IV Promethazine Overview

Background:

Promethazine, a drug in the phenothiazine class, exhibits antihistamine, sedative, anti-emetic, and anti-motion sickness properties. It is available in oral, rectal suppository, and injectable form. In its injectable form, promethazine is FDA-approved for IM and IV administration. According to the package insert, the preferred parenteral route of administration is deep IM injection, and caution should be exercised with IV administration due to the significant risk of perivascular extravasation and severe tissue injury. This risk is a consequence of the product's formulation with phenol, which decreases the pH to between 4 and 5.5, making IV promethazine highly caustic. In the event of infiltration or inadvertent arterial injection, severe tissue damage can occur and may lead to thrombosis, nerve damage, paralysis, abscess, and gangrene potentially requiring surgical interventions, including amputation.

Figure 1. Woman Develops Gangrene after Receiving Phenergan IV. Image provided courtesy of ISMP.

ISMP 2018-2019 Targeted Medication Safety Best Practices for Hospitals

A new best practice from ISMP recommends:

- Removing injectable promethazine from the hospital and classifying as a non-stocked, non-formulary medication
- Removing injectable promethazine from all computerized medication order screens, and all order sets/protocols
- Implementing a medical-staff approved therapeutic substitution to convert all injectable promethazine to another antiemetic

Rationale for recommendation:

- Eliminate risk of serious tissue injury and amputation from inadvertent arterial injection or IV extravasation of injectable promethazine

Existing parenteral promethazine products at ANW:

- PROMETHAZINE 25 MG/50 ML-0.9 % SODIUM CHLORIDE INTRAVENOUS PIGGYBACK – QUVA
- PROMETHAZINE 25 MG/ML INJECTION SOLUTION (IM)
- PROMETHAZINE IN 0.9 % SODIUM CHLORIDE IV PIGGYBACK
- PROMETHAZINE IN 0.9% SODIUM CHLORIDE 10 ML IV SYRINGE (PHENERGAN)
- PROMETHAZINE IV SYRINGE INFUSION IN 0.9% NACL 10 ML
- PROMETHAZINE PEDIATRIC 25 MG/ML INJECTION
- PROMETHAZINE 50 MG/ML INJECTION SOLUTION (IM)

Last updated: 8/28/19

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Order sets containing parenteral promethazine at ANW:

- ED ABD PAIN and OBS HYPEREMESIS
    - PROMETHAZINE IN 0.9% SODIUM CHLORIDE 10 ML IV SYRINGE (PHENERGAN)
    - PROMETHAZINE 25 MG/ML INJECTION SOLUTION (IM)

Clinical recommendations currently being implemented within Allina:

- Change language to state "Recommend IM use when available"
- Remove rapid IV syringe from order sets, smart groups, and preference lists; replacing with IVPB
- IV syringe recommendations
    - Preferred: Soft-delete IV syringe
    - If preferred option not viable: Add BPA alert to change IV syringe to IVPB
- Omnicell actions
    - 50 mg/mL IM injection has been removed from Omnicell
    - Keep 25 mg/mL injection in Omnicell for IM use and after-hours IV use

If IV administration must occur, the following precautions have been recommended

- Dilute in 10-20 mL NS or prepare in minibags with NS
- Administer IV piggyback (instead of IV push)
- Limit starting dose to 6.25-12.5 mg
- Administer at a rate no greater than 25 mg/min (can administer over 10-15 minutes)
- Use a maximum concentration of 25 mg/mL
- Administer ONLY through a large-bore IV, preferably via a central venous catheter
    - Do not administer in a hand or wrist vein
- Administer through a running IV line at the port furthest from the patient's vein
- Ensure patency of site before administration
- Instruct the patient to immediately report any burning or pain during or after injection and stop administration immediately if this type of reaction is reported

References:

Grissinger, Matthew, "Preventing Serious Tissue Injury with Intravenous Promethazine (Phenergan)" Pharmacy and Therapeutics, 2009 Apr, 34(4):175-176

Promethazine HCl Injection. DailyMed-US National Library of Medicine. (2006) Teva Parenteral Medications, Inc. North Wales, PA.

Promethazine Hydrochloride. Micromedex. Truven Health Analytics. Updated periodically. Accessed 8/26/19.

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