Drug stewardship receives a boost from **improved diagnostics**

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Innovations in multiplex PCR diagnostics are poised to help healthcare professionals prescribe more targeted therapies for patients – improving outcomes and combatting antibiotic resistance in the process.

Mutating bacteria continue to outwit us, with drug-resistant strains killing more than 700,000 people each year. The United Nations interagency group on antimicrobial resistance believe things will get worse, estimating that the figure could rise to 10 million a year by 2050 - double the number of people who have died globally from COVID-19.

The need for improved diagnostics

Efforts to bring new drugs to market remains slow, so good stewardship of those antibiotics still fit for purpose is vital. However, a lack of diagnostic information makes it hard for healthcare professionals to make the best choices. Empirical therapy is based on experience, not diagnostics, many doctors prescribe the latest drugs as a 'catch all' because they simply have no way of knowing whether their patients have resistant strains or not.

This poses several problems. While the latest drugs may treat the infection, they aren't necessarily as effective in patients who have wild-type strains. They're also often not tolerated as well, and their over-use will inevitably lead to further resistance rendering the drug useless over time.

Multiplex PCR diagnostics

Keith Stanley, Professor at the University of New South Wales and Founder and Managing Director at AusDiagnostics, is hopeful that Multiplex-Tandem PCR, which can measure up to 24 different targets, will give doctors the insight to prescribe treatment much more accurately.

Molecular diagnostics typically test for organisms and resistant genes that are 'present', but there is also the scope to test for what is 'absent'. This could be game changing when diagnosing and treating complex infections where gram-negative bacteria with numerous resistant genes may be involved.

As Stanley points out, improved diagnostics empower healthcare professionals to make the best decision for their patients while also considering the global, long-term impact of the drugs they prescribe. He confirms, "We made a 16-target test that enabled doctors to prescribe with 90% effectiveness. With a 24-target test we are confident we can get this to 95% or even higher."

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