IPOC 1662
WPR 47201

Oct 2020
WHITE

NHS
Doncaster and Bassetlaw Teaching Hospitals
NHS Foundation Trust

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PARACETAMOL POISONING

❶ 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.

❷ 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.

❸ Significant ingestion?

Work out ingestion 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 >75mg/kg/24h
- ☐ Reported dose unreliable

☐ **No,** as none of the above

❹ Paracetamol level high?

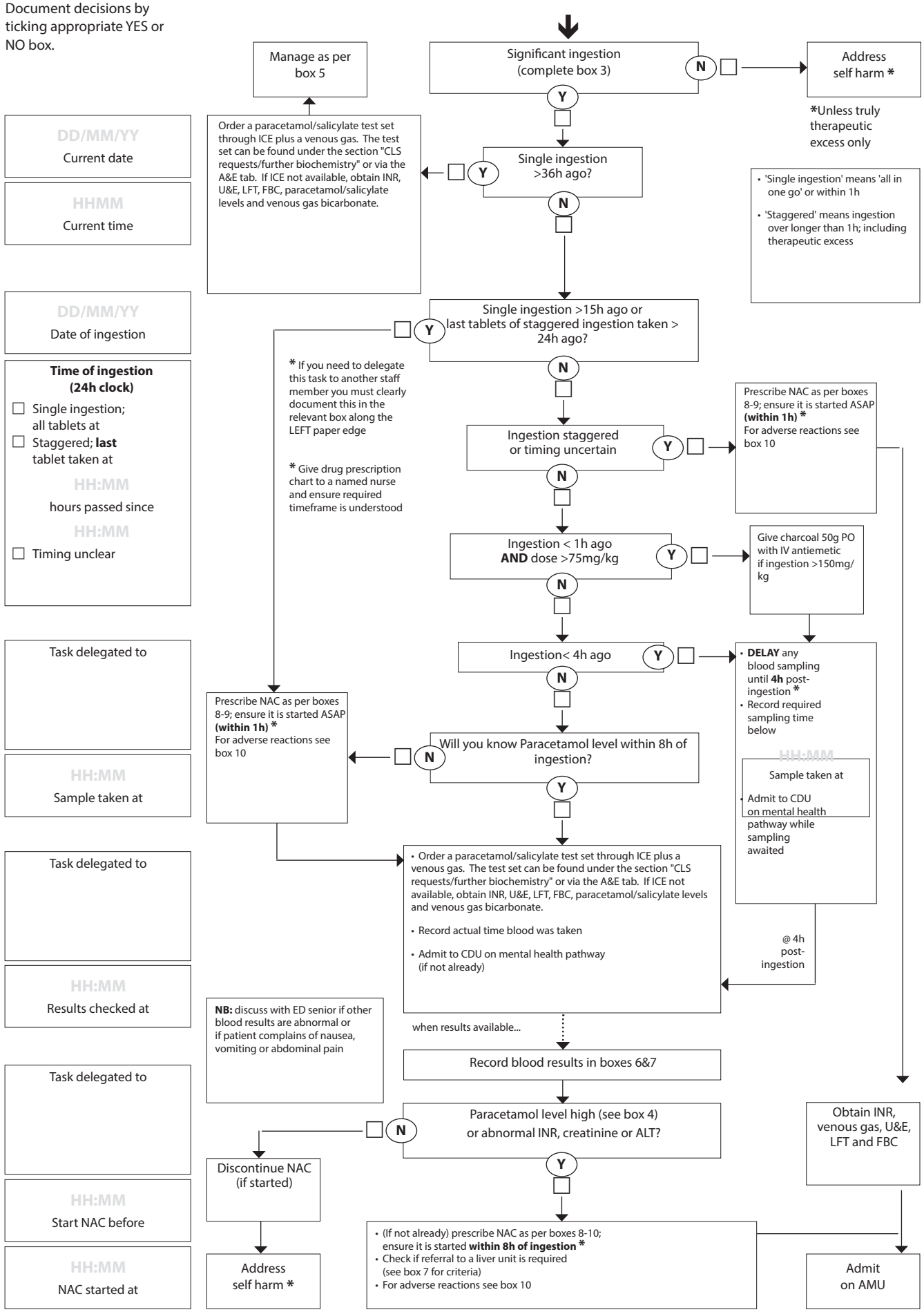
☐ **Yes,** as one of the below:
- ☐ 4-15h after single ingestion, level on or above treatment line
- ☐ >15h after single ingestion Paracetamol still detectable
- ☐ >24h after last tablets of a staggered ingestion taken Paracetamol still detectable

☐ **No,** as none of the above

DBTH Emergency Department - Paracetamol Poisoning

Proforma 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.



This patient was managed by:

Print name:..... Signature: .....

Role:.....

❺ 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).

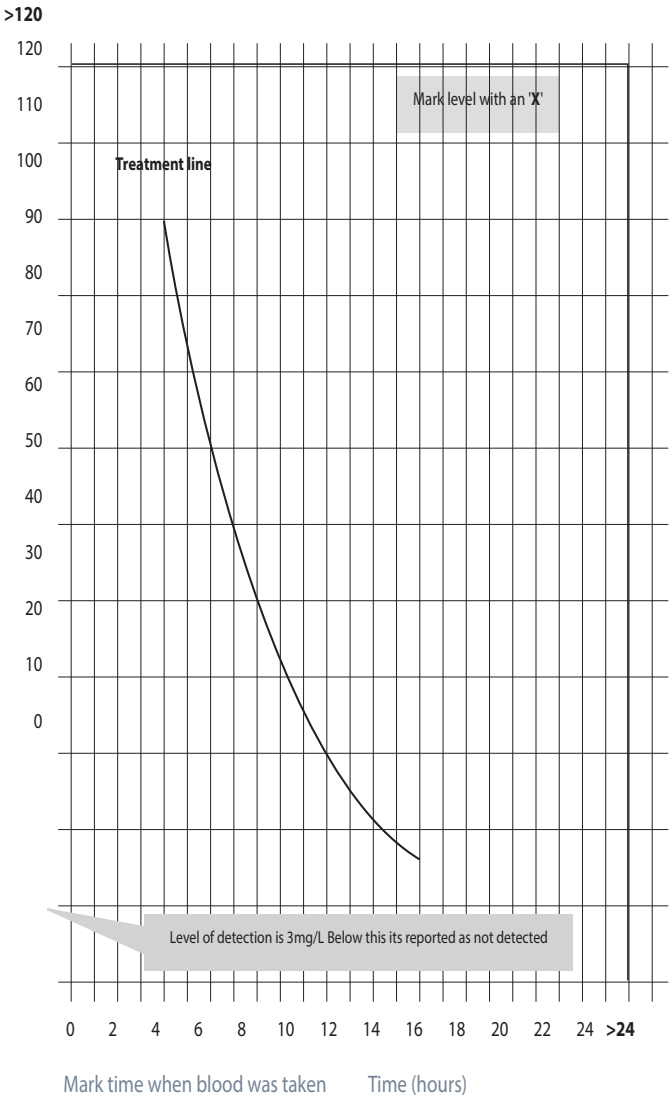
3. If none of the above ➔Admit to CDU/AMU/retain in ED as appropriate and repeat all blood tests (apart from Paracetamol level) after 12h **UNLESS**

- 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

❻ Blood results



❼ Blood results

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

Time			
INR			
Prothrombin time			> 100
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			

❽ 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 or 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 acetylcysteine		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.

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

❾ 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.

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