Whole Genome Sequencing Can Transform the Management of Healthcare-Associated Infections

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An economic model by bioinformatics company Genpax published in *Microbial Genomics* concludes that in England the National Health Service (NHS) could save close to £0.5bn, improve patient safety and prevent 1,200 hospital care-associated avoidable deaths, and the US health system over $3bn and 4,800 deaths by implementing whole genome sequencing (WGS) as a tool to control bacterial healthcare-associated infections.

Healthcare-associated infections (HAIs) are a huge economic burden to global healthcare systems. They currently cost the English NHS over £3bn a year and the US health system over $18bn. While WGS has the potential to revolutionize how HAIs are controlled, it has yet to be deployed widely. Genpax, an innovative bioinformatics company, has built an extensive and detailed economic and health impact model to evaluate the potential impact of widely implementing a WGS-led intervention strategy in England and the USA.

This economic model examined the potential for WGS to prevent outbreaks, safeguard vulnerable patient populations, substantially reduce the transmission rates of bacterial HAIs, and reduce the burden of antimicrobial resistance in healthcare settings.

Antimicrobial resistance (AMR) is where microbes become resistant to antimicrobials that would normally treat the infection. AMR is a serious global issue and was associated with nearly 5 million deaths worldwide in 2019 according to the CDC.

This model concluded that implementing this strategy could prevent 74,000 infections, equating to around 700,000 bed days and saving approximately £480 million for the NHS in England annually, yielding a return on investment of £7.83 for every pound invested in diagnostic WGS. Applying the model to the USA projected a net saving of around $3.2 billion and a greater return on investment of $18.74 for every $1 invested.

This economic model has major implications for health policymakers, healthcare leaders, and diagnostic providers as it shows the overwhelming benefits of the broad-scale deployment of this technology.

The full paper, "Economic and health impact modelling of a Whole Genome Sequencing-led intervention strategy for bacterial Healthcare-Associated Infections for England and the USA," by John M. Fox, Dr Nigel J. Saunders, Dr Susie H. Jerwood is available at the following URL: https://www.microbiologyresearch.org/content/journal/mgen/10.1099/mgen.0.001087,

DOI: 10.1099/mgen.0.001087

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About Genpax: Genpax is a bioinformatics company providing novel analytic solutions which aim to provide accurate, high resolution and scalable analysis of bacterial genomes for infection prevention and control.

For more information please visit genpax.co or for media enquiries contact Genpax at press@genpax.co

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