UNMET NEED

Sepsis is responsible for more than 250,000 deaths in the U.S. per year. Currently, identifying the source of sepsis involves obtaining a positive microbial culture, often taking over 48 hours to incubate and resulting in false negatives due to the low density of blood bacteria in early infection.

A promising alternative method is to capture and analyze blood circulating biomarkers that have been developed as surrogate inflammatory indicators of infection. However, even with this method, new blood bio-marker detection technology is needed for timely and accurate diagnosis and treatment.

SOLUTION

MCIRCC researchers are developing a handheld POC biomarker immunosensor module called the Smart Pipette. It is a battery-operated, portable, biomarker analysis microsystem that is wirelessly connected to a smartphone for data transmission and analysis. The data is analyzed and correlated with sepsis severity, treatments, and outcomes to result in timely intervention and predict sepsis development.

COMPETITIVE ADVANTAGE

The Smart Pipette provides a sepsis biomarker analysis at the point of care. The device’s short (< 30 min) sampling-to-answer time and sample sparing capability make multi-time-point detection and high time resolution possible. This multi-biomarker detection approach, coupled with a machine learning algorithm, advances the way for precision therapeutics for individuals with sepsis.