LRI Emergency Department

Paracetamol poisoning in children 6 years of age and older

Use for all ORAL ingestions including 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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Review due Oct27 . Trust Ref: C34/2016

Patient details

Full name

DoB

Unit number

(use sticker if available)

Note times & tasks in the 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

HH:MM
Sample needed at

Blood sampling delegated to

HH:MM
Sample taken at

Result checking delegated to

HH:MM
Start NAC before

NAC administration delegated to

HH:MM
NAC started at

Significant ingestion (see box 2)? N → Manage self-harm unless ingestion was truly unintentional

Y ↓

Ingestion >7 days ago in patient without any new symptoms, CKD or chronic liver disease? Y → Manage self-harm unless ingestion was truly unintentional

N ↓

Single ingestion >24h ago? Y → Manage as per box 4

N ↓

- 'Single ingestion' means 'all taken in one go' or within 1h
- 'Staggered' means ingestion over more than 1h; including therapeutic excess

Ingestion staggered or timing unclear? Y → Prescribe NAC as per box 7 and ensure it is started **within 1h of arrival** ✱ Manage any adverse reactions as per box 9

N ↓

Ingestion <1h ago **AND** >150mg/kg? Y → Give charcoal 50g PO with an IV antiemetic

N ↓

Ingestion <4h ago? Y → Admit patient to CSSU on 'Paracetamol overdose' pathway unless co-ingestions make patient unsuitable for CSSU admission

N ↓

>150mg/kg ingested? N → Will it be possible to act on blood results within 8h of ingestion? N → **If necessary,** delay moving on to next box (blood sampling) to ensure that 4h have passed since last tablets were taken; record time bloods are due in box on left paper edge ✱

Y ↓

Will it be possible to act on blood results within 8h of ingestion? Y → Delay blood sampling until 4h after ingestion; record time bloods are due in box on left paper edge ✱

- Obtain INR, venous gas, U&E, LFT, paracetamol level and FBC ✱
- Record actual time blood was taken in box on left paper edge
- Record blood results in boxes 5-6 ✱

✱ = new rise above normal or >10% from previously elevated value

✱ If you need to delegate a task to someone else, record this in the relevant box on left paper edge

Is NAC Rx needed (see box 3)? N → NAC can be stopped → Y Crea raised? ✱ Y → Manage self-harm unless ingestion was truly unintentional. Provide Paracetamol OD Information Sheet. **NB**: discuss with ED senior if other blood results abnormal or if nausea or abdo pain

N ↓

Y ↓

- (If not already,) prescribe NAC as per box 7 ✱ (if possible, start NAC **within 8h of ingestion**)
- Manage any adverse reactions as per box 9

✱ Inform pt's nurse of NAC prescription and ensure urgency is clearly understood

INR, ALT or creatinine raised? N → CSSU care on 'Paracetamol OD' pathway unless unsuitable due to co-ingestions

Y → Admit to Children's Hospital (**NB**: See box 6 for liver unit referral criteria). Further management as per UHL paracetamol poisoning guideline.

This patient was managed by

Print name | Signature | Role

① Sources of further advice

Go to toxbase.org or toxbasebackup.org (find login details on the 'Drugs and Fluids' guidance page of the UHL Connect ED site) for additional management advice about Paracetamol OD, e.g. by IV/other routes

National Poisons Information Service (NPIS) is available anytime if remaining uncertainties after advice from ED senior
0344 892 0111

Liver unit referrals should be directed to the 'liver outlying registrar' at the **Birmingham Children's Hospital** (see criteria in box 6)
0121 333 9999

② Significant ingestion?

Work out ingested dose in mg/kg

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

③ NAC treatment needed?

☐ **YES**, as one or more of the below
- 4-15h after single ingestion, level on or above treatment line ☐
- >15h after single ingestion, paracetamol is still detectable ☐
- >4h after last tablets of a staggered ingestion taken, paracetamol is detectable ☐
- >4h after an ingestion of uncertain timing, paracetamol is detectable ☐
- INR >1.3 * ☐
- ALT >53 IU/L * ☐

☐ **NO**, as none of the above

* *Call NPIS (see box 1) for advice if INR or ALT are known to be chronically raised for other reasons (e.g. due to warfarin or chronic liver disease) **AND** paracetamol cannot be detected or plasma level below the treatment line in box 5; patient **MAY** not need NAC*

④ Single ingestion >24h ago

Obtain INR, venous gas, U&E, LFT, Paracetamol level and FBC

If jaundice or liver tenderness
→ Start NAC NOW (**DO NOT** wait for blood results) & admit to Children's Hospital.
NB: check if referral to a liver unit is required (see box 6 for criteria).

