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

Doncaster and Bassetlaw Teaching Hospitals

NHS Foundation Trust

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NHS Number:
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• 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 Parecetamol overdose has changed in Sep 12 following a review by the Commission on Humanx Medicines (CHM):
- All ingestions >75mg/kg are significant (NB: In patients weighing <54kg, taking even the higher dose of paracetamol 1G QDS will result in therapeutic excess)
- Assessment for risk factors of hepatotoxicity is no longer required.
- All patients requiring N-Acetlycystine (NAC) should be treated with the SNAP 12 protocol unless discussed with a senior.
- Follow the questions and guidance below and complete the relevant sections of the flowchart.
- If an ingestion is self harm and requiring N-Acetlycystine, please contact the access team for review if the patient is alert enough to discuss their ongoing mental health concerns.

2 Sources of further advice

- www.toxbase.org has complete online management guidance for Paracetamol poisoning, including IV and other routes. The username and password are available on your department notice board or induction app. Please do not use other trusts login details.
- National Poisons Information Service (NPIS) is available anytime if remaining uncertanties after advice from ED senior 0844 892 0111
- Liver unit referrals should be made to the 'liver unit medical registrar' at St James Hospital, Leeds or via switch.

Significant ingestion?

Work out ingestion dose in mg/kg	
Total dose $\frac{\dots mg}{\text{Patient weight}} = \dots mg/kg$	
Patient weightkg	
Disregard any additional kilos in excess of 110kg. If pregnant, enter pre-pregnancy not act	ual weight
Yes, as one of the below: Ingested dose >75mg/kg/24h Reported dose unreliable	■ No, as none of the above
Paracetamol level high?	
Yes, as one of the below:	\square No, as none of the above
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	

DBTH Emergency Department - Paracetamol PoisoningProforma to guide ED management of ORAL ingestion in adults. Includes overdoses due to therapeutic excess. Manage and document any co-ingestions separately. Document decisions by ticking appropriate YES or NO box. Significant ingestion Address Manage as per (complete box 3) box 5 self harm * *Unless truly Order a paracetamol/salicylate test set therapeutic through ICE plus a venous gas. The test set can be found under the section "CLS excess only Current date Single ingestion requests/further biochemistry" or via the A&E tab. If ICE not available, obtain INR, >36h ago? 'Single ingestion' means 'all in one go' or within 1h U&E, LFT, FBC, paracetamol/salicylate Ν levels and venous gas bicarbonate. 'Staggered' means ingestion Current time over longer than 1h; including therapeutic excess Single ingestion >15h ago or last tablets of staggered ingestion taken > 24h ago? Υ Date of ingestion * If you need to delegate Time of ingestion this task to another staff (24h clock) member you must clearly document this in the Prescribe NAC as per boxes 8-9; ensure it is started ASAP (within 1h) *
For adverse reactions see ☐ Single ingestion; relevant box along the LEFT paper edge all tablets at Ingestion staggered Staggered; last box 10 or timing uncertain Υ tablet taken at * Give drug prescription chart to a named nurse Ν and ensure required hours passed since timeframe is understood Give charcoal 50g PO Ingestion < 1h ago with IV antiemetic ☐ Timing unclear AND dose >75mg/kg if ingestion >150mg/ kg

Task delegated to **DELAY** any Ingestion < 4h ago blood sampling until **4h** post-ingestion * N Prescribe NAC as per boxes Record required 8-9; ensure it is started ASAP sampling time below (within 1h) *
For adverse reactions see Will you know Paracetamol level within 8h of box 10 N ingestion? Sample taken at Sample taken at Admit to CDU on mental health pathway while sampling awaited · Order a paracetamol/salicylate test set through ICE plus a Task delegated to venous gas. The test set can be found under the section "CLS requests/further biochemistry" or via the A&E tab. If ICE not available, obtain INR, U&E, LFT, FBC, paracetamol/salicylate levels and venous gas bicarbonate · Record actual time blood was taken @ 4h · Admit to CDU on mental health pathway ingestion (if not already) Results checked at NB: discuss with ED senior if other blood results are abnormal or if patient complains of nausea, when results available.. vomiting or abdominal pain Record blood results in boxes 6&7 Task delegated to Obtain INR, Paracetamol level high (see box 4) venous gas, U&E, N or abnormal INR, creatinine or ALT? LFT and FBC Discontinue NAC (if started) Start NAC before • (If not already) prescribe NAC as per boxes 8-10; ensure it is started within 8h of ingestion *
• Check if referral to a liver unit is required Address Admit (see box 7 for criteria) on AMU self harm * · For adverse reactions see box 10 NAC started at

This patient was managed by:	
Print name:	Signature:
Role:	

9 Single ingestion > 36h ago

If jaundice or liver tenderness

→ Start NAC immediately and admit to AMU. **NB.** check if referral to a liver unit is required (see box 7 for criteria).

