



“In this article, we provide an overview of microbial biofilm formation; describe the involvement of various genetic determinants, adhesion proteins, organelles, mechanism(s) of biofilm formation, polymicrobial infections, and biofilm-associated infections on indwelling intravascular catheters; and describe the diagnosis, management, and prevention of catheter-related bloodstream infections.” Yousif et al (2015).

Reference:

Yousif, A., Jamal, M.A. and Raad, I. (2015) Biofilm-based central line-associated bloodstream infections. *Advances in Experimental Medicine and Biology*. 830, p.157-79.

Biofilm-based central line-associated bloodstream infections reviewed [@ivteam #ivteam](http://ctt.ec/5WvRb+)

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Abstract:

Different types of central venous catheters (CVCs) have been used in clinical practice to improve the quality of life of chronically and critically ill patients. Unfortunately, indwelling devices are usually associated with microbial biofilms and eventually lead to catheter-related bloodstream infections (CLABSIs). An estimated 250,000-400,000 CLABSIs occur every year in the United States, at a rate of 1.5 per 1,000 CVC days and a mortality rate of 12-25 %. The annual cost of caring for patients with CLABSIs ranges from 296 million to 2.3 billion

dollars. Biofilm formation occurs on biotic and abiotic surfaces in the clinical setting. Extensive studies have been conducted to understand biofilm formation, including different biofilm developmental stages, biofilm matrix compositions, quorum-sensing regulated biofilm formation, biofilm dispersal (and its clinical implications), and multi-species biofilms that are relevant to polymicrobial infections. When microbes form a matured biofilm within human hosts through medical devices such as CVCs, the infection becomes resistant to antibiotic treatment and can develop into a chronic condition. For that reason, many techniques have been used to prevent the formation of biofilm by targeting different stages of biofilm maturation. Other methods have been used to diagnose and treat established cases of CLABSI. Catheter removal is the conventional management of catheter associated bacteremia; however, the procedure itself carries a relatively high risk of mechanical complications. Salvaging the catheter can help to minimize these complications. In this article, we provide an overview of microbial biofilm formation; describe the involvement of various genetic determinants, adhesion proteins, organelles, mechanism(s) of biofilm formation, polymicrobial infections, and biofilm-associated infections on indwelling intravascular catheters; and describe the diagnosis, management, and prevention of catheter-related bloodstream infections.

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