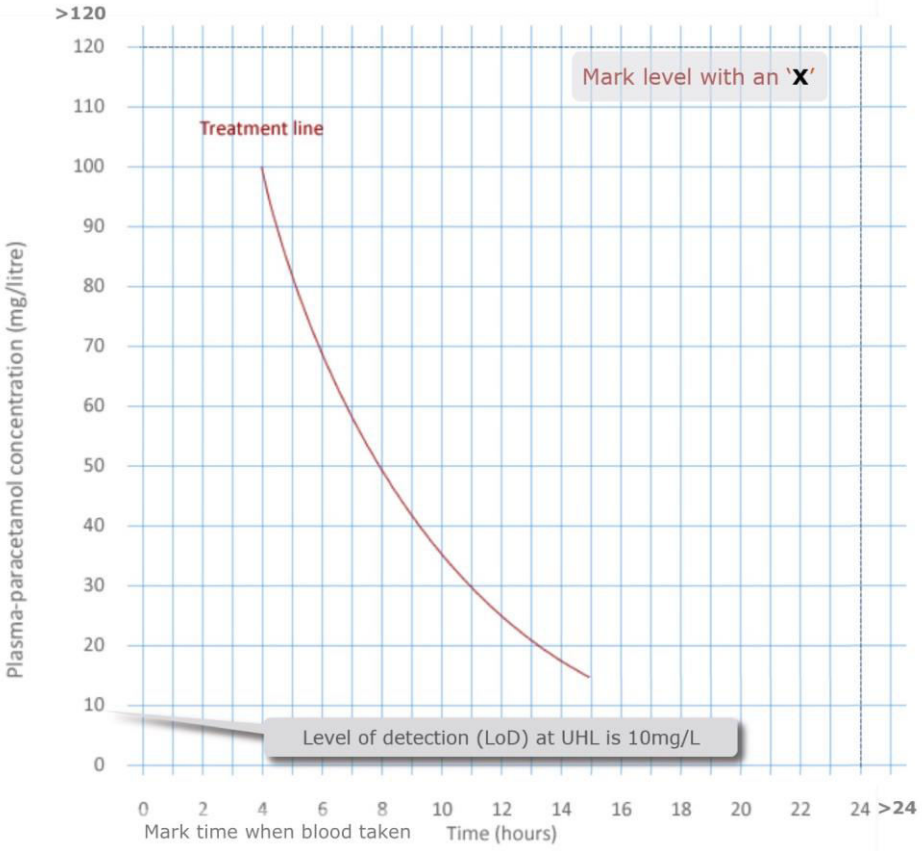
Otherwise await blood results

If NAC treatment needed (see box 3)
→ Start NAC and admit to Children's Hospital.
NB: check if referral to a liver unit is required (see box 6 for criteria)

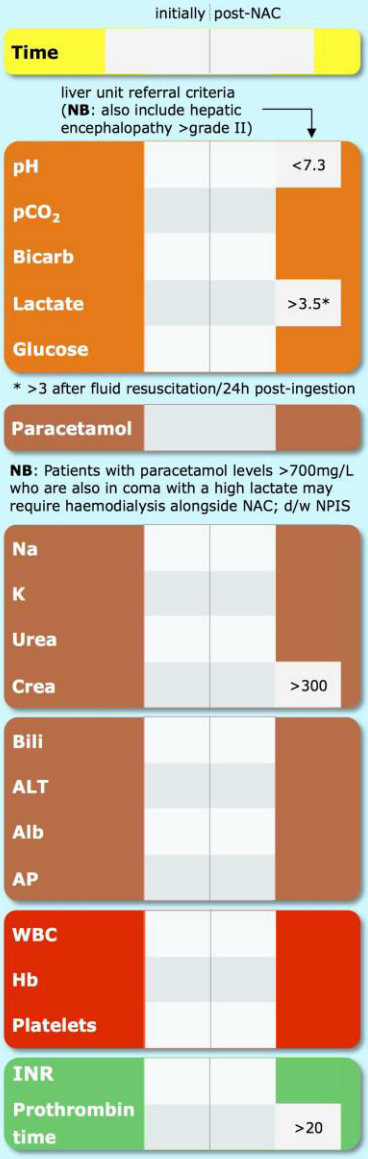
If serum creatinine is abnormal
(i.e. new rise above upper limit of normal or >10% from previous abnormal value)
→ Admit to Children's Hospital.

