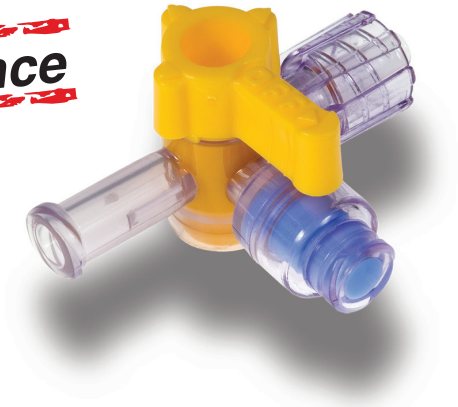
Antimicrobial Stopcocks Family

B Stop 1 2 3

New Evidence



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Introduction

Intravascular catheters are indispensable in modern-day medical practice, although such catheters provide necessary vascular access; their use puts patients at risk for local and systemic infectious.

Catheter related blood stream infections (CRBSI) are common, costly and potentially lethal.

CRBSI are increasingly disturbing problem in hospitals, especially in intensive care units (ICU).

Based on CDC (Centers for Disease Control and Prevention) data, approximately 80,000 CVC-associated blood stream infections occur in ICUs each year in the United States. A total of 250,000 cases of CVC-associated blood stream infections have been estimated to occur annually if entire hospitals are assessed. The attributable cost per infection is an estimated $34,508-$56,000 and the annual cost of caring for patients with CVC-associated blood stream infections ranges from $296 million to $2.3 billion. The chance for mortality is estimated as 12%-25% for each infection, through infectious complications such as pneumonia, surgical wound and vascular access-related bacteremia.

Contamination of the catheter hub contributes substantially to intraluminal colonization of long-term catheters; contamination may derive from valve, stopcock or another port. Stopcocks represent a potential portal of entry for microorganisms into vascular access catheters and IV fluids. According to CDC, Stopcock's contamination occurs in **45% and 50%** in the majority of series. **Therefore reducing the chance of microbial colonization on stopcocks can contribute to reducing rates of catheter colonization.**

Recent Studies

Recent studies accomplished by Kolf and Loftus mark the stopcock as a main resource for bacterial contamination. In their study "Transmission of pathogenic bacterial organisms in the anesthesia work area" Kolf and Loftus indicate stopcock as a potential contamination source in anesthesia work area. Contaminated stopcocks were associated with a trend toward increased nosocomial infection and mortality rates.

Internal Luer surface of three way stopcocks was sampled. Study's results demonstrate that bacterial organisms are transmitted during the practice of general anesthesia work area and intravenous stopcock sets. Stopcocks sets became contaminated with potentially pathologic bacteria in 32% of studied cases (61 patients undergoing various surgical procedures). They observed an increase in mortality that might be attributable to stopcock contamination, secondary to poor aseptic practice.

2 of 20 patients with contaminated stopcocks died after stay in the intensive care unit secondary to bloodstream and respiratory infections. There were no patient deaths in the group of patients without stopcock contamination. Finally they claimed that efforts should be taken to develop more effective strategies to reduce transmission of infectious organisms hospital-wide.

Kolf and Loftus tested in another study - "Reduction in Intraoperative Bacterial Contamination of Peripheral Intravenous Tubing through the Use

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of a Novel Device", how improving hand hygiene will influence the bacterial transmission from the anesthesia provider hands to the patient. In order to demonstrate contamination rates they sampled three way stopcocks. 32.8% of the stopcocks in the control group were contaminated and 17% of the patients developed nosocomial infection. Kolf and Loftus found that increased hand hygiene compliance in the treatment group nearly eliminated bacterial contamination in patients.
A contamination reduction rate in the treatment group was associated with reduction in contamination of peripheral intravenous stopcock sets. There is a convincing connection between hand hygiene and contamination rates of stopcocks.
Kolf and Loftus showed that improved hand hygiene reduces the risk of intraoperative bacterial transmission.

B Stop 1,2,3

Elcam Medical, the premier provider of stopcocks to the US and European OEM markets, is the first and only company to introduce the new standard of care - An **Antimicrobial Stopcock line**, that provides a comprehensive solution to the concerns regarding stopcocks involvement in CRBSI. Elcam's antimicrobial technology is based on silver ions, which are incorporated into the stopcock's body. Silver is a well known antimicrobial agent with the purpose of preventing/ reducing CRBSI rates, and potentially decrease hospital costs associated with treating CRBSIs. The Antimicrobial stopcock line also contains the Closed Swabbable Stopcock, which enables Needle free connection, aseptic fluid administration and sampling in the operating room, while keeping the IV line closed to the atmosphere, preventing contamination of the IV line due to contact with operator hands and bed linen.

Efficacy tests results

The antimicrobial efficacy of Elcam's antimicrobial stopcocks line – **B Stop 1,2,3** was tested for each bacterial model, against conventional Elcam Medical's stopcocks. Antimicrobial efficacy was measured in terms of total log reduction in bacterial counts. The reduction was detected regarding microbial population within the stopcock Selection of test organisms was based on data from CDC. The microorganisms chosen comprise the majority of the hospital-acquired bloodstream infections.
For all 6 bacterial and yeasts strains, there was a significant reduction in the total bacteria and yeast counts. A microbial reduction exceeds 99.99% was shown in 4 common pathogens known to cause CRBSI (Staph aureus, Staph epidermidis, Enterobacter spp and Candida albicans) and 99.8% reduction against MRSA.

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