

## Safety Alert

# Risks with Intravenous Paracetamol

### Issue:

While paracetamol has been used orally for many decades, the introduction of an IV formulation brought new risks, some of which were not experienced with oral and rectal products:

1. **Dose Adjustment:** Failure to adjust the dose of IV paracetamol for patients (adults & children) weighing 50kg and under.
2. **Confusion between mg and mL:** Erroneously giving the same number of mL as the prescribed dose in mg will result in a dose 10 times that prescribed.
3. **Chemical Incompatibility:** There is risk of precipitation if other medications are mixed in the same solution as IV paracetamol.
4. **Risk of dose duplication:** Where a dose of paracetamol has been duplicated in different clinical settings e.g. in theatres and then again on the ward, or where multiple drug administration records are in use.
5. **Pharmacokinetics:** The standard algorithm for treatment of paracetamol overdose with acetylcysteine does not apply when the IV route is involved. The National Poisons Information Centre (Tel. 01-8379964) must be contacted for advice.
6. **Caution:** Dose reduction of IV paracetamol is required in patients with dehydration, chronic malnutrition, chronic alcoholism or hepatocellular insufficiency.

### Evidence of Harm:

There have been a number of reports of accidental overdose of IV paracetamol 10mg/mL nationally and internationally. There has been at least one death from liver failure, in a 35kg female 19 year old who was given 1g paracetamol IV, four times daily for 5 days in the U.K.

Anecdotal evidence from Irish hospitals also suggests that additional doses of paracetamol have been administered to patients within 4 hours of having received a dose in the operating theatre/Emergency Department. Reports worldwide also suggest that there have been cases of accidental overdose, including at least one fatality, resulting from the prescription of IV paracetamol solution being in **mg**, but doses having been administered (particularly to children) in **mL**.

### How to Reduce the Risks:

- **Restrict Use:** IV paracetamol should only be prescribed when the oral or rectal routes are not appropriate. The continued need for IV paracetamol should be reviewed regularly.
- **Dose by body weight (50kg and under):** For children and adults 50kg and under, the dose of paracetamol should be calculated according to body weight and independently checked by a second person.
- **Check last dose:** Before administering, check when paracetamol was last administered and the cumulative paracetamol dose over the previous 24 hours.
- **Patients at risk of toxicity:** Adjust dose in patients with hepatocellular insufficiency, chronic alcoholism, chronic malnutrition, or dehydration (maximum daily dose 3g); for patients with renal impairment the minimum dosage interval is six hours.
- **Use 50mL presentation for smaller patients:** The 100mL presentation should not be used for children or adults 33kg and under. A syringe driver or Buretrol® should be used in children 33kg and under.
- **Mixing:** Other drugs should not be mixed with IV paracetamol in same solution.
- **Education:** Ensure healthcare staff are aware of the concentration of IV paracetamol (10mg/mL).

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