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the maryland poison center's monthly update. news. advances. information.
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Medication Errors with Intravenous Acetylcysteine

Acetylcysteine is a commonly used antidote to prevent or limit the hepatotoxicity associated with acetaminophen overdoses. It was first approved in 1985 by the FDA to be administered orally. An intravenous preparation of acetylcysteine was approved in 2004 and is currently sold as Acetadote®. The intravenous dosing regimen is somewhat complex in that a loading dose followed by 2 maintenance doses are all given at different infusion rates:

- 150 mg/kg in 200 mL D5W over 1 hour
- 50 mg/kg in 500 mL D5W over 4 hours
- 100 mg/kg in 1000 mL D5W over 16 hours

In order to assess the frequency of errors in the administration of IV acetylcysteine, a retrospective chart review of Maryland Poison Center records of patients treated with IV acetylcysteine from August 1, 2006 to August 31, 2007 was performed. The results of this study were recently published: ***Hayes BD, Klein-Schwartz W, Doyon S. Frequency of medication errors with intravenous acetylcysteine for acetaminophen overdose. Ann Pharmacother 2008;42:766-70.*** There were 84 medication errors identified in 74 (33%) of 221 patients. Errors occurred more frequently in emergency departments (54% of cases) as compared to medical floors, ICU's and during patient transfers, and occurred more commonly on third shift. The types and frequency of errors included:

- More than one hour of interruption between doses (especially between the 2nd and 3rd dose)—18.6%
- Unnecessary administration—13.1%
- Incorrect infusion rate (including 5 cases of administering the loading dose over 15 minutes instead of 1 hour, as was recommended until 2006)—5.0%
- Incorrect dose—1.4%

Hospital staff should be aware of the potential for IV acetylcysteine administration errors and take steps to prevent these errors. When consulted, the Maryland Poison Center works closely with physicians, nurses and pharmacists to ensure that acetylcysteine is administered correctly.

DID YOU KNOW THAT… *anaphylactoid reactions to intravenous acetylcysteine sometimes occur?*

Adverse effects including rash, pruritus, angioedema, bronchospasm, tachycardia, and hypotension have occurred in a small number of patients. The frequency of adverse effects reported in the literature ranges from 0.2% to 20%, but is generally accepted to be less than 10%. In most cases, adverse effects are mild and do not require discontinuing treatment with IV acetylcysteine. Call the Maryland Poison Center for assistance in assessing and managing adverse effects with IV acetylcysteine.

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