

# New technology set to lead fight against anti-microbial resistance

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Increasing pressures on health services have led to the over-prescription of commonly used antibiotics, more instances of mis-prescription and subsequently, the emergence of antibiotic resistance and an increased reliance on antibiotics of last resort. This novel technology is set to play a vital role in the fight against anti-microbial resistance.

Professor Douglas Kell has developed technology using [flow cytometry](#) which detects and counts individual bacteria in a urine sample, and can determine which antibiotic is the most efficient at killing those particular bacteria. The most effective antibiotic can then be prescribed to the patient.

Professor Kell believes the 'precise technology' could be deployed as a portable instrument in GP clinics and hospitals.

Professor Kell said: "What we've been able to do for the very first time is to provide a very [rapid method](#) that will enable us to determine whether a particular antibiotic is going to kill the organisms in the [urinary tract infection](#) or not. The method is sufficiently rapid that the results would be available in the time before an individual would leave a doctor's surgery.

"Typical modern methods have often relied on discovering the genotype of the organism that is there and the sequence of DNA. But that doesn't actually tell you whether or not the organism is susceptible, in the sense of stopping it growing, to the antibiotic in question."

Antimicrobial resistance or AMR—which occurs naturally over time and usually through genetic changes—is the ability of a microbe to resist the effects of medication that once could successfully treat the microbe. Microorganisms that develop antimicrobial resistance are sometimes referred to as superbugs. AMR is widely seen as one of the greatest threats to society.

Professor Kell added: "The common occurrence is that a patient will turn up at a GP clinic with a urinary tract infection or a suspected urinary tract infection, and the doctor would like to give an antibiotic.

"Quite often, one doesn't know which is the right antibiotic that will cure the [infection](#).

"What would be desirable is to have a test that could tell you which antibiotic is going to work on a timescale of say thirty minutes or less so that the patient gets the right prescription before they leave the GP's clinic. This is what we have been able to achieve"

**More information:** Srijan Jindal et al, Very rapid flow cytometric assessment of antimicrobial susceptibility during the apparent lag phase of microbial (re)growth, *Microbiology* (2019). [DOI: 10.1099/mic.0.000777](#)

Provided by University of Manchester

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