

## Introduction

Vascular access devices (VAD) are vital for the administration of intravenous therapy. Although essential, VADs put patients at risk of complications including catheter-related bloodstream infections (CR-BSI), which are amongst the most dangerous for patients, but are largely preventable (Loveday et al, 2014). Consequently, reducing them has become the focus of infection prevention strategies. An audit of VADs conducted in our 500-beds hospital in October 2013 demonstrated poor standards of care and low compliance with evidence-based guidelines (McGuire, 2015). A bundle strategy of training, education and standardisation was implemented to raise standards and improve compliance, and the audit repeated in 2018 to evaluate the impact.

## Method

To maintain consistency with the 2013 audit, two intravascular practitioners did the audit over 7 non-consecutive weekdays between 3 and 23 October 2018. Convenient sampling was used to capture all VADs in-situ in patients above 18 years on the audit days.

## Results

A total of 158 devices were audited with a range 5 – 21 in each ward (*Table 1*). The result demonstrated a collective compliance rate of 87% with non-compliance of 13%; of these, 99% (n=156) were peripheral venous catheters (PIVC) and 1% (n=2) central venous catheters. In total, 97% (n=154) of PIVCs were in-situ for 10 days or fewer, with 3% (n=2) in-situ for longer; range 1-15 days. The data were analysed using STATA V12; 95% confidence intervals and two-tailed hypothesis tests for differences in proportions between the two audit periods were calculated (*Table 2*).

### Box 1. Care elements

- Dressing dry, clean and intact
- Dressing dated
- Inserted site visible
- Insertion documented
- On-going observation including VIP Score documented
- Still needed (clinical indication for use)
- Number of days in situ

**Table 1. Number of devices per ward (n=158)**

| Wards | Number of devices | Wards | Number of devices |
|-------|-------------------|-------|-------------------|
| 1     | 15                | 8     | 18                |
| 2     | 8                 | 9     | 15                |
| 3     | 5                 | 10    | 8                 |
| 4     | 8                 | 11    | 15                |
| 5     | 13                | 12    | 21                |
| 6     | 8                 | 13    | 19                |
| 7     | 5                 |       |                   |

**Table 2: Results and comparison of key indicators from 2013 and 2018 audit**

| Indicator                        | 2013 Audit %<br>compliance<br>(n=120) | 2018 audit<br>compliance<br>(n=158) | Difference in<br>compliance | 95% CI<br>difference | P       |
|----------------------------------|---------------------------------------|-------------------------------------|-----------------------------|----------------------|---------|
| Intact, clean and dry            | 77 (64.2%)                            | 126 (79.8%)                         | 15.6%                       | 5.0%-26.2%           | 0.0037  |
| Site visible                     | 58 (48.3%)                            | 148 (93.7%)                         | 45.4%                       | 35.6%-55.1%          | <0.0001 |
| Dated                            | 53 (44.2%)                            | 142 (89.9%)                         | 45.7%                       | 35.7%-55.8%          | <0.0001 |
| On-going care and documented VIP | 46 (38.3%)                            | 113 (71.5%)                         | 33.2%                       | 22.0%-44.4%          | <0.0001 |
| Compliant with duration policy   | 94 (78.3%)                            | 156 (98.7%)                         | 20.4%                       | 12.3%-28.5%          | <0.0001 |
| Still needed                     | 82 (68.3%)                            | 130 (82.3%)                         | 14.0%                       | 3.7%-24.2%           | 0.0066  |

## Discussion

The 2013 audit demonstrated that change was required to improve standards. Implementing a standardized bundle strategy of training, education and standardization in VAD insertion, use and care was necessary to raise standards, improve patient outcome and reduce costs. Loveday et al. (2014) emphasized performance improvement through the implementation of bundle strategies as a benchmark for quality assurance. Additionally, 'educational interventions appears to have the most prolonged and profound effect when used in conjunction with audit and feedback' to improve patient safety.

## Conclusion

The 2013 results demonstrated poor standards of care with overall compliance rate of 52%. The 2018 audit showed significant improvement in standards with a collective compliance rate of 87%. The result indicates that implementing strategies to improve practice has been effective. The success is attributable to a combination of different initiatives, including regular surveillance and monitoring with timely feedback, making problems visible and therefore actionable

## References

Loveday HP, Wilson JA, Pratt RJ et al. epic3: national evidence-based guidelines for preventing healthcare-associated infections in NHS hospitals in England. J Hosp Infect. 2014;86(Suppl 1):S1-70. [https://doi.org/10.1016/S0195-6701\(13\)60012-2](https://doi.org/10.1016/S0195-6701(13)60012-2)

McGuire R. Assessing standards of vascular access device care. Br J Nurs. 2015;24(8):S29-S35. <https://doi.org/10.12968/bjon.2015.24.Sup8.S29>