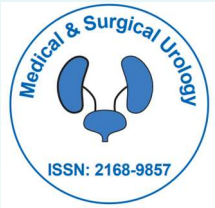
# UROSHIELD®

**BREAKTHROUGH ULTRASOUND TECHNOLOGY CATHETER CARE**

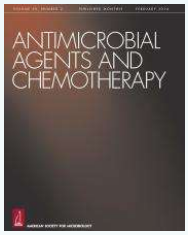
USLIT021

## UroShield Literature Review:



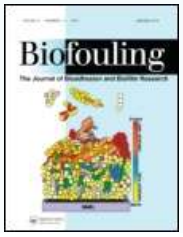

### The Effect of Surface Acoustic Waves on Bacterial Load and Preventing Catheter – Associated Urinary Tract Infections (CAUTI) in Long Term Indwelling Catheters

- Statistically significant reduction in CFU: >100,000 to 10,000 CFU or less (25/29) in the treatment group
- At 30 days - No reported infections in the treatment group vs. 27% symptomatic treated infections in control group
- At 90 days – 10% reported infections in the treatment group vs. 54% symptomatic treated infections in control group




### Effective Prevention of Microbial Biofilm Formation on Medical Devices by Low-Energy Surface Acoustic Waves

- Low-energy surface acoustic waves from electrically activated piezo elements were shown to effectively prevent microbial biofilm formation on indwelling medical devices.
- The development of biofilms by four different bacteria and Candida species is prevented when such elastic waves with amplitudes in the nanometer range are applied.
- Acoustic-wave-activated Foley catheters have all their surfaces vibrating with longitudinal and transversal dispersion vectors homogeneously surrounding the catheter surfaces. The acoustic waves at the surface are repulsive to bacteria and interfere with the docking and attachment of planktonic microorganisms to solid surfaces that constitute the initial phases of microbial biofilm development.




### Surface acoustic waves (SAW) increase the susceptibility of Pseudomonas aeruginosa biofilms to antibiotic treatment

- SAW was clearly demonstrated to enhance antimicrobial activity. The SAW effect may be enhancement of the diffusion through the biofilm or through the cell membrane.
- It was also demonstrated that a combined SAW and antibiotic treatment is capable of effectively treating biofilm of several clinically relevant bacterial species, such as P. aeruginosa, S. epidermis and E. coli.


### Surface Acoustic Nanowaves: A New Approach to Urinary Tract Infections?

- UroShield device proved to be safe and well tolerated with no differences in adverse event rate between the groups.
- UroShield reduced pain and spasm levels, thus less medication is required to treat these catheter related symptoms.
- Surface acoustic waves can markedly reduce – or even eliminate – the level of biofilm formation within indwelling catheters while a high rate of biofilm (7 out of 11) can be found in the control group.


### The effectiveness of acoustic energy induced by UroShield in the prevention of bacteriuria and the reduction of patients' complaints related to long-term indwelling urinary catheters

- At the end of week 8, significant bacteriuria detected in 4 patients (33%) in the UroShield group vs. 9 patients (81%) in the control group.
- No significant biofilm producing P. aeruginosa bacteria detected in the UroShield group, while P. aeruginosa bacteria rate was 27% in the control group. In the UroShield group, significant E. coli bacteriuria was half that in the control group.
- Catheter-related pain scores decreased by 1.6 in the UroShield group, while they increased by 1.3 in the control group.

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NANOVIBRONIX®
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# UROSHIELD®

**BREAKTHROUGH ULTRASOUND TECHNOLOGY CATHETER CARE**


- Prevents biofilm formation
- Decreases bacteriuria/UTI
- Reduces catheter related pain and discomfort
- Increases antibiotic efficacy

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