

LRI Emergency Department

Paracetamol poisoning in children

Use to manage all ORAL ingestions in patients aged >1 month and <16 years

Always call NPIS for advice if patient aged <1 month

Includes overdoses due to therapeutic excess

Manage and document any co-ingestions separately

Disclaimer:
This is a clinical template; clinicians should always use judgment when managing individual patients

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Patient details

Full name

DoB

Unit number

(use sticker if available)

① Read me first

Main effects of Paracetamol poisoning are delayed-onset liver and kidney damage.

The antidote N-Acetylcysteine (NAC) is very effective, but its protectiveness declines rapidly if started >8h of a single ingestion.

Management of Paracetamol overdose has changed in Sep12 following a review by the Commission on Human Medicines (CHM):

- All ingestions >75mg/kg are now deemed significant (**NB**: This may impact on the widespread paediatric practice of giving up to 90mg/kg/day especially perioperatively)
- Assessment for risk factors of hepatotoxicity is no longer required
- The 1st bag is now run over 1h (previously 15min) to reduce anaphylactoid reactions

Document decisions by ticking appropriate YES or NO box

Record delegated tasks and times in boxes below

DD/MM/YY

Current date

HH:MM

Current time

DD/MM/YY

Date of ingestion

Time of ingestion (24h clock)

