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Professor
Medicine and Epidemiology

Whole Genome Sequencing Surveillance for Prevention of Antibiotic-Resistant Infections

Lee H. Harrison, MD, is Professor of Medicine in the School of Medicine and Professor of Epidemiology in the Graduate School of Public. He is the PI of the Microbial Genomic Epidemiology Laboratory. Dr. Harrison did his undergraduate studies at the University of Pennsylvania and received his medical degree from the Emory University School of Medicine. He completed his internship and residency in internal medicine at the University of Virginia Hospital in Charlottesville. He served as an Epidemic Intelligence Service Officer in the former Meningitis and Special Pathogens Branch of the Centers for Disease Control and Prevention and then completed a fellowship in infectious diseases at Emory.

Dr. Harrison's research focuses on the epidemiology and genomic epidemiology of vaccine-preventable and other serious bacterial infections, including *Neisseria meningitidis* and *Streptococcus pneumoniae.* A current focus of his research is an NIH-funded study that uses bacterial genomics and data mining of the electronic health record to enhance outbreak detection in hospitals. He is also PI the CDC-funded Maryland Active Core surveillance site, which he established in 1991. He is program director of three NIH training grants, a T32 on antimicrobial resistance and international training grants in Mozambique on HIV infection and public health genomic epidemiology in South Africa. He completed a four-year term as a voting member of CDC's Advisory Committee on Immunization Practices in 2016.

Abstract: Hospitals use antiquated and relatively ineffective methods for outbreak detection. We initiated use of routine bacterial whole genome sequencing (WGS) surveillance in combination with machine learning (ML) of the electronic health record (EHR) to detect serious outbreaks that are otherwise unidentified by traditional hospital epidemiologic methods and correctly determine the responsible transmission route, respectively. This presentation will focus on the findings of two years of WGS surveillance at University of Pittsburgh Medical Center.