

ENABLED

Empowering Near-home Antimicrobial Resistance Diagnostics

ABSTRACT

Large institutions like the World Health Organization (WHO) have declared antimicrobial-resistant infections an urgent threat to humanity. Critical to proper treatment and surveillance of these infections are accurate and rapid diagnostic tests that can be used in decentralized settings. However, development and implementation of such tests is still an unsolved challenge, and there is a significant gap in healthcare preparedness regarding the threat of resistant “superbugs.”

The ENABLED project aims to simultaneously close the technological and implementation gaps, given their intertwined nature, starting from the field of sexually transmitted infections and the urgent problem of multidrug-resistant gonorrhea. In particular, the project will define implementation models for rapid point-of-care (PoC) tests detecting antimicrobial resistance (AMR) and refine a patented CRISPR-based biosensor developed at ETH Zürich. This CRISPR diagnostic system will be shaped and fine-tuned for efficient adoption by a consortium of experts from the WHO, Roche, GGD Health Service in Amsterdam, the Medical University of Vienna, and IRCCS Hospital Burlo in Trieste. With the biosensor already effectively identifying resistance, the technological level is ideal for collaboration between policy makers, industry leaders and AMR experts toward facilitating AMR diagnosis closer to home.

The project consists of two parts. The first involves identifying barriers to adopting PoC molecular AMR tests, adjusting the CRISPR-based test accordingly, and evaluating clinical efficiency of the refined system. The second involves leveraging our multifaceted team to design feasible models and workflows for using molecular AMR diagnostics in decentralized healthcare settings while considering the difficulties surrounding the evolution of these infections and their policy-based adoption. Finally, the novel diagnostic system will be used in an assessment of the effectiveness in the best discovered model.

KEYWORDS

- Gonorrhea
- Sexually-transmitted-infections
- Antimicrobial-resistance
- Diagnostics
- At-home-self-sampling

DURATION

24 months

PARTNERS

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