

2024 Multicenter Randomized Controlled Trial (Published in *Antimicrobial Resistance & Infection Control*): Demonstrates that this physical method inhibits biofilm formation and prevents catheter-associated urinary tract infections without the use of antibiotics.

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Efficacy and safety of preventing catheter-associated urinary tract infection by inhibiting catheter bacterial biofilm formation: a multicenter randomized controlled trial

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Abstract

Background Catheter-associated urinary tract infection (CAUTI) remains the most significant challenge among hospital-acquired infections (HAIs), yet still unresolved. The present study aims to evaluate the preventive effectiveness of JUC Spray Dressing (name of U.S. FDA and CE certifications, while the medical device name in China is Long-acting Antimicrobial Material) alone for CAUTI without combining with antibiotics and to evaluate the impact of bacterial biofilm formation on CAUTI results on the inserted catheters of patients.

Methods In this multicenter, randomized, double-blind study, we enrolled adults who suffered from acute urinary retention (AUR) and required catheterization in 6 hospitals in China. Participants were randomly allocated 1:1 according to a random number table to receive JUC Spray Dressing (JUC group) or normal saline (placebo group). The catheters were pretreated with JUC Spray Dressing or normal saline respectively before catheterization. Urine samples and catheter samples were collected after catheterization by trial staff for further investigation.

Results From April 2012 to April 2020, we enrolled 264 patients and randomly assigned them to the JUC group ($n=132$) and the placebo group ($n=132$). Clinical symptoms and urine bacterial cultures showed the incidence of CAUTI of the JUC group was significantly lower than the placebo group ($P<0.01$). In addition, another 30 patients were enrolled to evaluate the biofilm formation on catheters after catheter insertion in the patients' urethra (10 groups, 3 each). The results of scanning electron microscopy (SEM) showed that bacterial biofilm formed on the 5th day in the placebo group, while no bacterial biofilm formed on the 5th day in the JUC group. In addition, no adverse reactions were reported using JUC Spray Dressing.

Conclusion Continued indwelling urinary catheters for 5 days resulted in bacterial biofilm formation, and pretreatment of urethral catheters with JUC Spray Dressing can prevent bacterial biofilm formation by forming

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a physical antimicrobial film, and significantly reduce the incidence of CAUTI. **This is the first report of a study on inhibiting bacterial biofilm formation on the catheters in CAUTI patients.**

Keywords Urinary tract infection, Catheters, Bacterial biofilm on patient catheters, Physical antimicrobial film, Hospital-acquired infections

2025 MRSA Case Report in the *American Journal of Therapeutics*

2025 Case Report (*American Journal of Therapeutics*): Successfully treated a methicillin-resistant *Staphylococcus aureus* (MRSA) infection case that had shown no response to prior 8-week vancomycin treatment. Demonstrates its efficacy against "superbugs" through a physical mechanism.

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Application of JUC Spray Dressing in the Treatment of Methicillin-Resistant *Staphylococcus Aureus* Infections: A Case Report

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Abstract

Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) infections are prevalent among orthopaedic patients after implant surgery. However, the available treatments for MRSA are currently extremely limited.

Case presentation: A 70-year-old patient developed wound infections after undergoing a bipolar hemiarthroplasty operation, which were subsequently identified as MRSA infections through bacterial culture. After 8 weeks of vancomycin treatment, the infection symptoms and bacterial culture showed no improvement. However, the introduction of a physical antimicrobial spray dressing (JUC) resulted in noticeable effects after just one day of treatment. Within a week, the wound secretion significantly reduced, and complete healing was achieved after three weeks of treatment.

Conclusions: In this case, the application of JUC Spray Dressing proved to be significantly effective in treating MRSA infections.

Keywords: Methicillin-resistant *Staphylococcus aureus*, JUC Spray Dressing, bacterial resistance, physical antimicrobial method, case report