



# Poison HOTLINE

1-800-222-1222

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### Did you know .....

An IPCC medical toxicologist is on call 24 hours per day to respond to complex toxicological cases. The IPCC has a team of four board certified toxicologists overseeing care of IPCC cases. Dr. Edward Bottei is the full-time medical director at the IPCC and he is the state medical toxicologist for the Iowa Department of Public Health. Dr. Howard Burns is the associate medical director and also boarded in emergency medicine.

The IPCC also works closely with the two medical toxicologists, Dr. Josh Radke and Dr. Dan McCabe, located at the University of Iowa Hospitals and Clinics. Both are also board-certified in emergency medicine.

Call 1-800-222-1222 to request a consult with a toxicologist.

## Simplified IV NAC Protocols

In the United States there are only two FDA-approved protocols for administering N-acetylcysteine (NAC) to a patient with an acetaminophen overdose: (1) the 21-hour IV course and (2) the 72-hour oral course.

The current FDA-approved IV NAC protocol is referred to as the 3-bag protocol (three different volume IV bags are used) or the Prescott protocol (the name of author who first published it in 1979). This protocol gives three different NAC doses over three different time frames, as is detailed in this chart:

	NAC Dose	Infused over:	Dose-Rate
First bag	150 mg/kg	1 hour	150 mg/kg/hr
Second bag	50 mg/kg	4 hours	12.5 mg/kg/hr
Third bag	100 mg/kg	20 hours	6.25 mg/kg/hr

The 3-bag Prescott protocol is associated with significant incidence of medication errors, medication delays and adverse reactions. In some patients with very large acetaminophen ingestions or who present with notable liver injury, the dose of NAC delivered by this FDA-approved IV protocol can be insufficient and consultation with the IPCC is recommended.

Numerous simplified IV NAC protocols have been published in the literature. The simplified IV NAC protocols are described as having fewer medication errors, fewer medication delays and fewer adverse reactions in comparison to the 3-bag protocol. All simplified IV NAC protocols are an off-label use of NAC.

### Characteristics of Simplified IV NAC Protocols

- All use either one or two IV bags.
- The amount of NAC delivered ranges from 300 mg/kg in 12 hours to 300 mg/kg in 20 hours to 450 mg/kg in 21 hours.
- For pediatric administration, the 2-bag protocols need to be modified to use a smaller volume of diluent to prevent hyponatremia or fluid overload.
- After the loading dose, some protocols recommend a certain dose-rate (e.g. 10 mg/kg/hr) be given continuously until specific end points are met.

The IPCC is currently re-evaluating the simplified protocols. If an institution chooses to adopt a simplified IV NAC protocol, it is important that there is uniform adoption by all teams (nursing, pharmacy, physician/ NP/ PA, etc) to prevent a further increase confusion and additional medication errors and adverse reactions.

Jenny Smith, RN, CSPI



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