NANOVIBRONIX®

Therapeutic Waves in Motion

An effective Solution for the Prevention of Bacterial Load and CAUTI, Through the Application of Surface Acoustic Waves on Indwelling Catheters

March 11, 2019

NASDAQ: NAOV

Disclaimer

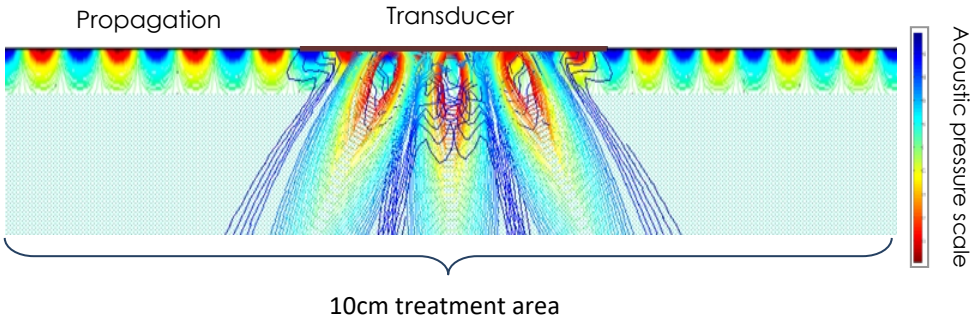
This presentation contains forward-looking statements. Forward-looking statements are based on current expectations and projections about future events and are subject to risks, uncertainties and assumptions about our Company, economic and market sectors and the industry in which we do business, among other things. These statements are not guarantees of future performance, and except as required by law, we undertake no obligation to publicly update any forward-looking statements whether as a result of new information, future events or otherwise. Actual events and results may differ from those expressed in any forward-looking statements due to a number of factors. Factors that could cause our actual performance, future results and actions to differ materially from any forward-looking statements include, but are not limited to, those discussed in risk factors within our Annual Report on Form 10-K for the fiscal year ended December 31, 2017, and our Quarterly Report on Form 10-Q for the quarterly period ended Secpetember 30, 2018, as filed with the Securities and Exchange Commission

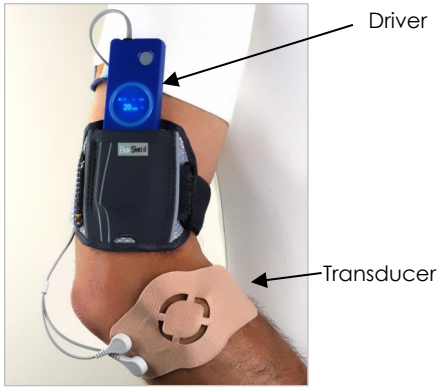
Differentiated Technology

The NanoVibronix "Shield" platform delivers *surface acoustic waves (SAW) to* soft tissue, muscle, and indwelling devices is designed to:

- Prevent microbial colonization and disrupts biofilm formation on indwelling devices
- Provide a unique enhancement for antibiotic effectiveness
- Expedite soft tissue healing process and pain reduction
- Eliminate heat production that can cause tissue damage

Transducer transmits surface acoustic waves onto treatment surfaces with a radius of up to 10 centimeters

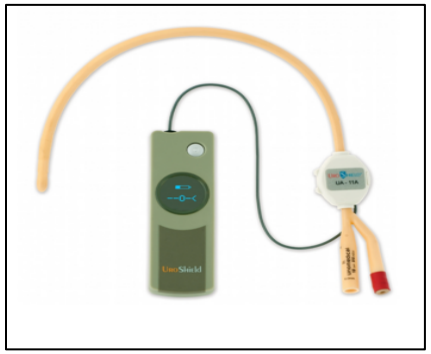




UroShield

- A therapeutic *surface acoustic wave* device, consisting of a reusable driver unit and a clamp-on disposable, which contains a proprietary therapeutic transducer

- Designed to *prevent bacterial docking, colonization and biofilm* on indwelling urinary catheters, decrease UT and urine infections, increase antibiotic efficacy, and decrease pain and discomfort associated with urinary catheter use.



