PARACETAMOL POISONING

Background:

Paracetamol is the most common single agent involved in poisonous ingestions in young children. While there is potential for serious liver damage if a large dose is ingested, in practice it is extremely rare for a child to achieve toxic blood levels by ingesting paracetamol syrup. Paracetamol is also commonly involved (often mixed with other drugs) in episodes of intentional self harm by teenagers. In this situation, relatively large amounts of paracetamol may have been ingested and this may not be disclosed. It is much more likely that a toxic level will be achieved under these circumstances.

Initial Management:

Gastric decontamination has a very limited role in paracetamol elixir ingestions. Most of the drug is absorbed within 15 minutes of elixir ingestion and it is unlikely that a child will receive any intervention within this time frame.

If the child presents to a medical clinic or Starship after a paracetamol tablet/capsule ingestion, then activated charcoal (1-2 g/kg stat po or ng) is indicated if the dose ingested is unknown or if > 200mg/kg may have been ingested.

An attempt should be made to determine the maximum dose that the child might have ingested. If the maximum possible dose of paracetamol ingested was < 200mg/kg, then no intervention is necessary.

Children who have ingested ≥ 200mg/kg, or in whom the dose is unknown, must have a paracetamol level measured at 4 hours post ingestion. This includes older children/teenagers who present with unexplained change in behaviour or other signs suggesting drug ingestion (even if there is no history of paracetamol obtained).

Children who have ingested paracetamol elixir can have a level measured at 2 hours (if no other drugs have been co-ingested and if there are no other reasons to suspect delayed gastric absorption). If the level is below the 4 hour treatment threshold (i.e. 1.0 mmol/L) at 2 hours then it is safe to discharge the child with no treatment. If the level is above 1.0 mmol/L at 2 hours then a further level should be measured at 4 hours (most of these children would not need treatment because the level will be lower at 4 hours). The paracetamol level should be measured at 4 hours if capsules or tablets have been ingested.

The 4 hour paracetamol level should be interpreted using the attached nomogram as a guide to treatment requirements. Note that there are no valid values for blood levels drawn prior to 4 hours post ingestion. A paracetamol level of ≥1.0 mmol/l is the threshold for treatment at 4 hours.

Acetylcysteine:

Treatment with N-acetylcysteine is indicated for those children with levels above the threshold shown on the nomogram. In addition, treatment should be commenced in children who present late after significant ingestions while awaiting paracetamol level results if the level will not be available within 8 hours of the time of ingestion. Children who present > 15 hours after a significant ingestion should have treatment started immediately, and their further management discussed with a toxicologist.

Acetylcysteine is highly effective at preventing hepatotoxicity if started within 8 hours of ingestion. Toxicity may still be reduced if it is started up to 24 hours after ingestion. Standard therapy consists of a 20 hour course of IV acetylcysteine in 3 phases.

PARACETAMOL POISONING

Phase 1: 150mg/kg over 15 minutes.
Phase 2: 50mg/kg over 4 hours.
Phase 3: 100mg/kg over 16 hours.

