

中文題目：結合基質輔助激光解析電離飛行時間質譜及抗生素管理介入於成人大腸桿菌血症之臨床效益

英文題目：Clinical benefits of MALDI-TOF mass spectrometry in combination with antimicrobial stewardship intervention in adults with *Escherichia coli* bacteremia

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## **BACKGROUND:**

*Escherichia coli* is the most common Gram-negative pathogen of bloodstream infections. Integration of rapid species identification via matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF-MS) with antimicrobial stewardship intervention (ASI) by infectious disease specialists has the potential for early customization of appropriate antibiotic therapy and improvement in patient outcomes. The objective of this study was to assess the impact of this combined approach on clinical and antimicrobial therapy-related outcomes in patients with *E.coli* bloodstream infections.

## **METHODS:**

A pre-post quasi-experimental study was conducted to analyze the impact of MALDI-TOF-MS and ASI in patients with *E. coli* bloodstream infections. The ASI team provided evidence-based antibiotic recommendations after the receipt of laboratory notification following Gram stain, organism identification, and antimicrobial susceptibilities of blood culture isolates for the intervention group. Outcomes were compared to a historical control group.

## **RESULTS:**

A total of 147 patients with bacteremia were included in the final analysis: 79 patients in the intervention group and 68 patients in the control group. There were no significant differences, in terms of age, sex, comorbidity, source of bacteremia, and disease severity between two groups. The intervention group had shorter time to *E. coli* identification (51.5 vs. 61.3 hours,  $P < .001$ ) and optimal antibiotic therapy (65.7 vs. 76.1 hours,  $P < .001$ ). Of note, the sepsis-related mortality rate (1.3%, 1/79 vs 10.3%, 7/68;  $P = 0.025$ ) and 30-day crude mortality rate (2.5%, 2/79 vs. 13.2%, 9/68;  $P = 0.024$ ), were lower in the intervention group.

## **CONCLUSION:**

MALDI-TOF-MS in adjunction with ASI can result in rapid species identification and early initiation of optimal antibiotic therapy, and most importantly, a better outcome in patient with *E. coli* bacteremia.