Regulatory approval in the EU, Canada, India & Israel; actively pursuing marketing clearance in the U.S

UroShield - Competitive Advantage

Disposable clip-on accessory for urinary catheter, designed to prevent urinary catheter related complications

UroShield™

- Helps prevent bacterial colonization and biofilm formati
- Helps prevent blockage of the catheter
- Helps prevent bacterial infection-UTI
- Helps reduce pain, spasm, discomfort and trauma
- Novel scientific application
- Helps increase antibiotic efficacy
- Cost benefits in staff time, resources, and HAI associated costs

UroShield – Initial "Proof of Concept" Studies

Case Studies & RCT's

- Salem Academic Hospital HD1 - Double Blind, RCT, (22 patients)
  - Statistically significant indication of prevention of biofilm,
  - Less medications and less pain than the control (U.Ikinger)
- Salem Academic Hospital HD2 - Double Blind, RCT, (40 patients)
  - 1/20 patients randomized to UroShield, without antibiotics, developed UTI vs 4/20 in the control group who were treated with prophylaxic antibiotic therapy (U.Ikinger)
- Shaare Zedek Medical Center – Case Series (10 patients)
  - Reported effectiveness in pain reduction, spasms, burning & itching. Results demonstrated a reduction in pain, itching, burning and spasms
- Shaare Zedek Medical Center – Open label, comparative, randomized (40 patients)
  - Statistically significant reduction in postoperative catheter related pain and bladder spasms. Notable trend towards reduction of bacteriuria.
- Prof. P. Tenke, Hungary – Multiple Patient Evaluations (27 patients)
  - Demonstrated reduction in pain and significant decrease in bacteriuria rates.

139 patients evaluated in 5 different studies with no adverse events reported

UroShield – Successful Peer Reviewed Study Results

Current Randomized Trial

- 55 subjects evaluated at five different nursing facilities
  - 26 patients treated with placebo devices ("controlled")
  - 29 patients had active UroShield devices ("treatment")
- All patients had been treated for at least one incident of a catheter-acquired urinary tract infection (CAUTI)

90-Day Follow-Up

- All study subjects had an initial colony count of greater than 100,000 CFUs
- 0% infections in the UroShield treatment group reported during the 30 day active treatment period
- 27% symptomatic UTI reported in the controlled group during the 30 day active treatment period
- 10.3% in UroShield treatment group developed symptomatic UTI at 90 days
- 53.8% in controlled group developed a developed symptomatic UTI at 90 days
- The UroShield treatment group demonstrated a statistically significant reduction in the rate of CAUTI

Published in the December 2018 issue of Medical & Surgical Urology, a leading peer-reviewed journal

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

NanoVibronix® Therapeutic Waves in Motion

Summary Results of In Vitro Study
Presented at Knowlex Infection Prevention and Control Conference 2019

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Lecturer in Medical Microbiology

Presented at Knowlex IPC Conference 27 February 2019

"Understanding and controlling urinary catheter-associated biofilms: a complex problem"