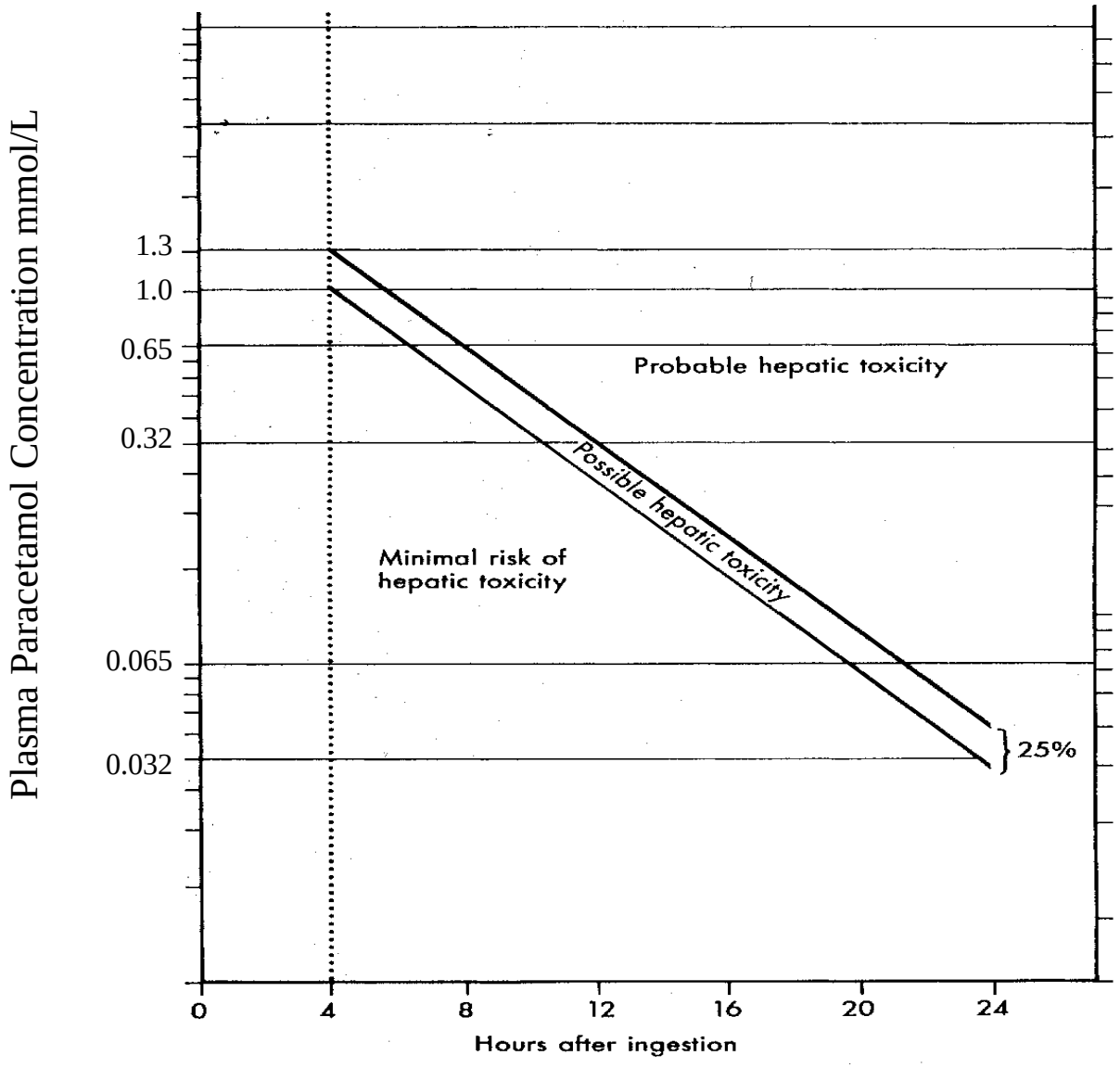
Blood should be drawn for LFTS and PI/APPT at commencement of therapy.
Flushing, urticaria, wheeze and hypotension have been described. These should be treated with hydrocortisone, promethazine and other management as necessary. The acetylcysteine must then be recommenced at 100mg/kg over 16 hours with caution.

Oral therapy is an option but frequently complicated by vomiting and poor compliance due to the foul taste. Oral therapy is often described in reference material from the USA. This is because IV acetylcysteine is not licensed in the USA, IV therapy is the preferred option elsewhere in the world.

Oral dose: 140mg/kg stat

then 70mg/kg/dose, 4 hourly for 72 hours.

Acetylcysteine therapy should not be stopped early even if a subsequent blood paracetamol level shows a result now below the line predicting toxicity.



Adapted from Rumack RH and Mathews M: 55:871, 1975.

N-acetylcysteine treatment is indicated for children with plasma paracetamol concentration above the lower of the two lines on the graph (i.e. 1.0 mmol/L at 4 hours).