

Meet&Match.Dx 2023



Unlock the power of data to fight Antimicrobial Resistance



WITH **QIAGEN**

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Challenge 4:

Title: Digital technologies to combat AMR - Using digital technologies to improve antibiotic prescription practices

Challenge owner: Qiagen

Disease area: Diagnostics and surveillance of antimicrobial resistance/Infectious diseases management and antimicrobial therapy

1. **Short description of the challenge:** Improve antibiotic prescription practices by predicting AMR & AMU with data triangulation.

QIAGEN is seeking digital technologies to help Antimicrobial Stewardship Program (ASP) teams monitor antimicrobial resistance (AMR) and improve antimicrobial use (AMU). By triangulating clinical, phenotype and molecular data in a clinical decision support system, the aim is to enable hospital teams minimize time to effective therapy by anticipating targeted antimicrobial therapy. We look for tools to make effective and informed medical decisions, and reduce the spread of antimicrobial resistance.

Long description of the challenge:

2. **Short introduction about the disease, the problem, or the process related to your challenge and desired solution.**

Time to effective antimicrobial therapy and avoidance of empiric treatment are essential to improve patient outcome and avoid emergence of in-therapy drug resistance. Improper therapy also leads to higher healthcare and societal costs.

In order to achieve optimization of care three sets of data could help if assessed together:

- Clinical data (prescription and clinical outcome)
- Microbiological diagnostic data (phenotypic)
- Molecular diagnostic data (genes, etc.)

Such data – if triangulated and analyzed accordingly – could lead to continuous surveillance of prevalent drivers of resistance, appropriateness and timeliness of drug prescription, evolution of resistance and ultimately lead to computerized clinical decision-support systems (CDSS). AI enabled algorithms would be required to build on the above-mentioned data and systems trained to predict resistance, anticipate antibiotic choice and alert system to risky practices with high chances of resistance emergence.

3. Describe the current treatment/solution (if any) and its limitations:

Current antibiotic prescription approaches rely on high levels of clinical suspicion for infection, severe infection and/or sepsis, and initiation of best available empiric treatment based on local guidelines. Escalation or de-escalation of therapy can only occur following results of diagnostic tests for which turnaround time (TOT) can be as long as 72 hrs. Within this period a high risk of adverse patient outcome and resistance emergence exist if the wrong antibiotic has been prescribed.

A system for predicting antimicrobial resistance is lacking due to poor utilization of molecular data for rapid antimicrobial choice as well as lack of analytical capacity to assess phenotypic results in relation to resistance marker findings and clinical outcomes.

4. Describe which kind of solution you are looking for:

We are proposing to build a computerized clinical decision support system (CDSS) that would allow early prescription of targeted therapy on the basis of educated risk profiling. The CDSS would build on triangulation of phenotypic (microbiological), molecular and clinical surveillance data that would train a purposely developed AI algorithm.

5. Write a more detailed description of the ideal solution:

Hospitals increasingly rely on computerized clinical decision-support systems (CDSS) to supply their antimicrobial stewardship program (ASP) teams with the relevant data & algorithms to ultimately identify patients who should be prioritized for review (surveillance) and provide suitable antimicrobial drugs treatment (AMR prediction).

The intended solutions could be the missing link to collating different type of data (clinical, phenotypic and molecular data) for triangulation.

The solution would need to seamlessly integrate with disparate testing sites throughout the hospital campus (Central & POC) and be compatible with different IT systems (EHR, LIMS) and diagnostics systems, including QIAGEN's molecular diagnostics testing solutions such as QIAstat.Dx, NeuMoDX, QIAcuity, Quantiferon, CLC Genomics Workbench, and more. (check <https://www.qiagen.com> for more information)

The intended solution shall provide a system for predicting antimicrobial resistance by utilization of data (clinical, phenotypic and molecular data) and by means of purposely developed AI algorithms.

Furthermore, we would look for a data-driven web-based intelligent decision support tool that is UX-friendly and would assist antimicrobial stewardship (AMS) teams to automate daily routine tasks.

6. Target group:

- Antimicrobial stewardship program (ASP)
- Hospitals Pharmacy
- Hospital IT
- Central Lab & POC Managers

How to apply for Meet&Match.Dx Programme?

- Check your eligibility:
 - Does your company meets the [SME definition](#) of the EU (more details via [SME self-assessment](#))?
 - Did your SME receive more than a total of €200.000 of *de Minimis state* aid between 2020 and 2022? For more information about de-minimis aid. You can find helpful information via these links [de minimis rule](#) and [state aid](#).
- Before you apply, read the full [Meet & Match.Dx programme](#) description
- Submit your application via the [application portal](#) until 16 April 2023, 23:59 CET.