● **UNLICENSED USE**
- With oral use Not licensed for use in meconium ileus or for distal intestinal obstructive syndrome in children with cystic fibrosis.

IMPORTANT SAFETY INFORMATION

MHRA/CHM ADVICE: INTRAVENOUS ACETYLCYSTEINE FOR PARACETAMOL OVERDOSE: REMINDER OF AUTHORISED DOSE REGIMEN; POSSIBLE NEED FOR CONTINUED TREATMENT (JANUARY 2017)

The authorised dose regimen for acetylcysteine in paracetamol overdose is 3 consecutive intravenous infusions given over a total of 21 hours.

Continued treatment (given at the dose and rate as used in the third infusion) may be necessary depending on the clinical evaluation of the individual patient.

● **CAUTIONS**
- With intravenous use asthma (see Side-effects for management of asthma but do not delay acetylcysteine treatment) · atopy · may slightly increase INR · may slightly increase prothrombin time
- With oral use Asthma · history of peptic ulceration

● **SIDE-EFFECTS**
- With parenteral use Acidosis · anaphylactoid reaction · angioedema · anxiety · arrhythmias · cardiac arrest · chest discomfort · cough · cyanosis · eye pain · eye swelling · generalised seizure · hyperhidrosis · hypertension · hypotension · joint disorders · malaise · nausea · pain facial · respiratory disorders · skin reactions · syncope · thrombocytopenia · vasodilation · vision blurred · vomiting

SIDE-EFFECTS, FURTHER INFORMATION Anaphylactoid reactions (with intravenous use) can be managed by suspending treatment and initiating appropriate management. Treatment may then be restarted at lower rate.

● **DIRECTIONS FOR ADMINISTRATION**
- With oral use For *oral* administration, use oral granules, *or* dilute injection solution (200 mg/mL) to a concentration of 50 mg/mL; orange or blackcurrant juice or cola drink may be used as a diluent to mask the bitter taste.
- With intravenous use Glucose 5% is preferred fluid; Sodium Chloride 0.9% is an alternative if Glucose 5% unsuitable.

● **MEDICINAL FORMS** There can be variation in the licensing of different medicines containing the same drug. Forms available from special-order manufacturers include: effervescent tablet, granules, solution for infusion

Granules

CAUTIONARY AND ADVISORY LABELS 13
- **Fluimucil N** (Imported (Germany))
  Acetylcysteine 100 mg Fluimucil N 100mg granules sachets | 20 sachet PoM
  Acetylcysteine 200 mg Fluimucil N 200mg granules sachets | 20 sachet PoM
- **A-CYS** (Ennogen Healthcare Ltd)
  Acetylcysteine 200 mg A-CYS 200mg granules sachets | 20 sachet £75.00

Solution for infusion

ELECTROLYTES: May contain Sodium
- **Acetylcysteine (Non-proprietary)**
  Acetylcysteine 200 mg per 1 ml Acetylcysteine 2g/10ml solution for infusion ampoules | 10 ampoule PoM £21.26 DT = £21.26
- **Parvolex** (Phoenix Labs Ltd)
  Acetylcysteine 200 mg per 1 ml Parvolex 2g/10ml concentrate for solution for infusion ampoules | 10 ampoule PoM £22.50 DT = £21.26

4 Methaemoglobinaemia

ANTIDOTES AND CHELATORS

Methylthioninium chloride

(Methylene blue)

● **INDICATIONS AND DOSE**

Drug- or chemical-induced methaemoglobinaemia

▸ BY SLOW INTRAVENOUS INJECTION
- Neonate: Seek advice from National Poisons Information Service.
- Child 1–2 months: Seek advice from National Poisons Information Service
- Child 3 months–17 years: Initially 1–2 mg/kg, then 1–2 mg/kg after 30–60 minutes if required, to be given over 5 minutes, seek advice from National Poisons Information Service if further repeat doses are required; maximum 7 mg/kg per course

Aniline- or dapsone-induced methaemoglobinaemia

▸ BY SLOW INTRAVENOUS INJECTION
- Child 3 months–17 years: Initially 1–2 mg/kg, then 1–2 mg/kg after 30–60 minutes if required, to be given over 5 minutes, seek advice from National Poisons Information Service if further repeat doses are required; maximum 4 mg/kg per course

● **CAUTIONS** Children under 3 months (more susceptible to methaemoglobinaemia from high doses of methylthioninium) · chlorate poisoning (reduces efficacy of methylthioninium) · G6PD deficiency (seek advice from National Poisons Information Service) · methaemoglobinaemia due to treatment of cyanide poisoning with sodium nitrite (seek advice from National Poisons Information Service) · pulse oximetry may give false estimation of oxygen saturation

● **INTERACTIONS** → Appendix 1: methylthioninium chloride

● **SIDE-EFFECTS**
- **Common or very common** Abdominal pain · anxiety · chest pain · dizziness · headache · hyperhidrosis · nausea · pain in extremity · paraesthesia · skin reactions · taste altered · urine discolouration · vomiting
- **Frequency not known** Aphasia · arrhythmias · confusion · faeces discoloured · fever · haemolytic anaemia · hyperbilirubinaemia (in infants) · hypertension · hypotension · injection site necrosis · mydriasis · tremor

● **PREGNANCY** No information available, but risk to fetus of untreated methaemoglobinaemia likely to be significantly higher than risk of treatment.

● **BREAST FEEDING** Manufacturer advises avoid breastfeeding for up to 6 days after administration—no information available.

● **RENAL IMPAIRMENT**

Dose adjustments Use with caution in severe impairment; dose reduction may be required.

● **DIRECTIONS FOR ADMINISTRATION** For *intravenous injection*, may be diluted with Glucose 5% to minimise injection-site pain; not compatible with Sodium Chloride 0.9%.

● **MEDICINAL FORMS** There can be variation in the licensing of different medicines containing the same drug. Forms available from special-order manufacturers include: solution for injection

Solution for injection
- **Methylthioninium chloride (Non-proprietary)**
  Methylthioninium chloride 5 mg per 1 ml Methylthioninium chloride Proveblue 50mg/10ml solution for injection ampoules | 5 ampoule PoM £196.89