Clinicians are searching for better ways to extend the working life span of implanted CVADs, by preventing colonization and reducing the risk of bloodstream infections" Liu et al (2018).

Abstract:

Central venous access devices (CVADs) are an essential component of modern health care. However, their prolonged use commonly results in microbial colonization, which carries the potential risk of hospital-acquired bloodstream infections. These infections complicate the treatment of already sick individuals and cost the existing health care systems around the world millions of dollars. The microbes that colonize CVADs typically form multicellular biofilms that are difficult to dislodge and are resistant to antimicrobial treatments. Clinicians are searching for better ways to extend the working life span of implanted CVADs, by preventing colonization and reducing the risk of bloodstream infections. In this study, we analyzed 210 bacterial and fungal isolates from colonized CVADs or human bloodstream infections from two hospitals geographically separated in the east and west of Canada and screened the isolates for biofilm formation in vitro Twenty isolates, representing 12 common, biofilm-forming species, were exposed to 4% tetrasodium EDTA, an antimicrobial lock solution that was recently approved in Canada for use as a medical device. The EDTA solution was effective at eradicating surface-attached biofilms from each microbial species, indicating that it could likely be used to prevent biofilm growth within CVADs and to eliminate established biofilms. This new lock solution fits with antibiotic stewardship programs worldwide by sparing the use of important antibiotic agents, targeting prevention rather than

the expensive treatment of hospital-acquired infections.IMPORTANCE The colonization of catheters by microorganisms often precludes their long-term use, which can be a problem for human patients that have few body sites available for new catheters. The colonizing organisms often form biofilms, and increasingly these organisms are resistant to multiple antibiotics, making them difficult to treat. In this article, we have taken microorganisms that are associated with biofilm formation in catheters from two Canadian hospitals and tested them with tetrasodium EDTA, a new antimicrobial catheter lock solution. Tetrasodium EDTA was effective at eliminating Gram-positive, Gram-negative, and fungal species and represents a promising alternative to antibiotic treatment with less chance of the organisms developing resistance. We expect that our results will be of interest to researchers and clinicians and will lead to improved patient care.

You may also be interested in…

Central venous catheter lock solution consisting of Minocycline, EDTA and 25% Ethanol
Molecular analysis of biofilm formation in central venous catheters
IV lock solution for central venous catheter salvage

Reference:
Liu, F., Hansra, S., Crockford, G., Köster, W., Allan, B.J., Blondeau, J.M., Lainesse, C. and White, A.P. (2018) Tetrasodium EDTA Is Effective at Eradicating Biofilms Formed by Clinically Relevant Microorganisms from Patients' Central Venous Catheters. mSphere. November 28th.

doi: 10.1128/mSphere.00525-18.