☐ Single ingestion; all tablets at
☐ Staggered; last tablets taken at

HH:MM

hours passed since

HH:MM

☐ Timing unclear

Task delegated to

HH:MM

Sample taken at

Task delegated to

HH:MM

Results checked at

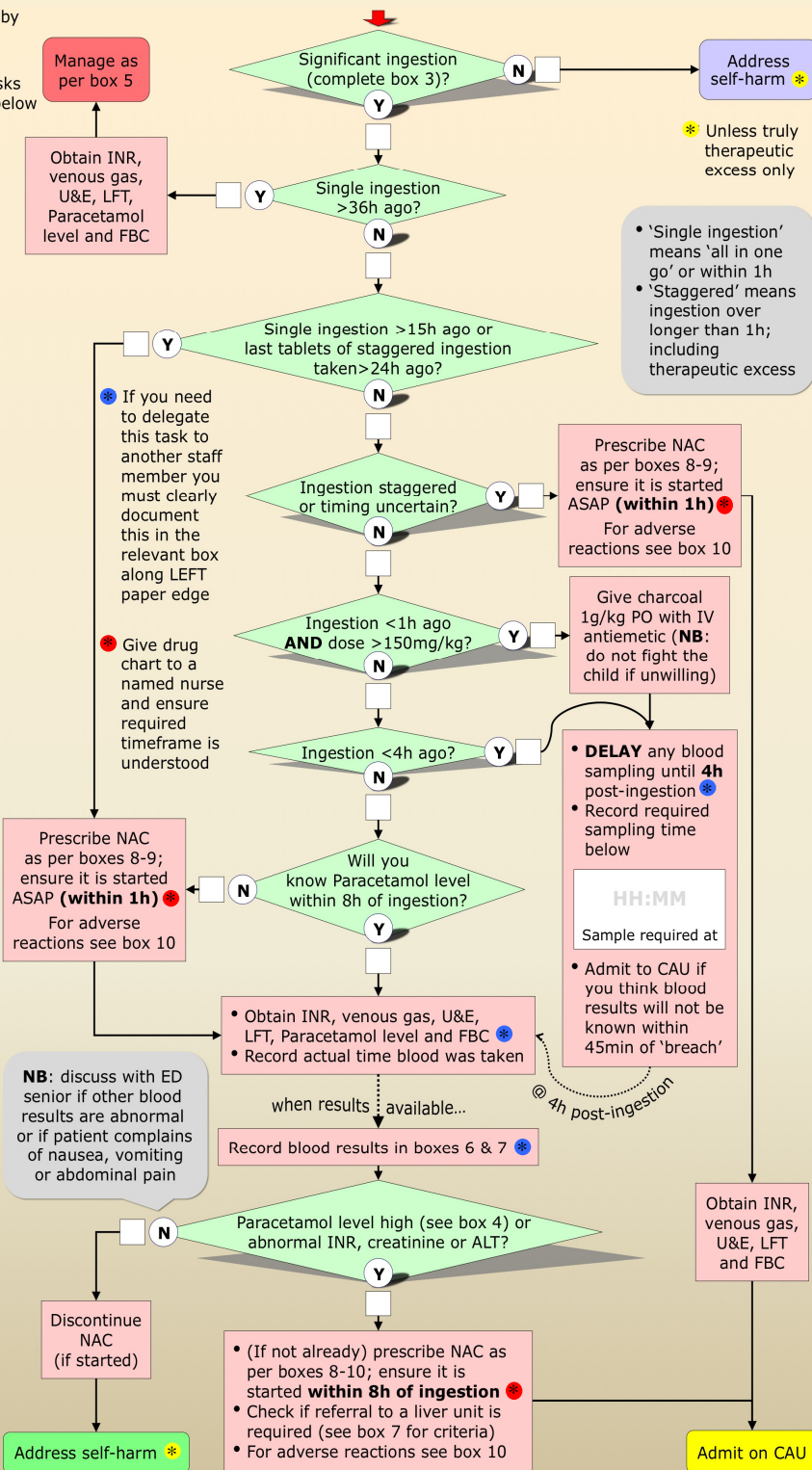
Task delegated to

HH:MM

Start NAC before

HH:MM

NAC started at



② Sources of further advice

- www.toxbase.org has complete online management guidance for Paracetamol poisoning, including IV and other routes
Username **H229** Password **SQUARE**
- National Poisons Information Service** (NPIS) is available anytime if remaining uncertainties after advice from ED senior
☎ **0844 892 0111**
- Liver unit** referrals should be made to the 'liver outlying registrar' at the **Birmingham Children's Hospital** (see box 7 for criteria)
☎ **0121 333 9999**

③ Significant ingestion?

Work out ingested dose in mg/kg

In toddlers taking e.g. swig from Calpol bottle use max. possible dose (e.g. total mg in bottle) in calculation

Total Dose

mg

Patient weight

kg

mg/kg

Disregard any additional kilos in excess of 110kg

If pregnant, enter pre-pregnancy not actual weight

☐ Yes, as one of the below

Ingested dose > 75 mg/kg/24h ☐

Reported dose unreliable ☐

☐ No, as none of the above

④ Paracetamol level high?

☐ YES, as one of the below

4-15h after single ingestion, level on or above treatment line ☐

>15h after single ingestion Paracetamol still detectable ☐

>24h after last tablets of a staggered ingestion taken Paracetamol still detectable ☐

☐ NO, as none of the above

⑤ Single ingestion >36h ago

If jaundice or liver tenderness

→ Start NAC immediately (do not wait for blood results) and admit to CAU.

NB: check if referral to a liver unit is required (see box 7 for criteria).

Otherwise await blood results and then

- If ANY of the below
 - Paracetamol still detectable
 - ALT >149IU/L
 - INR >1.2 **AND ANY** ALT elevation→ Start NAC and admit to CAU
NB: check if referral to a liver unit is required (see box 7 for criteria)
- If INR >1.3 but ALT normal
→ Look for other causes (discuss with ED senior then call NPIS if in doubt)
- If none of the above
→ Admit to CAU and repeat all blood tests (apart from Paracetamol level) after 12h **UNLESS**
 - ingestion >48h ago **AND**
 - ALT <150IU/L **AND**
 - INR <1.4If then ALT <150IU/L **AND** INR <1.4
→ no more bloods needed, otherwise
→ manage as per 1. & 2. above

