danger of contracting secondary bacterial infections. The combination of COVID-19 with bacterial

pneumonia can be deadly and, to counteract this, many hospital patients are routinely given antibiotics to reduce the likelihood of secondary infection. This is not good clinical practice and should be avoided unless positive identification of a bacterial infection has been made. However, there are no rapid diagnostics for the identification of bacterial infections, making it difficult for ICU clinicians to make quick, informed decisions.

The increased awareness of infectious disease is a rare silver lining in these difficult times and we hope it will result in a re-evaluation by all stakeholders of the importance of fundamental science research. However, the volume of patients and the increased risk to life can make hospitals less conservative with the use of antibiotics. Overuse and improper use of antibiotics is a major driver of antibiotic resistance and may be fuelling the next crisis post-COVID.

In the fight against antibiotic resistance, as with the fight against COVID-19, we must remember our scientists. It is scientists who discovered and developed the COVID vaccines, but all too often these scientists work under very difficult conditions with limited funding. I hope the COVID pandemic will result in much more infectious disease funding including for antibiotic resistance research.

The COVID pandemic has hit our funding hard as face-to-face fundraising events have had to be cancelled making it more difficult for us to carry out our mission. That is why I hope anyone reading this article will [help us in our essential work](#).



What would you say are Antibiotic Resistance UK's biggest achievements to date?

Our main achievement is that we exist! Until our charity was created there was no charity focussing on bacterial antibiotic resistance.

I am extremely proud of our achievements – we have raised nearly £2 million since we were formed in mid-2014 and these funds have been used to support our three goals of research, education and patient support.

I believe we punch above our weight. We have held meetings with Government ministers including the then Prime Minister Theresa May to highlight the critical issue of AMR.

We have also worked with major pharmaceutical companies such as MSD, Shionogi and Pfizer. One research programme we have supported might provide a new treatment for multidrug-resistant Gram-negative infections and so achieving one of our goals of getting a new treatment into the clinic by the early 2020s.

Looking now to the future, what are the main challenges and goals for Antibiotic Research UK over the next 5–10 years?

The main challenge as I see it, is to increase the profile of the resistance problem alongside raising the profile of our charity.

We want to become known as the primary charity in this space providing evidence-based support and information. We have produced a [five-point action plan](#).

In particular, I am keen to see the creation of a UK AMR Research Fund of up to £100 million; the contributors to the fund would be pharma, government and medical research charities. The primary aim of the fund would be to support basic precompetitive science across UK universities and institutes. I would view the creation of such a fund as a major achievement in helping to develop the treatments of tomorrow. I also hope to see our patient support service expanded to serve the over 60,000 people who get an antibiotic-resistant infection every year in the UK.

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