UNIVERSITY OF Southampton

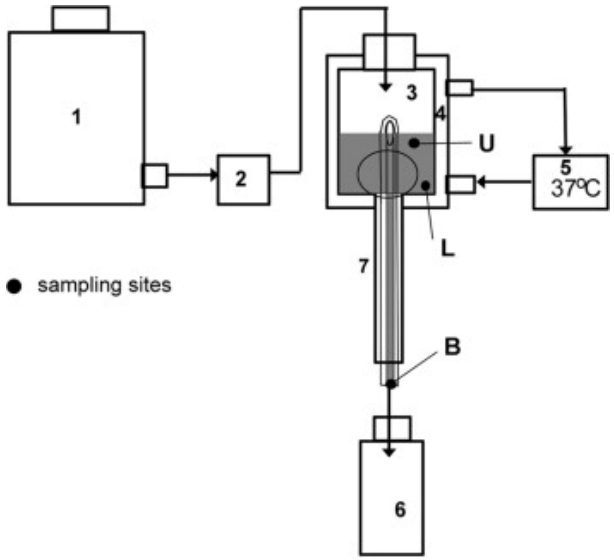
NANOVIBRONIX™ Curing through prevention

Biofilms and catheters

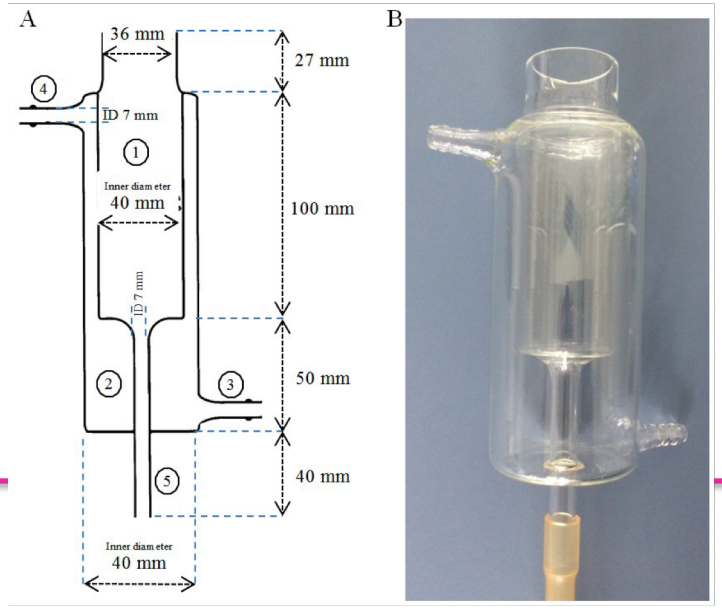
- Biofilms can develop on the external or internal surface of the catheter.
- Can contribute to catheter-associated UTIs and catheter blockages.
- Often infections and blockage can reoccur.
- Up to 50% patients undergoing long-term catheterisation will experience encrustations and subsequent blockage.
- Blockages are most commonly due to the presence of *Proteus mirabilis*, a urease-producing bacterium which causes a rapid increase in urine pH, leading to crystal formation and encrustations.

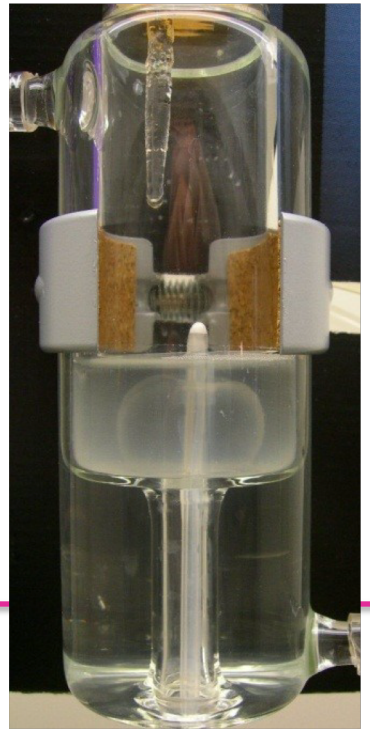
Controlled laboratory modelling:

UNIVERSITY OF Southampton



Scheme of artificial bladder model assembly: 1, aspirator with artificial urine; 2, peristaltic pump; 3, glass artificial bladder; 4, heating jacket; 5, water bath; 6, drainage bag; 7, artificial urethra.
(Kazmierska *et al.*, 2010).





Images taken from Maierl *et al.*, 2015.

This is the most widely accepted setup for in-vitro testing

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Lab model results:

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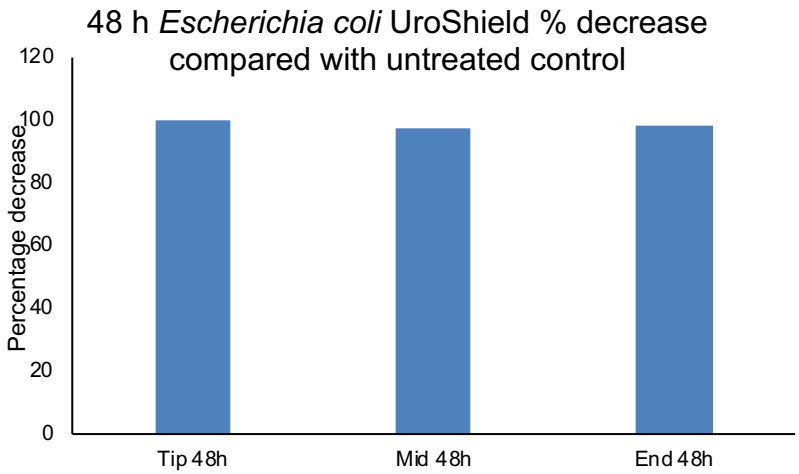

