Mannitol Administration Trial

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Implementation Plan

Mannitol Administration Trial
For 8Long & 8South

Decision Tree for Line Placement:

1. Administer Mannitol using an in-line filter (1.2 micron filter). Change in-line filter Q24hr & pm if crystallization forms.
2. Check blood return prior to starting the infusion.
3. Use Alaris pump: For Mannitol dose of 25gm, infuse over 15 minutes. For Mannitol dose of 50gm or greater, infuse over 30 minutes.
4. Continuous observation of the site by the RN for signs & symptoms of local extravasation reactions until the infusion is complete.
5. Signs & symptoms of local extravasations reaction:
   - Complaints of local pain, burning, or any acute change at the infusion site
   - Induration or swelling at the infusion site
   - Resistance when flushing the line indicates the line is occluded.
7. For subsequent Mannitol infusions, check line for blood return by aspiration or placing the IV bag below the IV site. If unable to get blood return, try flushing the line with 10cc NS.
8. If no signs of infiltration or pain, start infusion & monitor site as above. Document how line was checked prior to infusion.

How to treat extravasation:

DO NOT ADMINISTER HYALURONIDASE due to absence of data supporting its use and potential in adult population for anaphylaxis

1. If extravasation is suspected, do not flush line – attempt to aspirate any excess fluid from infiltration site prior to discontinuing IV.
2. Elevate extremity.
3. Apply heat on the site to decrease the swelling for the first 24 hours then apply ice pack for comfort.
4. Discuss with the team the need for consult with Plastic Service for further recommendation.
5. Complete an IR for any occurrence of Mannitol infiltration/extravasation.

Next Steps

1. Request Pharmacy & Therapeutics to adopt this change in practice
2. Discuss with the Procedure Committee the possibility of implementing this Test of Change house wide.
3. Presentation of this data during Staff Meeting

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Identified Problem

The Neuroscience Clinical Practice Council on 8Long/8South identified a patient safety issue regarding Mannitol administration and its high extravasation rate. Since 2008, there have been 40 Incident Reports written related to significant tissue damage as a result of Mannitol extravasation. An example involved a large amount of extravasation from a clotted EJ line requiring medical intervention. Data from UCSF Risk Management 2003-2009 showed that $1.8 million dollars has been paid out for claims of IV infiltration & extravasation of medications, with Mannitol being one of the causative agents.

Initiative Goal

Develop a Mannitol Administration Protocol that would eliminate Mannitol IV extravasations on 8Long/8South.

Steps Taken to Enact the Initiative

A multidisciplinary task force was formed to develop a Mannitol Administration Protocol with representatives from Dept. of Neurosurgery- Dr. Mitchell Berger, Dept. of Neurology/Neurovascular- Dr. Sharon Poisson, Dept. of Quality & Patient Safety for Dept. of Neurosurgery- Dr. Catherine Lau, Risk Management- Susan Penney, JD, Nursing – Carol Viele CNS Hem/Onc/BMT, Mary Reid RN Patient Care Manager 8L/8S, John Pearson RN Unit Educator 11NICU, William Gersten RN/Vivien Ma-Wong RN 8L, & Pharmacy – Allison Miller Pollock Pharm D. Resource & supported by Carol Viele CNS, project co-leaders William Gersten & Vivien Ma-Wong formulated a Mannitol Administration Protocol with the following parameters:

1. Decision Tree for type of line placement
2. How to infuse Mannitol
   a. Site monitoring guidelines – Peripheral IV vs. PICC line
   b. Dose based administration time
3. How to treat extravasation

Evidenced Based Nursing interventions related to IV Mannitol Administration were researched. After 13 revisions of the Administration Protocol, over a 6 month period, it was approved by the Multidisciplinary Task Force. After consultation with the Medication Safety Committee, the 3 month pilot study was approved. The pilot study is for the period of July 2-Oct 2, 2012. The results will be presented to the Multidisciplinary Task Force & the Medication Safety Committee upon completion of the 3 month trial period.

Results

Review of the audits revealed compliance with the Mannitol Administration Trial by both RNs and MDs.

After a decline in Mannitol extravasations from January 2008 to June 2011, they increased on 8L/8S in 2011 and 2012. There were 4 extravasations on 8L and 1 on 8 South in the period of January thru June 2012.

During the trial, from July 2 thru October 2, 2012, there were no incidences of Mannitol extravasation.

Data for the Trial is as follows:

- Patient Population: Total # of Patients: 24
  - Age Range: 31-83
  - Sex: Males (15) = 62.5%
  - Females (9) = 37.5%
- Total doses administered: 203
  - PICC doses (125) = 61.6%
  - PIV doses (78) = 38.4%
  - Most frequent dose: 25 gms = 83.5%
  - Dose Range: 30–100 gms = 16.5%

Next Steps

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3. Presentation of this data during Staff Meeting

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Approved by: Sharon Poisson MD for the Department of Neurology & Neurovascular 6/12
Approved by: Catherine Lau MD for the Department of Quality & Patient Safety 6/12
Approved by: Allison Miller PharmD 6/12
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Approved by: Carol Viele RN MS CNS Hematology/Oncology Bone Marrow Transplant 6/12
Approved by: Medication Safety Committee 6/12