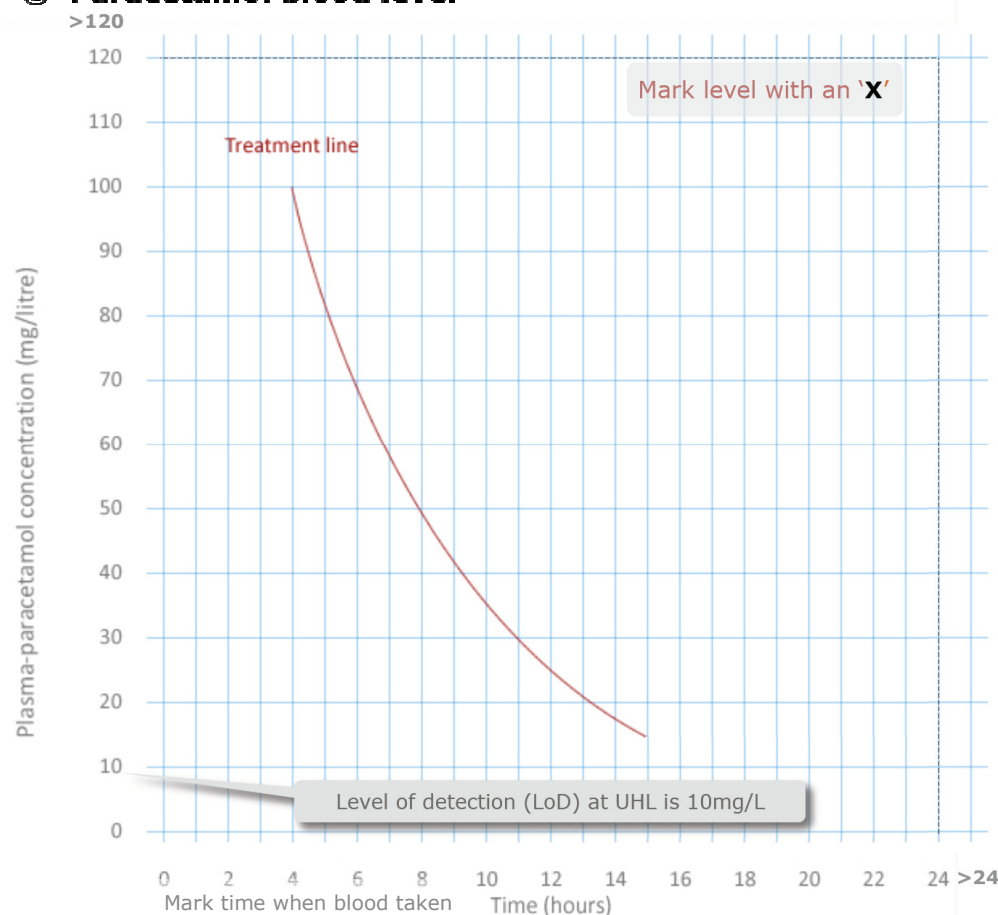
This patient was managed by

Print name

Signature

Role

⑥ Paracetamol blood level



⑦ Blood results

initially post-NAC	
Time	
liver unit referral criteria (NB: also include hepatic encephalopathy >grade II)	
pH	<7.3
pCO ₂	
Bicarb	
Lactate	>3.5*
Glucose	
* >3 after fluid resuscitation/24h post-ingestion	
Paracetamol	
Na	
K	
Urea	
Crea	>300
Bili	
ALT	
Alb	
AP	
WBC	
Hb	
Platelets	
INR	
Prothrombin time	>100

⑧ NAC regimen

- **NB:** For children >39.9kg use NAC regimen on adult proforma instead
- N-Acetylcysteine (NAC) ampoules contain 2G NAC in 10mL (200mg/mL)
- Regimen consists of 4 infusions given consecutively over 21h
- Tick applicable weight range (in pregnancy, here: **ACTUAL** weight)
- Prescribe NAC on fluid page of drug chart as per example in box 9

