



Transformative Diagnostics



What we do

Our vision is to create a world where nobody dies from a treatable infection.

GenomeKey is replacing blood culture with a direct from-patient blood diagnostic device. Our IVD device maps the right antibiotic to the right patient, in hours not days. It's the only viable low-cost solution to the number one cause of death.

Empowering rapid, precise and data-driven diagnostics, we can save lives, save money, and save more antibiotics for the future.

Map the right antibiotic to the right patient in hours, not days



The challenges we're addressing

There is a combined societal crisis causing millions of deaths across the globe. Sepsis is already an extremely difficult condition to detect and treat, made even more challenging by growing antibiotic resistance.

The state of sepsis

Sepsis is currently the world's leading cause of death in hospitals. Affecting 50 million people every year; 11 million people die which manifests in one death every 2.8 seconds due to sepsis.

Indiscriminate



A deadly condition that can kill a previously healthy adult in a matter of hours. 2 in 5 cases are in children under five.

Hospital stay

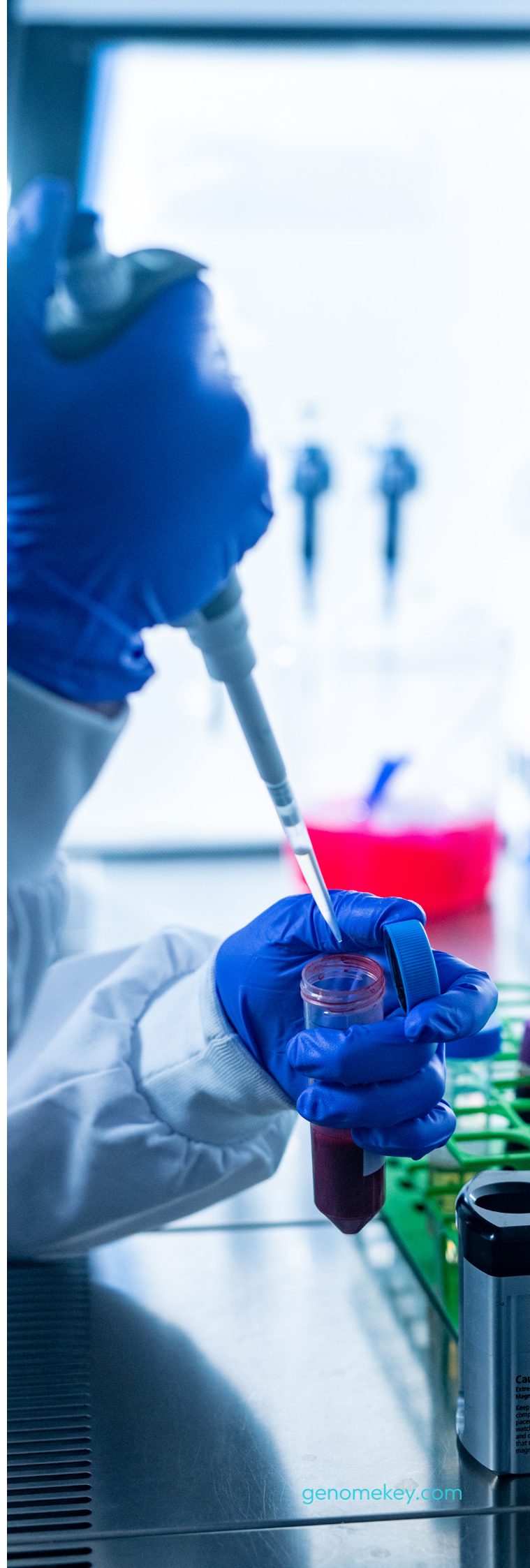


£2 billion direct treatment cost in the UK alone.

Disability



Amputation (8.5%)
Kidney damage (14.1%)
PTSD (9.9%)



The burden of bacterial AMR

Bacterial antimicrobial resistance (AMR) has emerged as one of the leading public health threats of the 21st century. Its magnitude is believed to be at least as large as major diseases such as HIV and malaria, and potentially much larger.

A large contributor of this is the overuse of broad-spectrum antibiotics as part of a proactive (prophylactic) treatment strategy, for example, in cases of bacterial sepsis.



Death

11 Million deaths



Antibiotics

5 Million cases associated with antibiotic resistance



Resistant

1.27 Million additional deaths directly due to AMR

The downfall of diagnostics solutions

It is extremely difficult to recognise bacterial sepsis and the gold standard process for an accurate, comprehensive and reliable diagnostic test is 2-3 days. In this time, 1 in 3 deaths from sepsis have already occurred.

The tragedy is that the right antibiotics to save the patient are often in the cupboard next to their bed – clinicians just don't have the right information to identify the most effective antibiotic.

Blood culturing

- ✗ 2-3 days
- ✗ Unreliable results
- ✓ Cheap

Molecular tests

- ✓ Fast
- ✗ Limited panel breadth
- ✗ Expensive



The impacts



Human

11 million people die of sepsis every year



Medical

Many sepsis survivors suffer from consequences for the rest of their lives



Financial

£2 billion in direct sepsis treatment costs to the UK economy



Societal

AMR is one of the top global threats

Our solution

GenomeKey[Dx]

A Next-gen Diagnostic Device

GenomeKey is driven to transform diagnostics with the fastest and most precise solution to identifying bacteria in blood. Our IVD device maps the right antibiotic to the right patient, when they need it most.

