

Acetylcysteine for Acute Acetaminophen Toxicity (over 16 years of age and/or over 40 kg)

For patients less than 16 years of age, contact Drug Poison Information Centre (1-800-567-8911) for management.

Weight (kg)

Bulleted orders are initiated by default, unless crossed out and initialed by the physician/prescriber. Boxed orders () require physician/prescriber check mark () to be initiated.

- ALLERGIES:** see Allergy and Adverse Reaction Record
- DIAGNOSIS:** Suspected / documented acetaminophen overdose **Estimated time of ingestion** date: _____ time: _____
Estimated amount ingested (g): _____

Contact Drug & Poison Information Centre 1-800-567-8911 for additional questions

- CONSULTS:** Intensivist Gastroenterologist Psychiatry Social Worker Pharmacist
 Internal Medicine Other: _____

ACTIVITY: Activity as tolerated

5 LABORATORY

- acetaminophen level; obtain on arrival and 4 hours post-ingestion **STAT**
- CBC, AST, ALT, Alkaline phosphatase, serum phosphate, GGT, LDH, bilirubin, INR, PTT, creatinine, urea, ASA, ethanol, glucose and electrolytes **STAT**
- Qualitative Beta-HCG in women of child-bearing years
- 20 hours after acetylcysteine initiation repeat:** Date: _____ Time: _____
 - acetaminophen level
 - AST, lactate, INR, bilirubin, creatinine, ALT, alkaline phosphatase, serum phosphate, GGT, glucose and electrolytes

6. MONITORING

- BP, HR, RR, Temp Q2H and PRN until stable, then Q6H
- Neurovitals if decreased level of consciousness Q2H until stable
- Continuous cardiac monitoring
- Other: _____

7. INTRAVENOUS THERAPY AND HYDRATION

- IV _____ at _____ mL/hr ****OR**** saline lock

8. MEDICATIONS

Decontamination:

- Activated Charcoal (**if no contraindication**) 50 g PO/NG/OG once, if presents within 2 hours of ingestion (Note: may be useful beyond 2 hours in cases of large ingestions, sustained release products, or co-ingestions of opioids or anticholinergics)

Antidote:

- acetylcysteine (NAC) protocol for acetaminophen overdose (Note: Not for extended release acetaminophen)**
acetaminophen level: _____ umol/L at _____ hrs post-ingestion
 - Plot on Rumack-Matthew nomogram (reverse) and start acetylcysteine if acetaminophen level is above the dotted line (possible toxicity range) on the nomogram.
- Extended release acetaminophen products**, massive ingestions, or co-ingestions involving opioids or anticholinergics:
 - If initial level is **above** treatment line, begin acetylcysteine.
 - If the initial level is **below** the treatment line, repeat acetaminophen level at 8 hours post-ingestion (or 4 hours after the first level).
 - If the second level crosses into the treatment range, begin acetylcysteine.
 - If the second level is below the treatment line, there is no need for acetylcysteine or additional acetaminophen serum levels.

Total dose 300 mg/kg, (dose = _____) given over 21 hrs. Follow acetylcysteine IV monograph for mixing and administration, rounding patient's weight up to the nearest 5 kg increment.

Step 1: Loading dose: **150 mg/kg** (dose = _____) IV run over 60 minutes, start **STAT**. Started at time: _____

Step 2: Change to 2nd rate: **50 mg/kg** (dose = _____) IV run over 4 hours (12.5 mg/kg/hr) Started at time: _____

Step 3: Change to 3rd rate: **100 mg/kg** (dose = _____) IV run over 16 hours (6.25 mg/kg/hr) Started at time: _____

Continue infusion at 3rd infusion rate until results of bloodwork are available and physician reviews.

