Perioperative IV vesicant administration
Johns Hopkins Hospital

Program/Project Description.
Vesicant drugs are solutions that can cause tissue necrosis, and extravasation occurs with administration of a vesicant into surrounding tissues. At our hospital, there have been incidents where vesicants were improperly administered through intravenous (IV) catheters, sometimes causing significant extravasation injuries. These injuries include ulceration resulting in pain, plastic surgery, and disability. In addition to significant morbidity for the patient, there is a cost to the hospital and chance of litigation. Anesthesiology and Critical Care Medicine (ACCM) providers regularly administer hyperosmolar solutions, vasoconstrictive substances and concentrated electrolyte solutions in the perioperative setting that are considered vesicants. However, they are often unaware of extravasation injuries that may occur since they are often reported over 24 hours postoperatively.

Our goal is to increase awareness about common vesicants, educate staff about management of IV extravasation, improve compliance with vesicant administration protocols, and ultimately reduce injuries related to IV extravasation. In addition to provider education, a future goal is to improve tracking and documentation of intravenous extravasation events in the hospital by providers and nursing staff.

Process.
The idea to reduce IV extravasation arose from root-cause analyses of cases of extravasation collected in our hospital Patient Safety Network reporting system. The Risk Management department and faculty and residents in the ACCM department are collaborating on this effort. Resident involvement occurs through a practice-based learning course that was recently developed as part of an 18-month curriculum at this institution. Resident education, dictated by the Accreditation Council for Graduate Medical Education (ACGME) outlines six Core Competencies that all residents are expected to demonstrate: a) patient care, b) medical knowledge, c) practice-based learning and improvement, d) interpersonal and communication skills, e) professionalism, and f) systems-based practices.

Solution.
Our solution will be implemented in January and February of 2011. The initial step is to assess current anesthesia provider knowledge about the proper administration of vesicants and treatment of IV extravasation through a survey made up of questions and information taken from the Johns Hopkins Hospital Policies Online and current medical literature. Next, a slide presentation will be delivered to anesthesia providers in a Grand Rounds setting with the purpose of educating colleagues about vesicants. Following the presentation, the original survey will be readministered to anesthesia providers to assess learning. We are also in the process of compiling a chart with a list of vesicants and recommended dilutions and rates of infusion to increase patient safety. This chart will be used as a resource in the operating room and resident handbook.

Measurable Outcomes.
Results will include an assessment of provider knowledge prior to the Grand Rounds educational session, and any changes in provider knowledge after the educational session. Compliance with proper vesicant administration will be followed through random sampling of provider practices and tracking of medication administration through the electronic intraoperative anesthesia data recording system. Our team will also conduct a review of any reported IV extravasation cases through the hospital Patient Safety Network and/or Risk Management, and we will provide real-time feedback to providers as indicated.

Sustainability.
N/A

Role of Collaboration and Leadership.
see above under "Process"

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