

Action on antimicrobial resistance needed to avert a global crisis

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Antimicrobial resistance (AMR) is one of the greatest threats facing the global community, according to a new report from the World Health Organization, which has called for immediate and ambitious action to avert a potentially disastrous drug-resistant crisis.



Recognising that human, animal, food and environmental health are closely interconnected, the report calls for a co-ordinated, multi-sectoral 'One Health' approach to the problem, which England's chief medical officer Professor Dame Sally Davies warns is as big a threat to the world as climate change.

If no action is taken, warns the UN Interagency Coordination Group (IACG) on Antimicrobial Resistance, drug-resistant diseases could cause 10 million deaths each year by 2050 and damage to the economy as catastrophic as the 2008-2009 global financial crisis. By 2030 AMR could force up to 24m people into extreme poverty. Currently, at least 700,000 people die each year due to drug-resistant diseases, the report adds.

But AMR isn't just a problem of human antibiotic overuse. The food industry is also very much in the spotlight for its use of a whole range of antimicrobials – including antibiotics – to control animal diseases and dangerous pathogens. In response to this, Leatherhead Food Research is working with companies in the sector to reduce their impact on this problem.

Through the expertise of our staff and custom built food safety laboratories, we use microbiological contamination and growth studies to help companies reduce their use of antimicrobials and investigate novel alternatives. We also undertake UKAS accredited challenge tests to determine the potential microbial risk within products and risk assessments of companies' supply chains and processes.

As well as antibiotics, antimicrobials include: antifungals; antivirals; antiparasitics; antiseptics; disinfectants; sterilants; and preservatives. Heat, pH, and reduced water activity could also be considered as antimicrobials. AMR to all of these treatments has been reported.

AMR microorganisms have been found in the environment (soil and water), agricultural commodities (for example, livestock, poultry, fish, shellfish, cereals, fruit and vegetables) and also in food manufacturing, foodservice, the home and in hospitals.

These organisms can be spread by contamination of meat at slaughter by faecal material; contamination of water used for growing plants, fish and shellfish with human or animal faeces; environmental contamination of food; and cross-contamination by food handlers or contaminated equipment, and are exacerbated by poor hygiene. When present as biofilms, organisms can also be more resistant to antimicrobial treatment.



AMR is reported more often from animals or meat products than from plants, and multi-resistant strains are increasing, for example *Campylobacter* in chicken. To combat this, the UK poultry industry is reducing antibiotic use. And, while the use of antibiotics as growth promoters for livestock has now been banned in the US and Europe, governments may in future further restrict the use of certain antibiotics in farming and aquaculture.

While novel alternative antimicrobial treatments for controlling bacteria, including the use of bacteriophages, essential oils and chitosan from crustaceans, are being investigated, these must be food-safe and have no deleterious side effects for humans or animals. Good hygienic practices are also essential, but they must be properly applied to be effective, and not contribute to the problem.

If antimicrobial use is restricted, this should result in the decline of AMR. However, in the short to medium term, alternative therapies must be developed and Leatherhead can help you identify the most effective treatments.

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