# N-ACETYLCYSTEINE (NAC)
(For Renal Protection)

## Actions
- The action of N-Acetylcysteine is not well understood, however it is thought to primarily scavenge oxygen free radicals and minimise renal medullary vasoconstriction caused by administering intravenous contrast via its vasodilatory effects, thus decreasing damage to renal tissues.
- Radio-contrast induced nephropathy is a common cause of hospital acquired acute kidney injury AKI.
- Contrast agents cause vasoconstriction induced renal ischaemia and have direct cytotoxic effects on glomerular cells.

## Indications
- As prophylaxis in patients who are at risk of developing contrast induced AKI (CI-AKI); ie patients with acute or chronic renal dysfunction, diabetes, hypertension, CCF, increase age, volume depletion, haemodynamic instability, and those on nephrotoxic agents.
- Kidney Disease Improving Global Outcomes guidelines recommend using NAC with isotonic crystalloid in patients at increased risk of CI-AKI.

The use of N-Acetylcysteine is at the discretion of the treating Intensivist.

## Dosage & Administration
- **Not recommended for Intramuscular injection**

N-Acetylcysteine can be given orally or as an intravenous (IV) infusion.

The recommendation for N-Acetylcysteine is 600 mg orally or IV every 12 hours, started 24 hours in advance of contrast administration, and continued for 24 to 48 hours post contrast administration.

### Enteral & Oral Administration
- **Dose:** 600mg of Acetylcysteine 800mg/4mL Nebulising Solution
- The dose should be prepared immediately before use
- 600mg N-Acetylcysteine is prepared by drawing up 3ml of neat Acetylcysteine 800mg/4mL Nebulising Solution (200mg/ml)
- If nasogastric insitu: 600mg dose is diluted into 100ml sterile water for injection and administered
- If Nasogastric tube not present & oral administration appropriate: 600mg is diluted into 100mL orange juice & consumed (orange juice is used to make it palatable)

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**IMPORTANT:** This is a guideline ONLY, for more detailed information please refer to: MIMS, Micromedex, and The Australian Injectable Drugs Handbook. Australian Medicines handbook. Check compatibility before administering with other medications.
Depending on the fluid status of the patient and presence of co-morbidities, consider intravenous fluid hydration with 1L Normal Saline 0.9% over 12 hours pre and post procedure requiring contrast.

### INTRAVENOUS ADMINISTRATION (IV)

- **Dose 600mg**
- N-Acetylcysteine can be given by IV infusion using Acetylcysteine [DBL] 2g/10mL if use of the oral route is contraindicated
- 600mg/3mL N-Acetylcysteine is diluted in 50-100mL 5% Dextrose and is given as an intravenous infusion over 30 minutes
- **Do not** administer undiluted N-Acetyl-Cysteine
- Administer as an infusion via volumetric pump only; **DO NOT** administer as a bolus

In urgent cases N-Acetylcysteine can be given IV or orally immediately before the procedure. Thereafter, 2 doses may be given 12 hours apart. The IV hydration regimen should be administered as previously discussed.

### MONITORING
- ECG, blood pressure and saturations
- Biochemistry and Full blood count
- Site of Intravenous cannula

### ADVERSE REACTIONS
- Allergic type reactions (anaphylaxis and anaphylactoid reactions) including rash, bronchospasm and angioedema
- Hypotension and shock
- Hypokalemia, thrombocytopenia and platelet dysfunction.
- Nausea, vomiting

### CONTRAINDICATIONS
- Previous allergic reactions

### PRECAUTIONS
- Administer with caution in asthmatic patient with a history of bronchospasm
- PREGNANCY CATEGORY B2

### INCOMPATIBILITY
- Cefepime, Ceftriaxone

### COMPATIBILITY
- Glucose 5%, Saline 0.9%

### TRADE NAMES
- **For oral administration:** Omegapharm 800mg/4mL Nebulising Solution.
- **For IV administration:** Acetylcysteine [DBL] 2g/10mL concentrated vial

### REFERENCES:

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