

# Smart Solutions for HCAI



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## **EVALUATION REPORT: Baxter V-Link Silver Coated IV Connector**

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### **Introduction**

Smart Solutions for Healthcare Associated Infections (HCAI) is a national programme that aims to bring forward new technologies with the potential to reduce HCAI rates within the NHS. The programme was run by *TrusTECH*<sup>®</sup>, The North West of England NHS Innovations Hub, on behalf of the Department of Health's HCAI Technology Innovation Programme, and supported by the NHS National Innovation Centre.

Following a national call for innovative products and technologies from a range of diverse industries, nine products were selected for further evaluation within an NHS setting. The aim of the evaluation was to assess the potential of the product to contribute to the reduction of HCAs in a scientifically robust manner.

The Baxter V-LINK Luer Activated Device with VitalShield Protective Coating was one of the products selected for an evaluation. Intravascular catheters are widely used in modern medical practice for the administration of drugs and fluids and for haemodynamic monitoring but they are also recognised as being one of the largest cause of hospital-acquired bacteraemia and are associated with significant increases in medical costs and length of hospital stay. Baxter has developed a technology called VitalShield Protective Coating which is applied to the interior and exterior surfaces of the V-LINK connector. This coating results in the controlled release of silver ions, which are a well-known antimicrobial substance, effective against a wide spectrum of microorganisms.

The trial was undertaken at Queen Elizabeth Hospital, Birmingham with Professor Tom Elliott, Consultant Microbiologist acting as the Principal Investigator.

### **Objectives**

To compare the microbial contamination rates between the V-LINK silver coated IV connector with the CLEARLINK uncoated connector during clinical use.

1. To compare the number and type of microorganisms on the internal surfaces of the V-LINK device vs. the CLEARLINK following clinical use.
2. To investigate the number and type of microorganisms on the external compression seal of the V-LINK device vs the CLEARLINK following clinical use.
3. If intravascular catheter infection was suspected, to evaluate catheter tip colonisation, exit site colonisation and blood cultures to evaluate the source of infection.
4. To evaluate the healthcare workers perceptions of the usability of the V-LINK and the CLEARLINK devices.

## Methodology

Patients who required a central venous catheter for longer than 4 days as part of their clinical management were recruited into the study and randomised to receive either the V-LINK or CLEARLINK devices.

After 4 days the devices were removed aseptically and replaced with an IV access device of the same type. The removed devices were sent to the laboratory for culture within 1 hr of removal, stored at 4°C and processed within 2 hrs of removal from the patient.

The compression seals of the devices were imprinted onto the surface of neutralising agar plates. The internal microbial contamination was sampled in three stages to remove planktonic, loose bound bacteria and bacterial biofilms and the number and type of microorganisms were determined as per standard laboratory techniques.

A usability questionnaire was distributed to nursing staff who handled the V-LINK and CLEARLINK devices.

## Results

- No catheter-related bloodstream infections occurred in study patients during the study period.
- 119 V-LINK and 117 CLEARLINK needleless IV access devices were cultured.
- There was no significant difference between the devices in terms of the incidence or extent of microbial contamination on the external silicone compression seal.
- The V-LINK needleless IV access devices were associated with a significantly lower rate and extent of internal microbial contamination than the CLEARLINK devices.
- A significantly higher number of CLEARLINK had blood remaining visible in the devices following flushing compared to V-LINK.
- However, this residual blood in the CLEARLINK devices had no significant effect on internal contamination rate.
- Thirteen nurses responded to the user questionnaire and most stated that they would use these IV access devices in their everyday practice.

## Conclusions

- There was no significant difference between the CLEARLINK and V-LINK needleless IV access devices in terms of the rate or extent of contamination on the external silicone compression seals. This may be due to the fact that both external compression seals are ergonomically similar and non-antimicrobial.
- Significantly fewer V-LINK devices were internally contaminated when compared to CLEARLINK devices. In addition, there were significantly fewer microorganisms within the V-LINK devices. This may be due to the antimicrobial activity of the silver within the internal surfaces of the V-LINK devices.
- Significantly more CLEARLINK devices had visible blood remaining following flushing when compared with V-LINK devices. However, over the period of use in this study, this was not associated with a significantly higher risk of internal microbial contamination.
- There were no significant differences in the type of microorganisms isolated from the internal surfaces of the V-LINK and CLEARLINK devices suggesting that the silver does not select out for any particular microorganisms.
- Overall the usability survey was favourable to the use of both devices; however concern was raised regarding the presence of blood remaining in the CLEARLINK devices following flushing.
- Although no episodes of catheter-related bloodstream infection was observed during the study period, the reduction in internal contamination associated with the V-LINK devices may lead to a reduced risk of such infection.

CLEARLINK, V-LINK and VitalShield are trademarks of Baxter International Inc.

**Further information**

Smart Solutions for HCAI is run by *TrusTECH*®, the North West Innovations Hub.

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