Using whole genome sequencing and novel machine learning methods, our device correctly identifies the bacteria behind the infection in hours, not days.

Our technology goes far beyond simple identification: it's a fundamentally new and different approach to diagnostics which could replace blood culturing. The device provides bacterial detection, and through our machine learning platform, delivers species identification, AMR profiling and a bioinformatics analysis of the pathogen.

It does not require viable bacteria and can detect when bacteria are not present in the patient's blood – preventing unnecessary and harmful antibiotic use.

Fast

Hours vs 2-3 days

Reliable

High accuracy for predicting resistance

Accessible

Low cost and easily integrated device

Comprehensive

100% of pathogens covered in a single test

Technology details

Target product profile

- Direct from blood - fast results
- Rule-out sensitivity/specificity: >99%
- Analyte: Bacterial genomic DNA
- Sample type/collection: blood sample in standard vacutainer
- Sample volume: Up to 10 mL
- Lower limit of Detection: 1-10 CFU/mL
- Microfluidic cartridge consumable
- Sequencing cartridge

How it works

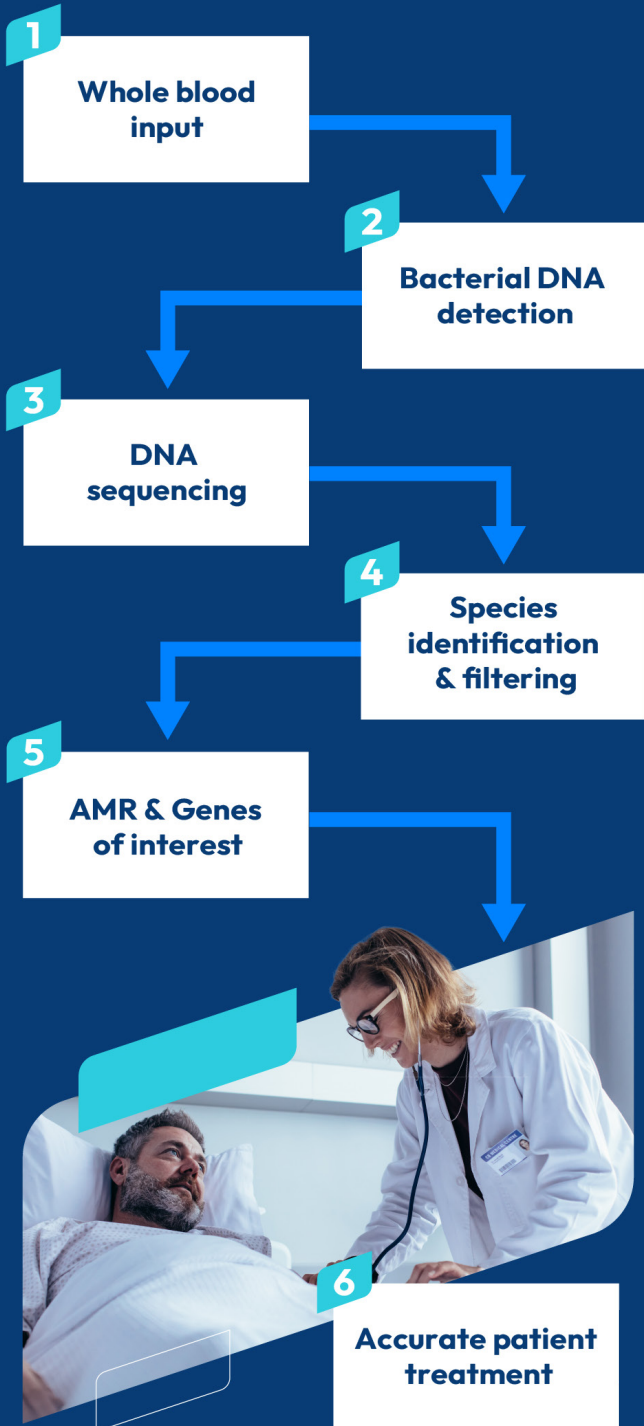
We use a fundamentally different technique using single molecule amplification, whole genome sequencing and AI interpretation to produce three important results:

- Bacterial Detection
- Bacterial ID
- AMR Profile

This means clinicians are empowered with the right information to treat sepsis patients effectively and quickly.

In addition to improvements towards target LOD, we are introducing novel molecular biology to improve human:bacterial sequencing ratio. And further tackling the issue of AMR, the ML algorithms also provide data on predicted antimicrobial resistance or susceptibility along with an explanation of these results.

The diagnostics process



GenomeKey ecosystem



Investors

Proven approach and industry advisors



Clinicians

Empowering more informed decision-making



Patients

Enabling more effective treatment, sooner

The only viable low-cost solution to the number one cause of death

Expert Team

PHD qualified experts, NHS and industry advisors.

NHS Trusts

Clinical evaluation of our technology in two of the most prominent NHS trusts in the UK.

Patented

Patent protected proprietary sample preparation.



Get in touch

GenomeKey is transforming how we diagnose patients.

Contact us now to get involved or learn more about our work.

info@genomekey.com