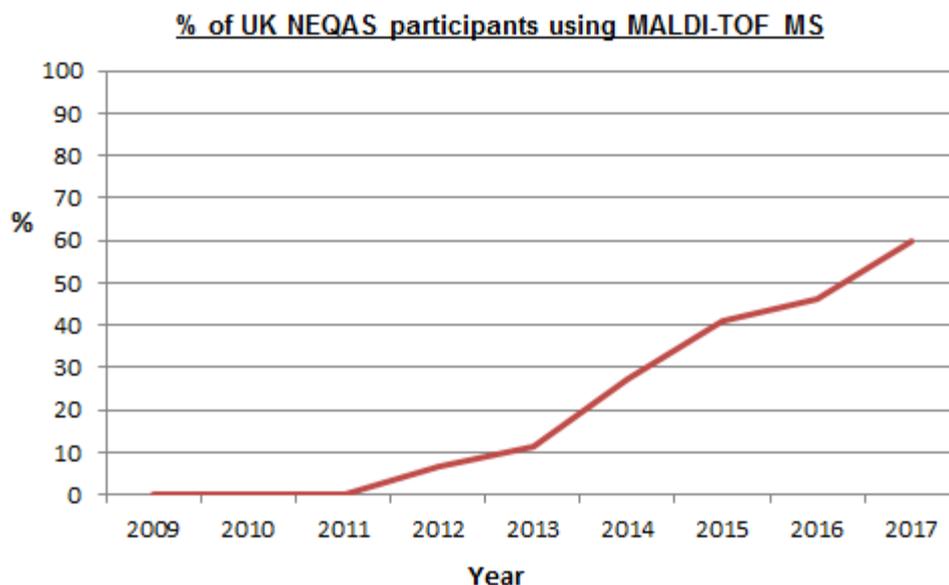


**An external quality assessment programme addressing the pressing needs of clinical microbiology laboratories using MALDI-TOF MS**

Clinical laboratories have experienced revolutionary changes in microbial identification in the last decade and have since started moving away from time consuming traditional microbial identification algorithms, embracing automation and new technologies in view of improving the work flow of the laboratory with an earlier organism identification. This paradigm shift poses a challenge to the laboratories to ensure that the results are rapid, cost effective and meaningful and provide accurate microbial identification , therefore impacting on patient care and antimicrobial stewardship associated with having an earlier organism identification.

