Fast break for antibiotic resistance testing

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A team of scientists from The University of Western Australia has developed a screening test that quickly confirms antibiotic efficacy. Their method is able to ensure the most effective antibiotics are prescribed sooner.

The time saving solution known as FAST (Flow cytometer-assisted Antimicrobial Susceptibility Testing) can accurately measure how resistant the bacteria will be 21 hours faster than the international standard, and also gives a reliable qualitative reading in just 30 minutes.

Antimicrobial resistance is a matter of global concern as it increases the risk of treatment failure in a wide range of common infectious diseases.

According to the US Centers for Disease Control and Prevention each year at least two million people in the US become infected with bacteria that are resistant to antibiotics and at least 23,000 people die as a direct result of these infections.

Dr Tim Inglis from UWA's School of Pathology and Laboratory Medicine said it was becoming more difficult to treat patients with severe infections.

"Resistant bacteria are chipping away at the 20 years antibiotics add to our life expectancy," Dr Inglis said. "Unfortunately, standard methods of antibiotic susceptibility testing take 48 to 72 hours, and delay decisions on antibiotic treatment.

"Physicians are forced to rely on educated guesswork, which can further promote antimicrobial resistance and also increase the risk of treatment failure. This is a huge step forward in providing quicker methods of antimicrobial susceptibility testing."

In work funded by a Grand Challenges award from the Bill & Melinda Gates Foundation and a project grant from the Health Department of Western Australia, Dr Inglis and his team have shown early changes in bacterial size and shape caused by antibiotic action can then accurately predict their antibiotic susceptibility profile.

Scientists from internationally recognised reference laboratories are now travelling to Perth to learn how to run FAST methods, and are equipping their labs to offer the testing locally.

"Our ultimate aim alongside The Bill & Melinda Gates Foundation is to develop a family of rapid antimicrobial susceptibility methods suitable for point-of-care, Emergency Department, clinical laboratory and reference laboratory applications," Dr Inglis said.

Provided by University of Western Australia