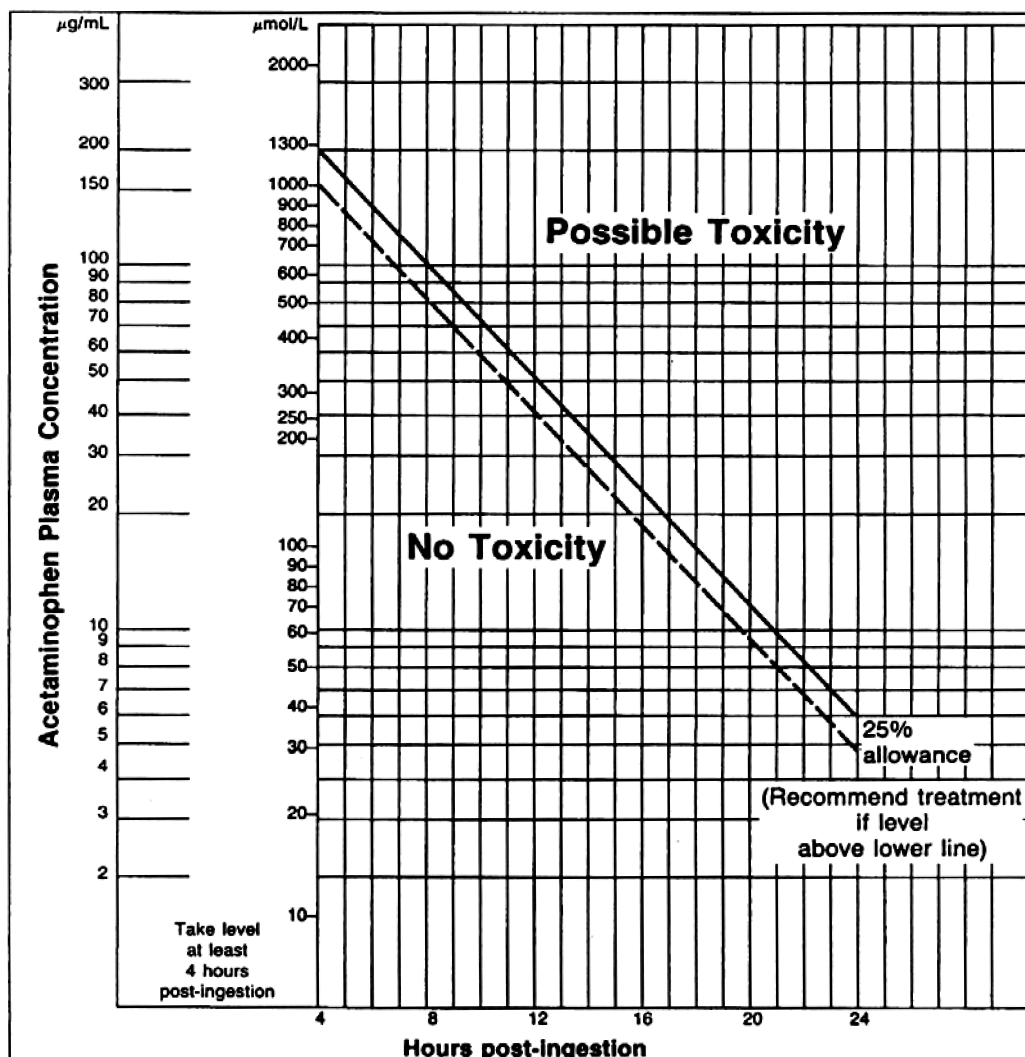
- NOTE: PHYSICIAN ORDER IS REQUIRED TO DISCONTINUE ACETYLCYSTEINE INFUSION.**

See reverse for indications for discontinuation of the acetylcysteine infusion

Date (dd/mm/yyyy)	Time	Prescriber's Signature	Printed Name or College ID#
-------------------	------	------------------------	-----------------------------

Rumack-Matthew Nomogram for Acetaminophen Poisoning¹

Applicable for Suspected Single Ingestion



INDICATIONS FOR ACETYLCYSTEINE

Patients presenting **within 16 hours** of ingestion: if a) toxic level greater than 4 hours since ingestion; b) non toxic level but signs and symptoms of toxicity present any time since ingestion; c) possible toxic dose (adult greater than 7.5 g, child greater than 150 mg/kg) less than 4 hours since ingestion; d) unreliable historian. Note: healthy child 1–6 years old are less susceptible to acetaminophen toxicities if dose less than 200 mg/kg.

Patients presenting **more than 16 hours** following ingestion: if a history of acute acetaminophen overdose within last 7 days AND i) signs/symptoms of serious acetaminophen toxicity *OR* ii) detectable acetaminophen serum concentration. In patient presenting with toxic acetaminophen levels more than 24 hours after ACUTE ingestion, treatment with ACETYLCYSTEINE is recommended until acetaminophen level undetectable, LFT return to normal, and clinically asymptomatic (alteration in mental status, abdominal pain, etc).

If signs and symptoms of progressive hepatic damage (hepatic encephalopathy, elevated AST, INR, bilirubin, lactate) after 21 hours of acetylcysteine or if the patient received the first dose of acetylcysteine more than 16 hours after acute acetaminophen overdose, **continue acetylcysteine at 3rd infusion rate (6.25 mg/kg/hr) until acetaminophen serum level is undetectable AND LFT/INR/Lactate in normal range AND clinically asymptomatic OR infusion is discontinued by a physician.**

Discontinuation of Acetylcysteine

If bloodwork is within normal limits and clinically asymptomatic, acetylcysteine may be discontinued.

Adapted from 1) Rumack BH et al, 2) Arch Int Med 1981; 141:280-5, 3) CMAJ 1984; 131:25-37, 4) DPIC Toxic Update 2005; 1:1-2

For patients less than 16 years old, please contact Drug & Poison Information Centre 1-800-567-8911 for management.