

Recognising the role of the environment in the global spread of antibiotic resistance

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Antibiotic resistance has been recognised in recent years as a major healthcare problem, however, a paper in *The Lancet Infectious Diseases* reviewing the issue on a global scale, concludes that, not enough attention is given to the critical role that the natural environment plays in the cycling of antibiotics and the associated development of resistance by bacteria.

The paper, by 12 scientists from UK universities and the NHS, concludes that the potential global threat posed by the continued evolution of antibiotic resistance in [pathogenic bacteria](#) (e.g. E. coli) found in both hospitals and the environment provides a grave and imminent threat to public health that should be urgently addressed.

According to the review, there is now sufficient evidence to support the hypothesis that one of the most important emerging public health threats is the large-scale spread of strains of serious-illness-inducing germs for which there is no effective [antibiotic treatment](#). Prof Davey Jones states that "we take it for granted that if we get a thorn in our finger and it turns septic or a tooth infection that we can take antibiotics to cure it. In the future this just won't always be possible and the [sepsis](#) may spread to the rest of the body. The consequences of this don't bear thinking about. It will be like returning to [medieval times](#)."

Bangor University contributing author Dr Prysor Williams explains: "The basic problem is that the antibiotics we currently use can persist in the environment, having been administered to treat humans or animals

and then excreted, or as a result of pollution at source during manufacture. Once in the environment, this creates potential for pathogens that come into contact with these antibiotics to mutate, sometimes making them resistant. These mutations can then spread to other related [pathogens](#) in the environment.

This threat is increased by recent changes in demographics, the misuse of antibiotics in healthcare and agriculture, their incomplete breakdown during sewage treatment and following release into the environment.

"We suggest that, globally, we need to address strategies to avoid this potential public health disaster. As well as searching for new antibiotics we need to develop smart antibiotics that have a shorter life-span in the environment. This would be combined with more responsible control of the release of antibiotics into the wider environment through improved sewage and animal waste management, and educating people about the scale of the problem" explained Dr Paul Cross.

More information: [doi:10.1016/S1473-3099\(12\)70317-1](https://doi.org/10.1016/S1473-3099(12)70317-1)

Provided by Bangor University

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