2023

Transitions to Normal Saline ONLY for CVADs

Megan Lehn
CentraCare Health, lehnm@centracare.com

Ann Backes
CentraCare Health, backesa@centracare.com

Transition to Normal Saline ONLY for CVADs

Megan Lehn, MSN, RN, CMSRN &
Ann Backes, MSN, RN, OCN
St. Cloud Hospital, St. Cloud, Minnesota

Purpose Statement

The purpose of this project is to implement a practice change throughout the system to remove heparin flushes for Central Venous Access Devices (CVADS) pending a successful pilot on Medical Oncology.

Synthesis of Evidence

- Sharma et al (2019) conducted a systematic review and meta-analysis including 886 participants that revealed no clear differences in CVC patency between heparin and NS.
- Klein et al (2018) conducted a pilot study on a 30-patient bone marrow transplant unit, each patient had a new CVC and were divided into two groups. Among 698 catheter-associated events overall incidence of central line issues were similar in both heparin and normal saline group.
- Egnatios & Gloria (2021) studied 37 patients receiving clinical trial infusions, they divided the study into two phases. During heparin phase there were 302 port accesses and four alteplase orders, during the NS study there was 261 accesses and seven alteplases orders. Alteplase was successful every time it was used.
- Zhong et al (2017) performed systemic review on use of heparin v. flushing protocols. Ten randomized control trials involving 7,785 participants were included in the meta-analysis. No general differences found between heparin v. NS in maintaining patency.
- Goossens et al (2013) oncology patients were randomly selected from 2009-2011. 382 were ultimately selected for normal saline group, and 283 for heparin group. All nurses were trained in proper pulsatile technique before study, it was found ultimately heparin was not superior in comparison to NS in maintaining the patency of CVC.

Team Members

Megan Lehn, MSN, RN, CMSRN Educator, Medical Oncology
Ann Backes, MSN, RN, OCN Director, Medical Oncology
Paige Coulter, BSN, RN, OCN Core Charge, Medical Oncology
Kara Panek, BSN, RN, OCN Core Charge, Medical Oncology
Lauren Tollefson, BSN, RN Literature Review
Angela Lindquist, Business Analyst

Evidence-Based Practice Change

Current Practice:
Any CVAD
e.g., tunneled catheter, implanted port.

Flush with the following after every access of the CVAD or when deaccessing:

- Flush with 20mL of Normal Saline
- Flush with 5mL Heparin 500 units

Proposed Practice Change:
Any CVAD
e.g., tunneled catheter, implanted device

Flush with the following after every access of the CVAD or when deaccessing:

- Flush with 20mL of Normal Saline utilizing **pulsatile** technique.

Benefits versus Risks

Heparin Flush:

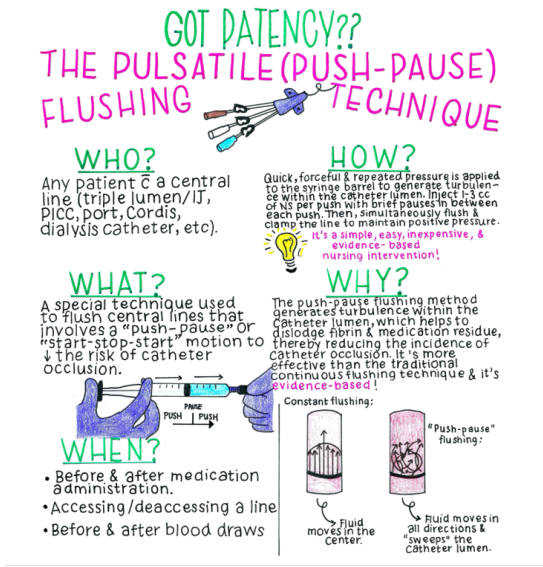
Benefits:
- Thrombus Prevention

Risks:
- Bleeding
- HIT (Heparin-Induced Thrombocytopenia)
- Hypersensitivities
- Medication Errors
- Air embolism

Saline Flush:

Risks:
- Air embolism
- Medication Error

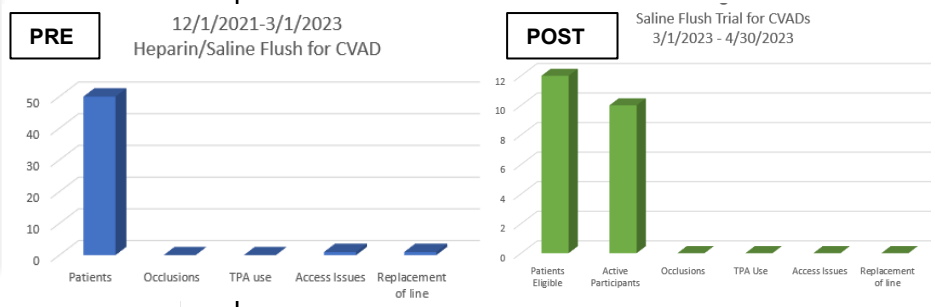
Benefits:
- Reduce risk for infection
- Reduce risk for occlusion



Pre/Post Measurements

Saline Flush Pilot for Ports Data

- Piloting normal saline flushing only in inpatient Medical Oncology March 1st- May 30th.
- Must meet ALL criteria listed below to participate in pilot of 20mL of NS
  (*Receiving IV Chemotherapy & Implanted Port*)



Note premeasurements are of the oncology patient population actively receiving IV chemotherapy that have a port.

References

Egnatios, D., & Gloria, C. (2021). Comparing heparin and normal saline. *Clinical Journal of Oncology Nursing, 25*(2), 169-174. doi 10.1188/21.CJON.169-173

Goossens, G.A., Jérôme, M., Janssens, C., Peetermans, W.E., Fieuws, S., Moons, P., Verschakelen, J., Peerlinck, K., Jacquemin, M., & Stas, M. (2013). Comparing normal saline versus diluted heparin to lock non-valved totally implantable venous access devices in cancer patients: A randomized, non-inferiority, open trial. *Annals of Oncology, 24*(7), 1892-1899. doi 10.1093/annonc/mdt114.

Klein, J., Jepsen, A., Patterson, A., Reich, R.R., & Mason, T.M. (2018). Heparin versus normal saline. *Clinical Journal of Oncology Nursing, 22*(2), 1-5. doi 10.1188/18.CJON.199-202

Sharma, S.K., Mudgal S.K., Gaur, R., Sharma, R., Sharma, M., & Thakur, K. (2019). Heparin flush vs. normal saline flush to maintain the patency of central venous catheter among adult patients: A systematic review and meta-analysis. *Journal of Family Medicine and Primary Care, 8*(9), 2279-2792. doi 10.4103/jfmpc.jfmpc_669_19

Zhong, L., Wang, H.L., Xu, B., Yuan, Y., Wang, X., Zhang, Y.Y., Ji, L., Pan, Z.M., & Hu, Z.S. (2017). Normal saline versus heparin for patency of central venous catheters in adult patients - A systematic review and meta-analysis. *Critical Care, 21*(5), 1-9. doi 10.1186/s13054-016-1585-x

lehnm@centracare.com