Manitoba Health

Manitoba Health supports reporting and learning from patient safety events. The focus of a patient safety review is to closely look at the health care system that surrounds and interacts with those giving and receiving care. The goal is to identify risks to patient safety and recommend the most effective ways to minimize risk and improve the delivery of healthcare.

Patient Safety Learning Advisory

Acetylcysteine (NAC) Overdose

Summary: A patient presented to an emergency department (E.D.) with nausea and vomiting. During treatment, a vague history revealed a potential Tylenol overdose. A diagnostic blood test for Tylenol levels was obtained and confirmed drug toxicity. The antidote treatment for Tylenol toxicity - Acetylcysteine (NAC) was initiated by intravenous (IV) infusion. The initial four-hour loading dose was administered at the correct infusion rate. The infusion dosage/rate was increased after the four-hour loading dose. It was identified at approximately 12 hours later into the IV infusion that the patient received an overdose of the antidote NAC. The patient's status declined, requiring intubation and a STARS transfer to a tertiary care center. The patient died 4 days later. It is undetermined if the patient's death was a result of the Tylenol overdose versus the overdose of the antidote treatment.

Keywords: Overdose

This review is based on a single event.

Findings of the Review:

The antidote treatment NAC (IV) monograph dosage is based on patient weight. The infusion dosage/rate was increased after the four-hour loading dose. It was identified at approximately 12 hours later into the IV infusion that the patient received an overdose of the antidote NAC. The dosage/rate of the NAC infusion was incorrect according to the IV monograph.

A Toxicology textbook located in the E.D. was utilized as a resource for the NAC dosing of the infusion at the time of the dosage/rate increase at four hours based on the patient's declining liver function test.

Pharmacy was not consulted for the NAC dosage.

The patient had been seen previously for mental health concerns/overdoses in the E.D. with no out-patient follow-up post discharge.

System Learning:

Recommendations:

Revise the NAC guideline to have clear, concise direction, including medication administration, specific times for lab value follow-up, and resources numbers for pharmacy consultation.

Include NAC on the High Alert provincial medication list.

Recommend a provincial standardized NAC guideline with a standard consultation path.

Add NAC to the B-Braun drug Library.

Remove outdated literature from the E.D.

Request 2 tablets to be dedicated for each regional acute E.D. and 1 tablet for each community E.D. with the following apps: infusion and compatibility, Micromedex, UpToDate, Elsevier, TREKK, and digistal drug monographs mounted on a stand.

Submit a request through the annual budget to have an on-call pharmacist in the SDO 24/7. *A copy of this CI recommendation should go with this request.*

Suggestions:

Perform serum ammonia testing intra-facility.

Provide 1 laptop in the doctor's lounge (currently desktop computer not working adequetly)

Initiate a nurse-to-nurse bedside patient report in all E.D.'s throughout the SDO at the beginning of each shift.

Request that the vital sign (VS) flowsheet in EDIS to allow space to document infusion rates.

Develop and standardize the medication and admin process for documentation for infusions.

Initiate a “weekend plan” for bed utilization when the bed-coordinator is not in the facility.

Discuss at Provincial Clinical Teams (PCT) re: outpatient clinic run by mental health specifically to follow-up on overdose patients that are seen in the E.D.