Patient weight (kg)	For the first infusion, start by preparing the appropriate volume of a 50mg/mL NAC solution shown in column (A). Administer only the volume shown in column (C).					For each of infusions 2-4, discard 190mL from a 500mL bag of Glucose 5%. Add one NAC ampoule to bag (giving 320mL of a 6.25mg/mL solution). Administer only the volume shown in column (E).					
	(A)		150mg/kg		Rate	(D)	(E)	50mg/kg		Rate	
		(B)	(C)	NAC dose	Infusion 1			(D)	(E)	NAC dose	Infusion 2
		mL	mL	mg	mL/h		mL	ml	mg	mL/h	mL/h
3	In a 60mL syringe, draw up 30mL Glucose 5% and 1 ampoule NAC = 40mL solution.		9	450	9	Draw up volume shown in column (C) in 60mL syringe		24	150	6	3
4			12	600	12			32	200	8	4
5			15	750	15			40	250	10	5
6			18	900	18			48	300	12	6
7			21	1050	21			56	350	14	7
8	Administer only the volume shown in column (C); expunge excess.		24	1200	24	Discard excess shown in column (D) from bag. Run via pump.	-256	64	400	16	8
9			27	1350	27		-248	72	450	18	9
10-14	Run via syringe driver.		38	1900	38		-220	100	625	25	12.5
15-19	Discard 40mL from a 100mL bag of Glucose 5%. Add 2 NAC ampoules = 80mL solution. Discard excess shown in column (B). Run via pump.	-27	53	2650	53		-180	140	875	35	17.5
20-24		-12	68	3400	68		-140	180	1125	45	22.5
25-29	Discard 10mL from a 100mL bag of Glucose 5%. Add 3 NAC ampoules = 120mL solution. Discard excess shown in column (B). Run via pump.	-37	83	4150	83	-100	220	1375	55	27.5	
30-34		-22	98	4900	98	-60	260	1625	65	32.5	
35-39		-7	113	5650	113	-20	300	1875	75	37.5	
Run time	1h					Infusions 2: 4h, infusions 3&4: 8h each					

⑩ NAC reactions

NAC can cause anaphylactoid reactions with vomiting, flushing, urticaria, angioedema and bronchospasm, rarely shock and, very rarely, respiratory depression, AKI and DIC.

Reactions occur in around 20% of patients. They are more likely in women, especially brittle asthmatics and those with very low Paracetamol levels, and are usually seen during infusion of the 1st bag (larger dose).

Reactions can usually be controlled by simply stopping the infusion; consider giving Chlorphenamine IV if not. Add Salbutamol neb if bronchospasm.

If unsuccessful use anaphylaxis pathway.

NB: (Re)start 2nd bag once reaction settled.

Previous reaction is **NO** contraindication to NAC. If patient reports repeated previous reactions consider pretreatment with Chlorphenamine and Ranitidine IV, and give 1st bag over 2h. Pretreat with Salbutamol if previous bronchospasm. For age-appropriate doses of Salbutamol, Chlorphenamine and Ranitidine see BNFC.

⑨ NAC example prescription

For 12kg patient as per table in box 8

Date	Infusion fluid		Additions to infusion		IV or SC	Line	Start Time	Time to run or mL/hr	Fluid Batch No.	Prescriber
	Type/strength	Volume	Drug	Dose						
DD/MM/YY	Glucose 5% with NAC (50mg/mL)	38mL	N-Acetylcysteine	1900mg	IV		HH:MM	38mL/h (i.e. runs over 1h)		Dr.'s Name
DD/MM/YY	Glucose 5% with NAC (6.25mg/mL)	100mL	N-Acetylcysteine	625mg	IV		HH:MM	25mL/h (i.e. runs over 4h)		Dr.'s Name
DD/MM/YY	Glucose 5% with NAC (6.25mg/mL)	100mL	N-Acetylcysteine	625mg	IV		HH:MM	12.5mL/h (i.e. runs over 8h)		Dr.'s Name
DD/MM/YY	Glucose 5% with NAC (6.25mg/mL)	100mL	N-Acetylcysteine	625mg	IV		HH:MM	12.5mL/h (i.e. runs over 8h)		Dr.'s Name