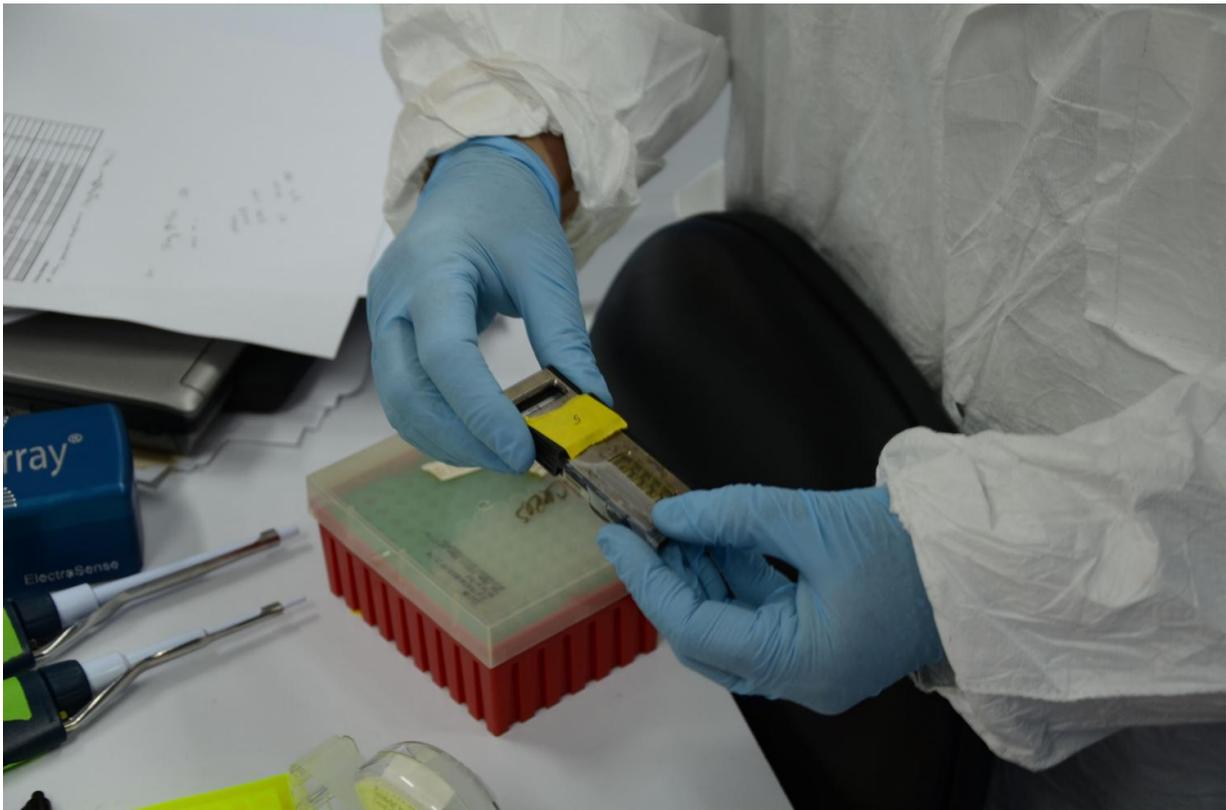


Scientists find high prevalence of antibiotic resistance in Kenya

July 11 2017



The NRL-developed Antimicrobial Resistance Determinant Microarray can simultaneously detect hundreds of antibiotic resistance genes from pathogenic bacteria. Credit: U.S. Naval Research Laboratory/Lt. Cmdr. Michael Prouty-NAMRU-2 (Released)

Antibiotic resistance is one of the most significant global public health

problems and is rising in many developing nations due to over-use of antimicrobial agents, widespread availability of counterfeit or substandard medicines and poor infection control measures.

In a joint effort between the U.S. Naval Research Laboratory (NRL), U.S. Army Medical Research Directorate-Kenya (USAMRD-K), Kenya Medical Research Institute (KEMRI), and University of Washington, the research team, using an NRL-developed microarray that detects over 200 different antibiotic resistance genes, tested bacteria from the intestinal tract of healthy individuals and ailing patients in the African country of Kenya, and discovered a high prevalence of bacteria strains resistant to commonly used [antibiotics](#).

"These results suggest that there is selective pressure for the establishment and maintenance of [resistant strains](#)," said Dr. Chris Taitt, research biologist, NRL Center for Bio/Molecular Science and Engineering. "This is potentially due to agriculture and prophylactic use of antibiotics and further suggests the need for more effective public health policies and infection control measures than those currently implemented."

Specific to Kenya, widespread use of tetracycline in livestock production, use of trimethoprim/sulfamethoxazole (SXT) and chloramphenicol as first line therapeutics for typhoid, and prophylactic use of SXT in persons exposed to or infected with [human immunodeficiency virus](#) (HIV) might have contributed to the high prevalence of resistance.

A total of 90 *Klebsiella* spp. bacterial strains were isolated from participants ranging in age from 4 months to 54 years. Half of the subjects were diagnosed with acute diarrheal illness, the other half were healthy individuals. Samples were collected from eight Kenyan clinics, including district hospitals of Kisumu, Kisii, Migori, and Homa Bay.

"While important for improvements to global health, an understanding of the types and prevalence of [antibiotic resistance](#) in under-characterized regions, such as the Great Horn of Africa, can additionally benefit deployed military personnel in making risk assessment for exposure to, and treatment of, resistant infections," Taitt said.

More information: Chris Rowe Taitt et al, Antimicrobial resistance of *Klebsiella pneumoniae* stool isolates circulating in Kenya, *PLOS ONE* (2017). [DOI: 10.1371/journal.pone.0178880](https://doi.org/10.1371/journal.pone.0178880)

Provided by Naval Research Laboratory

Citation: Scientists find high prevalence of antibiotic resistance in Kenya (2017, July 11) retrieved 15 May 2024 from <https://medicalxpress.com/news/2017-07-scientists-high-prevalence-antibiotic-resistance.html>

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