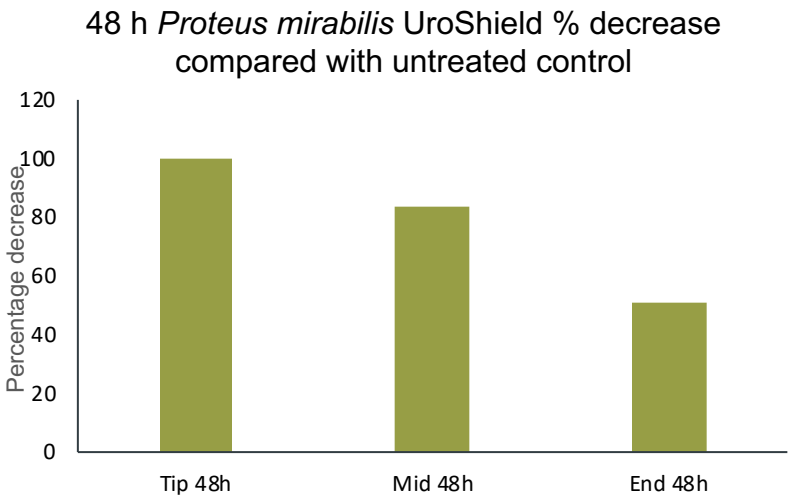

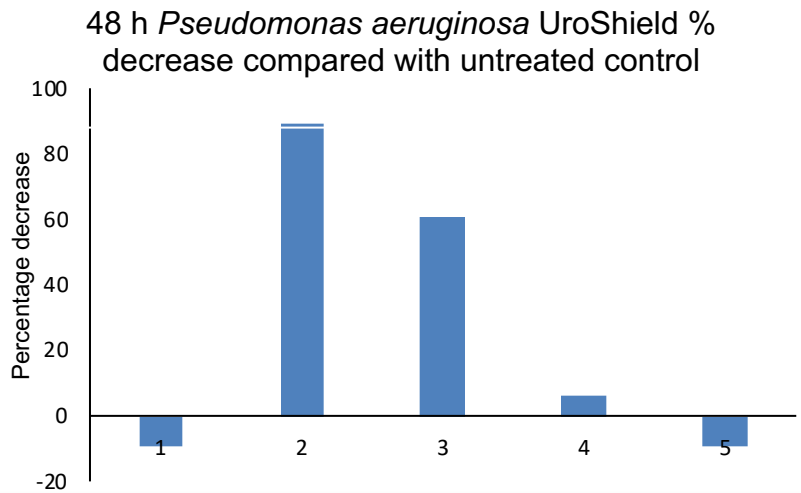

Percentage reductions in colonisation compared to the untreated control. BUT results were variable.

Presented at NOWLEX IPC Conference February 27th, 2019 (London, UK)

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Conclusions of In Vitro Study

- Previous testing concluded that coated and impregnated catheters were deemed innecfective
- Bacteria attach to the catheter surface rapidly and after only 2 hours, are surrounded by material which is polysaccharide-based.
- Complex crystalline biofilms can develop quickly.
- Alternative control methods include the use of impregnated materials and active coatings – but these may lead to resistance or be ineffective.
- The Nanovibronix™ UroShield™ device was tested on catheters under controlled laboratory conditions in flow models using an artificial urine medium. Produced the best results of any prior tests.
- Have tracked the effect on *E. coli*, *Proteus* and *Pseudomonas* attachment and biofilm formation.
- There is no impact of the immune system or human cells, ultrasound has been shown to stimulate the action of neutrophils.

Summary Conclusion

UroShield Shows Great Promise in the Effort to Reduce CAUTI!!!

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Thank You

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