

IMPROVE TREATMENT OPTIONS FOR POLYMICROBIAL INFECTIONS

FACT: Up to 39% of Urinary Tract Infections (UTI) are polymicrobial (more than two pathogenic organisms)¹⁻³

CHALLENGE: Polymicrobial UTIs are more difficult to treat and cure

SOLUTION: PHENOTYPE TESTING WITH HIGH-THROUGHPUT SPECTROPHOTOMETRY

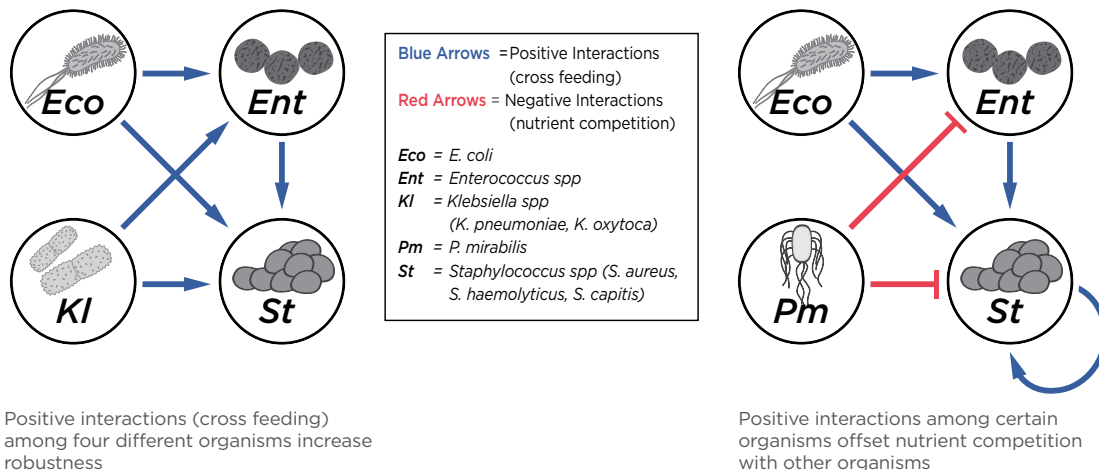


WHY: The Hidden World of the Bladder Microbiome

Mutualism—UTI polymicrobial infections create an ecological environment in which the organisms enhance each others proliferation rates and overall survival in presence of antibiotics.⁴⁻⁸

MUTUALISM ENHANCES PROLIFERATION RATES

Bacterial communities thrive due to cross-feeding. Organisms produce metabolites that nourish the other members of the community.⁴



MUTUALISM ENHANCES OVERALL SURVIVAL IN PRESENCE OF ANTIBIOTICS

- Bacterial communities require longer exposure to produce the same level of killing in a tolerant strain.⁴
- One strain protects the entire population of bacteria. Resistant bacterial cells inactivate/break down the antibiotic, subsequently assisting the whole bacterial population.⁵
- Bacterial organisms share resistance genes through Horizontal Gene Transfer (HGT), which is the movement of genetic material between organisms, including different species.⁶⁻⁷
- Mutualism increases the resistance levels and MIC levels to antibiotics, and enhances pathogens ability to invade bladder cells.^{4,8}

CHALLENGE: Polymicrobial UTIs are more difficult to treat and cure

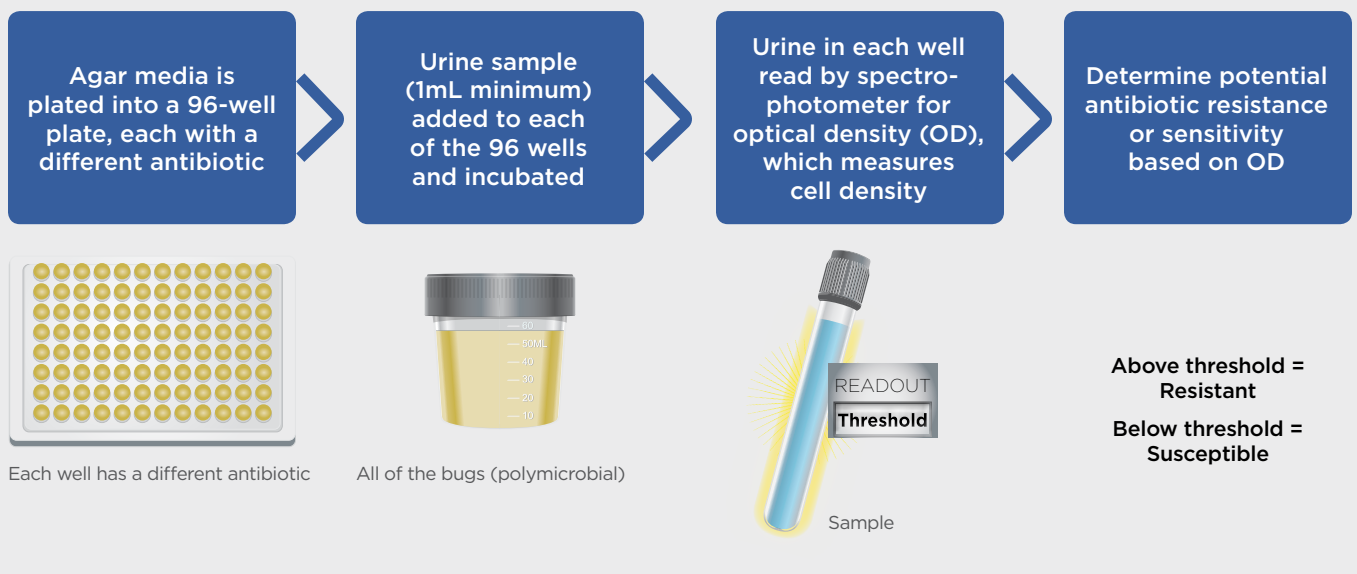
SOLUTION: PHENOTYPE TESTING WITH HIGH-THROUGHPUT SPECTROPHOTOMETRY



Guidance provides a superior phenotype testing process for antibiotic resistance, resulting in improved treatment for polymicrobial infections

OVERALL SURVIVAL IN PRESENCE OF ANTIBIOTICS

- Patient's specific specimen exposed to actual antibiotic to determine resistance or sensitivity
- Binary test result (resistant or sensitive response) from Guidance takes into account mutualistic characteristics of polymicrobial infections
- All pathogens in sample exposed to different types of antibiotics to determine antibiotic sensitivity or resistance/non-sensitivity



References

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