“Here we compare the ad libitum release of chlorhexidine and silver-sulfadiazine from a central venous catheter with their release from a new, on-demand release coating consisting of a temperature-sensitive copolymer of styrene and n-butyl (meth)acrylate.” Sjollema et al (2014).

Reference:

On-demand temperature-sensitive polymer for central venous catheters http://ctt.ec/aH56I+
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Abstract:
Antimicrobial releasing biomaterial coatings have found application for instance in the fixation of orthopaedic joint prostheses and central venous catheters. Most frequently, the release kinetics is such that antimicrobiologically-effective concentrations are only reached within the first days to weeks after implantation, leaving no local antimicrobial release available when a biomaterial-associated infection occurs later. Here we compare the ad libitum release of chlorhexidine and silver-sulfadiazine from a central venous catheter with their release from a new, on-demand release coating consisting of a temperature-sensitive copolymer of styrene and n-butyl (meth)acrylate. The copolymer can be loaded with an antimicrobial, which is released when the temperature is raised above its glass transition temperature. Ad libitum release of chlorhexidine and silver-sulfadiazine from a commercially-purchased catheter and associated antimicrobial efficacy against Staphylococcus aureus was confined to 16 days. Consecutive temperature-triggers of our on-demand coating yielded little or no antimicrobial efficacy of silver-acetate release, but antimicrobiologically-effective chlorhexidine concentrations were observed over a time period of 60-80 days. This attests to the clear advantage of on-demand coatings above ad libitum releasing coatings, that may have released their antimicrobial content before it is actually needed. Importantly, glass transition temperature of chlorhexidine loaded copolymers were lower (48°C) than of silver loaded ones (61°C), facilitating their clinical use.

Other intravenous and vascular access resources that may be of interest (External links – IVTEAM has no responsibility for content).

- Guide for intravenous chemotherapy and associated vascular access devices from