
**PICO Statement**

“What is the least amount of Heparin needed to maintain central venous catheter patency in adult patients in a busy community hospital setting?”

**Literature Review**

Compliances related to use of heparin in CVCs are well documented as early as the late 1990’s. Many studies have attempted to validate the need for heparin as a locking/flushing solution ultimately conceding the need for further study

A review was completed of over 30 articles categorized together as a dedicated vascular access team in our magnet community hospital conducted a two month study. A Task Force Committee is being formed to consider

**Significance**

- Approximately 3-5% of patients exposed to Heparin will develop Heparin Thrombocytopenia (HIT)
- Formation of Bio-film begins within 10 – 20 minutes after a catheter is placed. This build up has been known to be a precursor to a septic event
- 87% of catheter related bloodstream infections are related to some type of venous access device
- Catheter related bloodstream infections cost hospitals $25,000 - $55,000 per event.
- Complications decrease patient satisfaction, complicate physician management of the patient and can significantly increase cost to the hospital in LOS

**Description**

A dedicated vascular access team in our magnet community hospital conducted a two month study.

The first month was to determine a baseline analysis.

- Every central line lumen was flushed every 12 hours per policy
- When medications were administered via the central line, as per policy, the SASH (Saline-antibiotic-saline-heparin) Method was utilized.

Data collection included:

- Recording all occlusions
- Use of anti-thrombotic agents
- Repulsion rate

The second month a pilot was done utilizing only saline flushes.

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- When medications were administered via the central line, as per policy, the SASH (Saline-antibiotic-saline-heparin) Method was utilized.

Data collection included:

- Recording all occlusions
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After a 2 month study in the Franklin Square hospital policy was revised to reflect a change in practice eliminating Heparin in CVC flushing.

A Task Force Committee is being formed to consider standardization of CVC flushing policies System Wide.

**Outcomes**

The first month there were 192 CVCs with 329 lumens reflective of 637 lumen days. An occlusion rate of 3.65% per catheter. With an occlusion rate per lumen day of 1.88%

The second month there were 235 CVCs with 471 lumens reflective of 1,324 lumen days with an occlusion rate of 9.20% lumens. This translates into an occlusion rate of 4.25% per catheter and 1.78% per lumen day.

**References**


Buckley, L., and MCA, CS, MSc-pop, 06, NMS, Volume 3 (16) (June 2008), pp 34-40, Nursing (2008). “Targeting Therapy with Central Venous Access Devices.” Educational article providing configuration of CVCs, noted that the use of Heparin flushes has become more controversial, in favor of saline only. Still needs more research.

Karam, Anand, Volume 18(10) 2006 ISSN 2467-3026 Clinical Review “Heparinized Saline or Normal Saline” Peer review, unsolicited, well referenced: Literature fails to demonstrate any advantage of Heparin over NS. Noted that HIT can occur following minimal heparin exposure, including heparin flush.


Rotella, Leo C., MD, FCCP, Aitken D., Rhome M., Puzelli T, RN, NW, Tai Wei Chen, MD, Hoang N, MD, FCCP, Bucking C. L, RN, Metron, A, and Neglia J. MD, American College of Chest Physicians, October 24, 2007. “Incidence of Triple Lumen CVC and Post Occlusions Utilizing Normal Saline Flushes.” Collected data on 500 triple lumen CVC and 3500 port days, flushing with 10cc NS q 6 hrs. Line and port occlusions 4.0% and 2.8%. Very low incidence occurring between day 4 and peak occlusion rate on day 7. Conclusion: NS is as effective as Heparin.