If none of the above
Patient is not a risk of liver toxicity

⑤ Paracetamol blood level



⑥ Blood results



⑦ NAC regimen

- *N-Acetylcysteine (NAC) ampoules contain 2G NAC in 10mL (200mg/mL)*
- *Regimen consists of 2 infusions given consecutively over 12h (2h + 10h)*
- *To prescribe the complete regimen in NC Meds, go to Emergency Medicine (Child/TYA) > Antidotes (Child/TYA) > Paracetamol overdose (Child/TYA) > NAC (Child/TYA) > N-Acetylcysteine (Child/TYA) or N-Acetylcysteine (Adult) depending on weight and prescribe both first and second infusion*
- *During Nervecentre downtime, use drug chart as per example in box 8.*

***NB**: For children >39.9kg use NAC regimen on 'adult' proforma instead; for those <20kg use regimen on 'children under 6 years of age' proforma.*

Patient weight (kg)	For the first (**2h**) 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 the second (**10h**) infusion, start by preparing the appropriate volume of a **10mg/mL** NAC solution shown in column **D**. Administer only the volume shown in column **F**.				
	A		100mg/kg		Rate	**D**		200mg/kg		Rate
		B	**C**	NAC dose			**E**	**F**	NAC dose	
		mL	mL	mg	mL/h		mL	mL	mg	mL/h
☐ 20-24	Remove 40mL from a 100mL bag of glucose 5%. Add 2 NAC ampoules = 80mL solution. Discard excess shown in column **B**. Run via pump.	- 36	44	2200	22	Remove 430mL from a 1000mL bag of glucose 5%. Add **3** NAC ampoules = 600mL solution. Discard excess shown in column **E**. Run via pump.	- 160	440	4400	44
☐ 25-29		- 26	54	2700	27		- 60	540	5400	54
☐ 30-34		- 16	64	3200	32	Remove 240mL from a 1000mL bag of glucose 5%. Add **4** NAC ampoules = 800mL solution. Discard excess shown in column **E**. Run via pump.	- 160	640	6400	64
☐ 35-39		- 6	74	3700	37		- 60	740	7400	74

⑨ NAC reactions

NAC can cause nausea, vomiting, flushing, urticarial rash, angioedema, tachycardia, bronchospasm and, rarely, shock.

Reactions are more likely in female patients, asthmatics, those with a family history of allergies and pts with low paracetamol levels. They are mostly seen when giving the 1st bag (i.e. during rapid infusion of a large dose).

Reactions often settle when the infusion is simply stopped temporarily; consider giving chlorphenamine IV if this is not effective. Add nebulised salbutamol if bronchospasm.

Symptom control medications should all be prescribed together with NAC routinely.

If unsuccessful, treat as anaphylaxis.

NB: Once reaction settled, restart the infusion at the standard rate.

Previous reaction is **NO** contraindication to NAC. If such reactions are reported, consider pre-treatment with IV chlorphenamine. Pre-treat with nebulised salbutamol if previous bronchospasm.

For age-appropriate doses of salbutamol and chlorphenamine, consult the BNFC.

⑧ NAC example prescription

For 27kg patient as per table in box 7

Date	Infusion fluid		Additions to infusion		IV or SC	Line	Start Time	Time to run or ml/hr	Fluid Batch No.	
	Type/strength	Volume	Drug	Dose						Prescriber
DD/MM/YY	Glucose 5% with NAC (50mg/mL)	54mL	N-Acetylcysteine	2700mg	IV		HH:MM	27mL/h (i.e. runs over 2h)		Dr.'s Name
DD/MM/YY	Glucose 5% with NAC (10mg/mL)	540mL	N-Acetylcysteine	5400mg	IV		HH:MM	54mL/h (i.e. runs over 10h)		Dr.'s Name