

## **ACETYLCYSTEINE :**

**CLASS:** Antidote; Mucolytic Agent

**INDICATIONS:** Antidote for acute acetaminophen poisoning; repeated supratherapeutic ingestion (RSTI) of acetaminophen; adjunctive mucolytic therapy in patients with abnormal or viscid mucous secretions in acute and chronic bronchopulmonary diseases; pulmonary complications of surgery and cystic fibrosis; diagnostic bronchial studies

### **AVAILABLE DOSAGE FROM THE HOSPITAL:**

ACETYLCYSTEINE 200MG SACHET

ACETYLCYSTEINE 600MG SACHET

ACETYL CYSTINE 200MG INJ

### **TRADE NAMES:**

### **DOSAGE:**

- **Dosing: Adult**

**Acetaminophen poisoning:** Only the 72-hour oral and 21-hour I.V. regimens are FDA-approved. Ideally, in patients with an acute acetaminophen ingestion, treatment should begin within 8 hours of ingestion or as soon as possible after ingestion. In patients who present following RSTI and treatment is deemed appropriate, acetylcysteine should be initiated immediately. Regardless of the treatment regimen selected, serum acetaminophen levels, liver function, and clinical status should be evaluated during and prior to the end of the treatment regimen to determine if treatment discontinuation is appropriate. In patients who continue to experience symptoms of hepatotoxicity or elevated liver function tests at the conclusion of a 72-hour oral or 21-hour I.V. regimen, extending the treatment course may be appropriate; however, when and to which patients additional doses should be administered is unclear. Possible candidates for extended therapy include patients with a suspected massive overdose, concomitant ingestion of other substances, or patients with pre-existing liver disease. In patients with persistently elevated acetaminophen levels, persistently elevated liver function tests, or an elevated INR, additional acetylcysteine should be administered. Typically, an additional "third dose" or "third bag" (I.V.: 100 mg/kg [maximum: 10 g] infused over 16 hours) is administered; however, this dose may be inadequate in some patients (Rumack, 2012). Consultation with a poison control center or clinical toxicologist is highly recommended to determine optimal patient care.

Oral: Note: Consultation with a poison control center or clinical toxicologist is highly recommended when considering the discontinuation of oral acetylcysteine prior to the conclusion of a full 18-dose course of therapy.

72-hour regimen: Consists of 18 doses; total dose delivered: 1330 mg/kg

Loading dose: 140 mg/kg

Maintenance dose: 70 mg/kg every 4 hours; repeat dose if emesis occurs within 1 hour of administration

I.V. (Acetadote):

21-hour regimen: Consists of 3 doses; total dose delivered: 300 mg/kg

Loading dose: 150 mg/kg (maximum: 15 g) infused over 60 minutes

Second dose: 50 mg/kg (maximum: 5 g) infused over 4 hours

Third dose: 100 mg/kg (maximum: 10 g) infused over 16 hours

**Note:** The fluid volume should be reduced in patients weighing <40 kg according to the following table:

Acetadote Dosing / Fluid Volume Guidelines for Patients ≤40 kg

Body Weight (kg)	Loading Dose 150 mg/kg over 1 h		Second Dose 50 mg/kg over 4 h		Third Dose 100 mg/kg over 16 h	
	Acetadote	D <sub>5</sub> W	Acetadote	D <sub>5</sub> W	Acetadote	D <sub>5</sub> W
	(mL)	(mL)	(mL)	(mL)	(mL)	(mL)
40	30	100	10	250	20	500
30	22.5	100	7.5	250	15	500
21	15.75	100	5.25	250	10.5	500
20	15	60	5	140	10	280
15	11.25	45	3.75	105	7.5	210
10	7.5	30	2.5	70	5	140
5	3.75	15	1.25	35	2.5	70

Obesity: In patients who weigh >100 kg, the following dosing regimen is recommended: I.V. (Acetadote):

21-hour regimen: Consists of 3 doses; total dose delivered: 30 g

Loading dose: 15 g infused over 60 minutes

Second dose: 5 g infused over 4 hours

Third dose: 10 g infused over 16 hours

**Adjuvant therapy in respiratory conditions:**

**Note:** Patients should receive an aerosolized bronchodilator 10-15 minutes prior to dose.

Inhalation, nebulization (face mask, mouth piece, tracheostomy): Acetylcysteine 10% and 20% solution (dilute 20% solution with sodium chloride or sterile water for inhalation); 10% solution may be used undiluted: 3-5 mL of 20% solution or 6-10 mL of 10% solution until nebulized given 3-4 times/day; dosing range: 1-10 mL of 20% solution or 2-20 mL of 10% solution every 2-6 hours

Inhalation, nebulization (tent, croupette): Dose must be individualized; may require up to 300 mL solution/treatment

Direct instillation:

Into tracheostomy: 1-2 mL of 10% to 20% solution every 1-4 hours

Through percutaneous intratracheal catheter: 1-2 mL of 20% or 2-4 mL of 10% solution every 1-4 hours via syringe attached to catheter

Diagnostic bronchogram: Nebulization or intratracheal: 1-2 mL of 20% solution or 2-4 mL of 10% solution administered 2-3 times prior to procedure

Prevention of contrast-induced nephropathy (CIN) (unlabeled use): Oral: 600-1200 mg twice daily for 2 days (beginning the day before the procedure); may be given as powder in capsules (some centers use solution, diluted in cola beverage or juice). Note: No longer recommended for use prior to percutaneous coronary intervention; instead adequate hydration is preferred (Levine, 2011)

- **Dosing: Geriatric**  
Refer to adult dosing.
- **Dosing: Renal Impairment**  
Oral, I.V.: No dosage adjustment provided in manufacturer's labeling
- **Dosing: Hepatic Impairment**  
Oral: No dosage adjustment provided in manufacturer's labeling.  
I.V.: No dosage adjustment required

### **COMMON SIDE EFFECT:**

**Inhalation:** Frequency not defined.

Central nervous system: Drowsiness, chills, fever

Gastrointestinal: Vomiting, nausea, stomatitis

Local: Irritation, stickiness on face following nebulization

Respiratory: Bronchospasm, rhinorrhea, hemoptysis

Miscellaneous: Acquired sensitization (rare), clamminess, unpleasant odor during administration

### **Intravenous:**

>10%: Miscellaneous: Anaphylactoid reaction (8% to 18%; shorter infusion periods [eg, <60 minutes] associated with increased incidence)

1% to 10%:

Cardiovascular: Flushing (1% to 8%), tachycardia (1% to 4%), edema (1% to 2%)

Dermatologic: Urticaria (6% to 8%), rash (2% to 4%), pruritus (1% to 4%)

Gastrointestinal: Vomiting (2% to 10%), nausea (1% to 6%)

Respiratory: Pharyngitis ( $\leq 1\%$ ), rhinorrhea ( $\leq 1\%$ ), rhonchi ( $\leq 1\%$ ), throat tightness ( $\leq 1\%$ )

<1% (Limited to important or life-threatening): Anaphylaxis, angioedema, bronchospasm, chest tightness, cough, dizziness, dyspnea, headache, hypotension, respiratory distress, stridor, wheezing

### **Oral (Bebarta, 2010; Mroz, 1997):**

Cardiovascular: Hypotension, tachycardia

Dermatologic: Angioedema, pruritus, urticaria

Gastrointestinal: Nausea, vomiting

Respiratory: Bronchospasm

### **PREGNANCY RISK FACTORS: B**