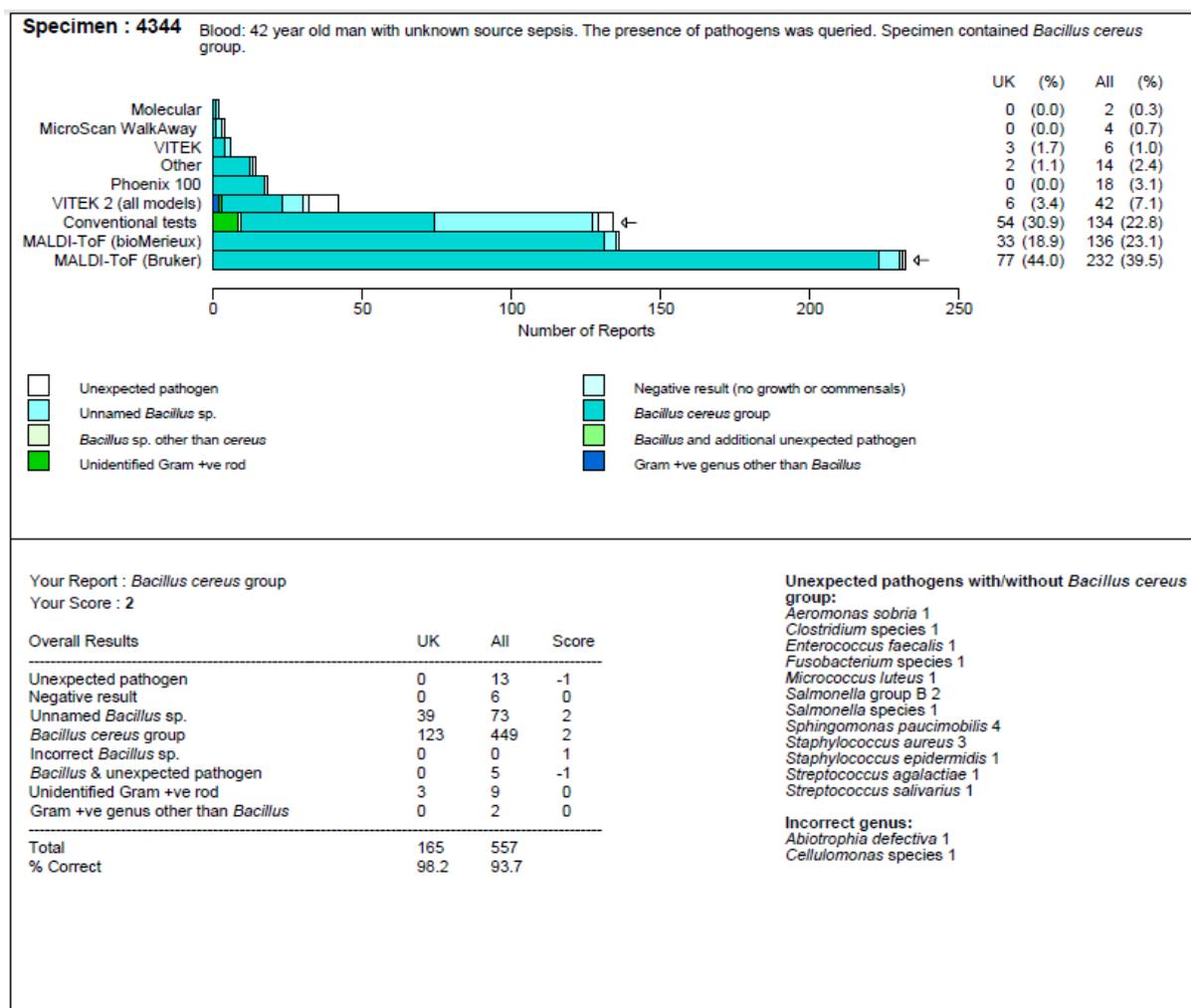
Matrix - assisted laser desorption ionisation- time of flight mass spectrometry (MALDI-TOF MS) is becoming a very important diagnostic tool in clinical microbiology laboratories as it improves turn-around time of results by providing an earlier identification of microbial pathogens. MALDI-TOF MS allows for the analysis of biomolecules, e.g. DNA, sugars, peptides, proteins, and large organic molecules (such as polymers and other macromolecules). It identifies bacterial isolates by comparing the protein spectra of isolates to a database of spectra and scans for microbial proteins between 4000 and 20,000 Daltons (60% to 70% of the dry cell weight of bacteria). The optimal reproducibility in microbial identification by MALDI-TOF MS is based on the assessment of ribosomal proteins, which are commonly abundant in the cell. MALDI-TOF MS can identify a broad spectrum of bacteria, including Gram-positive cocci and rods and fermentative and non- fermentative Gram-negative rods.

Participants in the General Bacteriology (GB) scheme of UK NEQAS for Microbiology have reported using MALDI-TOF MS since 2009 and the numbers have steadily risen over the years. In 2017, 60% of participants who are subscribed to the GB scheme use MALDI-TOF MS and it is predicted that the numbers will keep on rising.



## How are we addressing the needs of MALDI-TOF MS users?

The design of our specimens take into account the strengths and weaknesses of MALDI-TOF MS in identifying certain bacteria and there is no bias to penalise or favour any participants. Participants are also aware of the limitations of their equipment and update their databases regularly. The data collected so far are very sound and shows that MALDI-TOF MS users are getting excellent results. The table below illustrates a recent distribution ( April 2018) Specimen 4344 where around 62.6% of participants have reported using MALDI-TOF MS



The General Bacteriology scheme is fit for purpose to use MALDI-TOF MS for microbial identification and will fulfil the needs of clinical laboratories using MALDI-TOF MS looking for EQA schemes to subscribe to so that they can meet their quality assurance needs.