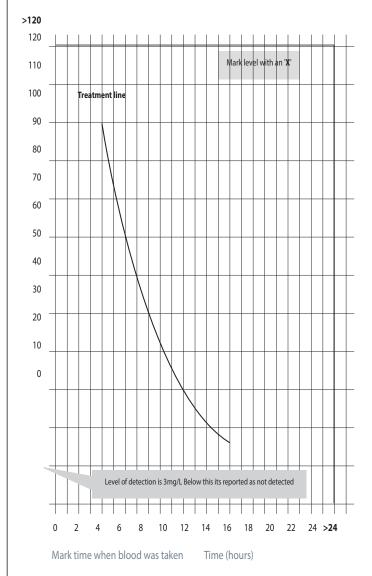
Otherwise await blood reslults and then

- 1. If **ANY** of the below:
- · Paracetamol still detectable
- ALT >149IU/L
- INR > 1.2 **AND ANY** ALT elevation → Start NAC and admit to AMU. **NB.** check if referral to a liver unit is required (see box 7 for criteria).
- 2. If INR > 1.3 but ALT normal → Look for other causes (discuss with ED senior then call NPIS if in doubt).
- 3. If none of the above → Admit to CDU/AMU/retain in ED as appropriate and repeat all blood tests (apart from Paracetamol level) after 12h **UNLESS**
- Ingestion >48h ago AND
- ALT<150IU/L AND
- INR < 1.4

If then ALT <150IU/L AND INR <1.4

- → no more bloods needed, otherwise
- → manage as per 1 & 2 above

6 Blood results



Blood results

Liver unit referral criteria (**NB:** also include hepatic encephalopathy > grade II)

Time

INR		
Prothrombin time		> 100

рН		< 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		

3 Blood result Acetylcysteine SNAP Doses - ADULTS (the modified 12-hour IV regimen)

Acetylcysteine SNAP Doses - ADULTS (the modified 12-hour IV regimen)

Important

The Scottish and Newcastle Acetylcysteine Protocol (SNAP) regimen for IV acetylcysteine is not licensed or endorsed by the MHRA. It should only be used after discussion with a senior clinician.

Preparation and Administration of Infusions

First Infusion

- Add the appropriate volume of acetylcysteine (100 mg/kg body weight, maximum 11 g) to 200 mL 5% glucose or 0.9% sodium chloride. infused over 2 hours.
- Note that the 200 mL bags of 5% glucose or sodium chloride 0.9% required for the first infusion are not currently commercially available. For this infusion, the excess amount of fluid should be removed from a larger bag using a syringe and discarded, before adding the acetylcysteine, e.g. by removing and discarding 50 mL from a 250 mL infusion bag.

Second Infusion

 Add the appropriate volume of acetylcysteine (200 mg/kg body weight, maximum 22 g) to 1000 mL 5% glucose or 0.9% sodium chloride and infuse over the next 10 hours.

Acetylcysteine prescription for adults and children weighing 40 kg or more (each ampoule = 200 mg/mL acetylcysteine)

12-hour Regimen	First	Infusion	Second Infusion			
Infusion fluid	200 mL 5% glucose o	r 0.9% sodium chloride	1000 mL 5% glucose or 0.9% sodium chloride			
Duration of infusion	2 hours		10 hours			
Drug dose	100 mg/kg acetylcyst	eine	200 mg/kg acetylcysteine			
Patient Weight ¹	Ampoule volume ²	Infusion Rate	Ampoule volume ²	Infusion Rate		
kg	mL	mL/h	mL	mL/h		
40-49	23	112	45	105		
50-59	28	114	55	106		
60-69	33	117	65	107		
70-79	38	119	75	108		
80-89	43	122	85	109		
90-99	48	124	95	110		
100-109	53	127	105	111		
≥110	55	128	110	111		

¹ Dose calculations are based on the weight in the middle of each band. If the patient weighs less than 40 kg use the paediatric dose table available on toxbase.

NAC adverse reactions

NAC can cause anaphylactoid reactions with vomiting, flushing, urticaria, angioedema and bronchospasm, rarely shock and, every 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 10mg IV if not. Add Salbutamol 5mg 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 10mg and Ranitidine 50mg IV, and give 1st bag over 4h. Pretreat with Salbutamol if previous bronchospasm.

² Ampoule volume has been rounded up to the nearest whole number.

Time finished											
Start time											
	Checked by										
Signature	Admin by										
Batch number & expiry											
Prescribers signature											
Additive		N-acetyl cysteine 200mg/ml	Dose (ml)								
Infusion /		2 hour 2		10 hours		10 hours		2 ()			
Infusion Volume		200 ml		1000 ml		1000 ml					
Infusion Fluid		Glucose 5%		Glucose 5%		Glucose 5%					
Bag Number		-		2		м					
Date											