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News Release

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Bid to beat drug resistance boosted by worldwide sewage survey

Efforts to monitor the spread of antibiotic resistance worldwide could be transformed with a map created using data from analysis of sewage samples.

An international team of scientists analysed the DNA of drug-resistant bacteria found in samples gathered from more than 60 countries.

Their method offers a relatively inexpensive, fast and simple way to track drug resistance in human populations.

Higher levels of drug resistance genes were found in South America, Asia and Africa compared with developed regions such as North America and Europe.

Improved health and sanitation could potentially limit the global burden of resistance to antibiotics, scientists say.

Analysis of the results alongside existing data on countries' health and development enabled scientists to predict drug resistance in regions not included in sewage sampling.

The wealth of information gathered in the study – some 10 billion individual measurements – could also enable research into other aspects of health, such as the global spread of viruses.

The team is to continue sampling twice-yearly until 2022, allowing scientists to map health trends over time. It could help spot trends in disease spread or identify emerging worldwide infections.

The study, published in *Nature Communications*, was led by the Technical University of Denmark in collaboration with the University of Edinburgh and researchers in the Netherlands. It was supported by the European Union Horizon 2020 programme, the World Health Organization and Novo Nordisk Foundation.

Professor Mark Woolhouse, of the University of Edinburgh's Usher Institute, who took part in the study, said: "We believe that this new approach to surveillance way of monitoring antimicrobial resistance around the world is a game-changer, making the difficult task of monitoring this threat far easier than before."

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