

How do we enable more efficient patient management and antibiotic stewardship?

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Antimicrobial stewardship is an essential part of clinical care to reduce selection pressure on bacteria and lower antibiotic-associated complications. As such, it has become an important quality standard in healthcare.

Providing universal detection of viable organisms with accurate and reliable results is vital to improving diagnostic testing in this area. This can quickly enable clinicians to confidently rule out infection, allowing for more effective therapy, resulting in patients getting home sooner and freeing up beds, which can provide a positive economic impact. It can help stop the unnecessary use of antibiotics,

which will reduce the pressure on antimicrobial resistance.

Momentum Bioscience is developing a range of innovative technologies to improve management in the area of bloodstream infections. We are particularly focused on early detection of the presence – or absence – of bloodstream infection (BSI) using our patented, universal detection technology. This is achieved by exploiting the organism’s own DNA polymerase, which acts on our modified DNA substrate, thus creating the specific target that is then detected by real-time Polymerase Chain Reaction (PCR). This allows early rule-out of BSI within 24 hours with a negative predictive value (NPV) of 99.5 per cent. In addition to this important early result, a further benefit is how this type of diagnostic could help improve the use of antibiotics as well as support improved stewardship.

Our proprietary technology for early rule-out of BSI has been tested in over 1,800 patients over three locations in the UK.



Dr Helen V Bennett

Market Development Manager,
Momentum Bioscience

“The outcome of these early negative results had the potential to reduce antimicrobial use and extra bed nights.”

A clinical study (performed at Sheffield Teaching Hospitals NHS Trust) using Momentum’s technology in 124 neonates showed reliable negative results from samples of blood culture within 15 hours after receipt of the sample within the laboratory, demonstrating an NPV of 100 per cent. The outcome of these early negative results had the potential to reduce antimicrobial use and extra bed nights by providing a result, on average, 10 hours earlier than the current ‘gold standard’ blood culture.

We followed this up with an economic analysis on neonates suspected of early onset sepsis using birth data from NHS England. Assuming 607,295 term babies are born in England each year, and our test turnaround time of 19 hours, with a sample transportation time of four hours and preliminary negative blood culture results at 36 hours, results can be summarised as follows when adding our test result to the current diagnostic pathway:

Total cost saved	£6.3 million
Total length of stay saved	19,501 days
Total antibiotics reduced	39,002 doses
Staff time saved by reducing antibiotics	135 days

SOURCE: AQUARIUS POPULATION HEALTH, 2017

This unique technology, in addition to providing universal detection of bacteria and fungi, detects many of the commonly found BSI causing organisms, at very low levels ensuring a more reliable and accurate result. ■

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