

Maintenance of intravascular device patency:

a survey of nursing and midwifery flushing practice

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Venous cannulation via peripheral intravenous catheters (PIVC) and central venous catheters (CVC) are frequently used in hospital care to administer fluids, drugs, blood and nutrition, and to withdraw blood for testing.

Researchers estimate that up to 85% of patients in hospital require infusion therapy, with up to 70% of patients requiring a PIVC. The proportion of CVC use is approximately 29% in the general hospital population, rising up to 80% for patients in critical care settings¹⁻⁵.

These devices may need to be left in place for days or even weeks at a time, however they are associated with inherent complications which can be mechanical or infectious.

IVD failure

Failure of these devices due to occlusion is unacceptably high, affecting up to 20% of patients with PIVCs and 36% of patients with CVCs^{6,7}.

This means patients need to have the device replaced, which has implications for patient comfort, therapy and health care costs.

There have been a range of strategies developed to prevent or reduce IVD-related complications including flushing regimes to maintain IVD patency.

However, current practice is widely varied, with poor outcomes⁸.

Impact of IVD failure

The high IVD failure rate means millions of dollars is spent on replacement devices and related nursing and medical time.

A recent economic analysis of data from the multi-site Queensland randomised trial of PIVC replacement⁷ showed the mean cost of catheter replacement was approximately \$70 when staff time and equipment was calculated⁹.

Reducing the PIVC failure rate by just 10% in Australia would save \$5 million each year.

Reducing the CVC failure by 5% would save Australia \$25 million annually.

There is little documented evidence that flushing of IVDs is actually happening in practice¹⁰.

Current IVD maintenance policies and guidelines vary and are largely based on derived scientific principles. There are no studies comparing different flushing regimens.

Survey of Queensland nurses and midwives

As a prelude to much-needed trial studies, a survey of nursing and midwifery IVD flushing practice was conducted by a research group from Griffith University.

The aim of the survey was to gain a better understanding of current IVD nursing flushing practices in the acute care setting.

The researchers employed a cross-sectional survey design using a 25-item electronic questionnaire and distributing it via the QNU membership database.

Survey results

Twelve hundred and three nurses responded to the online survey.

Only 1178 were fully completed and analysed with n=1068 using PIVC group and n=584 in the CVC group.

The majority of respondents 72% (PIVC 742/1028) and 80% (CVC 451/566)

were aware of their facility's policies on flushing of IVDs to maintain patency.

Most nurses reported using Sodium Chloride 0.9% for flushing both the PIVC (96%, 987/1028) and CVC (75%, 423/566).

Some form of heparin-saline combination was used in 25% of CVC cases.

A 10ml syringe was used by most respondents for flushing PIVCs and CVCs, however 24% of respondents used smaller syringes in the PIVC group.

Use of prefilled syringes was limited to 10% and 11% respectively for each group.

Frequency of flushing varied widely with the most common responses being for PRN (23% PIVC and 21% CVC) and 6th hourly (23% PIVC and 22% CVC).

Approximately half of respondents in both groups stated that there was no medical order or documentation for device flushing.

Conclusions

Flushing practice for IVDs appears to vary widely.

Specific areas of practice concern that warrant further investigation include the use of heparinised saline in CVC flushing, the use of smaller than recommended syringes, the minimal use of prefilled syringes, the varied frequency of flushes, and the lack of documentation of flush orders and administration.

The study is being presented at the upcoming World Congress on Vascular Access in Berlin in June and a manuscript summarising the study will be submitted for publication in April. ■

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