MINNESOTA POISON CONTROL SYSTEM

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BENEFITS OF 2-BAG NAC REGIMEN

- Fewer adverse drug reactions – both GI and anaphylactoid
- Fewer interruptions in care
- Simplicity
- Allows a natural "pause" to reassess utility of NAC at 4 hours

CHANGES TO N-ACETYLCYSTEINE (NAC) REGIMEN FOR ACETAMINOPHEN TOXICITY

Nationwide there has been a push towards simplifying NAC treatment for acetaminophen toxicity.

Q: What will the Minnesota Poison Control System be recommending?

A: 200 mg/kg IV NAC in 500 mL D5W over 4 hours, followed by 100 mg/kg IV NAC in 1000 mL D5W over 16 hours. Maximum dosing weight of 100 kg.

Q: Are there changes to NAC discontinuation criteria?

A: Yes – stop NAC once:

- The patient is clinically well
- APAP <10 mcg/mL
- INR <2
- Transaminase criteria
  - If peak AST <1000 IU – AST normal for patient or decreasing if elevated
  - If peak AST >1000 IU – AST has decreased at least 25% from peak *and* ALT has peaked

Q: What evidence is available to support this change?

A: There have been several studies worldwide looking at effectiveness of 2-bag NAC as well as reduction in adverse drug reactions.

Study*	Primary Outcome	Secondary Outcomes
SNAP Trial[1]	Reduction in vomiting, aOR = 0.26 (97.5% CI: 0.13 – 0.52; p<0.0001)	Reduction in anaphylactoid reactions, aOR = 0.23 (97.5% CI: 0.12 – 0.43; p<0.0001)
Simplification of standard 3bag NAC[2]	Fewer non-allergic anaphylactic reactions (4.3% vs 10%, p = 0.02, OR 2.5, 95% CI 1.1–5.8)	
A prospective observational study of a novel 2-phase infusion for NAC[3]	Reduction in frequency of adverse reactions (absolute difference 20%; 95% CI: 13-28%; p < 0.0001)	
2NAC study[4]	No difference in acute liver injury, difference 2% (95% CI: -9.12-5.36%)	Reduction in cutaneous and systemic reactions to NAC, difference 5.8% (95% CI: 4.0-7.6%)

*Please refer to each study for NAC regimens used and additional information.

References:

1. Bateman et al. Lancet. 2014 Feb 22;383(9918):697-704.
2. Wong A, Graudins A. Clin Toxicol. 2016;54(2):115-9.
3. Isbister et al. Clin Toxicol. 2016;54(2):120-6.
4. Wong et al. EClinicalMedicine. 2020 Mar 19;20:100288.