
Abstract:

Background/Purpose: The use of needleless positive pressure connector valves (PPVs) on venous access devices (VADs) has been shown to have possible benefits in decreasing VAD occlusion rates. catheter-related bloodstream infections (CRBSI) rates, however; have been variable. With this potential for improving patient outcomes, decreasing costs, and facilitating nursing care and catheter management, the use of PPV devices becomes both advantageous and desirable.

Methodology: This was a randomized, prospective, parallel clinical study of 160 medical and surgical step-down unit patients requiring parenteral therapies. Patients were equally randomized to two study groups to assess the impact on occlusion and CRBSI rates, using a PPV versus a standard cap without PPV. VADs included both peripherally inserted catheters (PICCs) and midlines.

Results: Seven VAD occlusions occurred; six in the experimental group, one in the control group (p = 0.43). Also, two CRBSIs occurred in the experimental group, with none in the control group (p = 0.497). All incidents occurred in double lumen PICCs. The lack of statistical difference between the two groups for occlusion and CRBSIs indicates that the use of PPVs
had no impact on preventing such outcomes. However, it was observed that the number of double-lumen PICCs and their dwelling time in the experimental group was significantly higher ($p = 0.003$).

Conclusion: There was no difference in the rate of catheter occlusions or CRBSIs when using PPVs or standard caps. We consider that the study outcomes may be due to the study’s small sample size, and we speculate that longer dwell time of double lumen catheters may have contributed to these outcomes. These observations deserve further investigation. However, the use of PPVs may still be advantageous from a nursing process perspective.