Research Data Request: Data Challenge - Unleashing the Power of AI: Harnessing Vivli Data from Kenya to Unlock the Untapped Potential of AMR Data from Uganda

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Purpose of Analysis

AmrTrendsForCountryRegion
AmrTrendsForPathogen
AmrTrendsForSpecificResistanceMechanism
AmrTrendsForInfectionTypeOrIndication
AmrTrendsOverDifferentYears
InformAntimicrobialStewardship

Terms of Use: ☑

Publication Acknowledgement: ☑

Recipient agrees to include the following acknowledgment in any publication or presentation of the Analysis results. "This publication or presentation is based on research using data from Pfizer, obtained through https://amr.vivli.org"

Summary of Research:

Our research interest is using machine learning to discover insights from phenotypic and genotypic data. The combination of phenotypic and genotypic data holds immense potential for uncovering valuable insights and understanding the relationships between genetic factors and observable traits. Machine learning techniques can play a crucial role in analyzing such complex datasets and identifying correlations. Our research aims to enhance public health practice and improve the health system in Uganda by utilizing antimicrobial resistance (AMR) data. While AMR data from Uganda is currently lacking in the Vivli database, we plan to leverage data from Kenya to develop machine learning (AI) models that can be applied to Uganda's AMR data. Additionally, we will conduct genetic analysis to study evolutionary rates, perform comparative genomics, and investigate mutations in AMR genes if genotype data is available. The priority pathogens for Uganda, identified by the Global Antimicrobial Resistance Surveillance System (GLASS), include Escherichia coli, Klebsiella pneumoniae, Acinetobacter baumannii, Staphylococcus aureus, Streptococcus pneumoniae, and Salmonella spp. The priority antibiotics are ceftriaxone, metronidazole, ciprofloxacin, and amoxicillin. By harnessing the power of AI, we can effectively support antimicrobial stewardship by analyzing large volumes of AMR data. AI algorithms can identify patterns, trends, and risk factors associated with antibiotic resistance, detect emerging resistance patterns, and predict future trends. This enables the development of targeted interventions and policies to optimize antibiotic prescribing practices and reduce the spread of resistant pathogens. Integration of diverse data sources such as clinical data, surveillance data, and genotype data allows AI algorithms to provide real-time insights into AMR dynamics. Public health officials can utilize these insights to implement timely interventions, allocate resources efficiently, and design targeted awareness campaigns. AI also contributes to strengthening health systems by assisting in resource allocation and optimization. Through the analysis of AMR data, including resistance rates, treatment outcomes, and healthcare facility utilization, AI algorithms can identify areas for improvement such as optimizing antibiotic usage, enhancing infection control protocols, and identifying gaps in healthcare infrastructure. This data-driven approach informs policy decisions, resource allocation, and system-level interventions, thereby fostering more resilient and efficient health systems. Ultimately, the integration of AI techniques with AMR data analysis has the potential to drive evidence-based decision-making and support effective interventions to combat antimicrobial resistance in Uganda.

Requested Datasets

ATLAS_Antibiotics
Data Request ID: 00008952
Dataset ID: ATLAS_Antibiotics
Data Contributor: Pfizer Inc.