ADDRESSOGRAPH, or

Name:
DoB:
Hospital number:
CHI:

PARACETAMOL OVERDOSE

Ingested over a period of one hour or less – presenting 0-8 hours after acute ingestion

Patients < 16 years

NHS Borders

This care pathway includes the Scottish and Newcastle Antiemetic Pretreatment (SNAP) based regimen for acetylcysteine and is **ONLY** for use in the Emergency department or ward 15, Borders General Hospital.

This version is not available on TOXBASE. For advice contact the on-call toxicologist at the RIE (Monday –Friday 9am-5pm) or the National Poisons Information Service (NPIS) out of hours.

There are 5 different care pathway documents for paracetamol overdose in patients <16 years, please ensure the correct document is used.

Review January 2022

NHS BORDERS

Patients < 16 years

PARACETAMOL OVERDOSE – 0-8 HOURS

ED presentation date..... Time.....

Ward admission date..... Time.....

Admitting Consultant.....

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Expected length of stay: approx 24 hours

To be initiated once a PARACETAMOL overdose is suspected

Ingested over a period of one hour or less – Presenting less than 8 hours after acute ingestion

*KEY TO INITIALS OF **ALL** STAFFCOMPLETING THIS CARE PATHWAY*				
Print name	Designation	Initials	Signature	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

STAFF: **Should be completed in addition to the Clerking notes, PEWS observation chart, infusion charts, prescription & administration record.**

Patients < 16 years
PARACETAMOL OVERDOSE – 0-8 HOURS
Date:

Clinical area: ED ☐ Ward ☐

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SUMMARY		Initials & time
Ingestion date……	Was paracetamol bought for overdose: Yes ☐ No ☐	
Ingestion time……	Total paracetamol ingested ……..g	
List all the drug(s) ingested (including prescribed)	Patient's weight…….kg	
……	**CALCULATE** The amount of paracetamol ingested ……..mg / kg	
……	Notes	**For obese patients weighing more than 110 kg**, the toxic dose in mg/kg should be calculated using 110 kg, rather than the patient's actual weight. The National Poisons Information Service advises that the **child's actual weight** should be used for calculating both the toxic dose and the acetylcysteine dose, **up to a maximum of 110kg**. **For pregnant patients** the toxic dose in mg/kg should be calculated using the patient's pre-pregnancy weight.
……		
Alcohol ingested? Yes ☐No☐		
Approx units.....		

This document represents the care expected for a majority of your patients. It is expected that some patients will need care other than that noted. This is referred to as a 'Variance' and should be noted as 'Var' in the appropriate space & explained fully on the 'Varience' sheet, page .

Clinicians are free to exercise their own professional judgements as appropriate.
However, any alteration to practice noted in this document should be noted as a 'Variance' in notes.

NHS BORDERS

Patients < 16 years
PARACETAMOL OVERDOSE – 0-8 HOURS
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Please tick boxes as appropriate and initial/time

IMMEDIATE ASSESSMENT	Initial & time
Full clinical assessment of patient **Assessment for risk of liver damage** Paracetamol ingested……mg / kg (see calculation on page 4)	

Less than 1 hour post-ingestion	
Consider administration of activated charcoal if more than 150mg/kg paracetamol has been ingested **within 1 hour.** Can be given via NG route but aspiration risk and airway patency should be considered by a senior doctor before administration. Charcoal prescribed on prescription chart and administered (1g/kg up to 50g) Yes ☐ No ☐ If no give reason……	Initial & time

1 - 4 hours post-ingestion – WAIT UNTIL 4 HOURS FROM INGESTION HAVE ELAPSED

There is normally no indication to start acetylcysteine without a plasma paracetamol concentration **provided the result can be obtained and acted upon within 8 hours of ingestion**
If there is going to be undue **delay (beyond 8 hours) in obtaining the paracetamol concentration, treatment should be commenced if more than 150mg/kg paracetamol has been ingested**

ACETYLCYSTEINE MUST START <u>WITHIN 8 HOURS</u> TO OBTAIN MAXIMUM PROTECTION

4 - 8 hours post-ingestion	
Clinical priorities are**:** Blood samples: U&Es, LFTs, GGT, FBC, INR, paracetamol ☐ Paracetamol concentration plotted on the paracetamol nomogram on page 6 ☐ Date, time & blood results documented on page 6 ☐	Initial & time
DECISION: read all points and tick all that are relevant. • Commence acetylcysteine if the plasma paracetamol concentration is on or over the treatment line (Refer to SNAP based dosage table on page 7/8) • Consider use of acetylcysteine if the patient has an abnormal ALT for age even if the paracetamol concentration is below the treatment line	Initial & time
A rise in ALT can suggest acute liver injury and in cases of severe poisoning the ALT rises rapidly and is commonly abnormal at first presentation to hospital ☐ Haemodialysis may be indicated alongside acetylcysteine if the patient has a paracetamol concentration of 700 mg/L or more and an elevated lactate. For advice contact local Toxicologist or the National Poisons Information Service Tel 0344 892 0111 out of hours	Initial & time
• Acetylcysteine is not indicated if the plasma paracetamol concentration is under the treatment line, the INR and ALT are normal, the patient is asymptomatic **AND** there is no doubt about the time of ingestion • If creatinine is abnormal and there are no indications for acetylcysteine treatment then renal function should be monitored as an inpatient	Initial & time

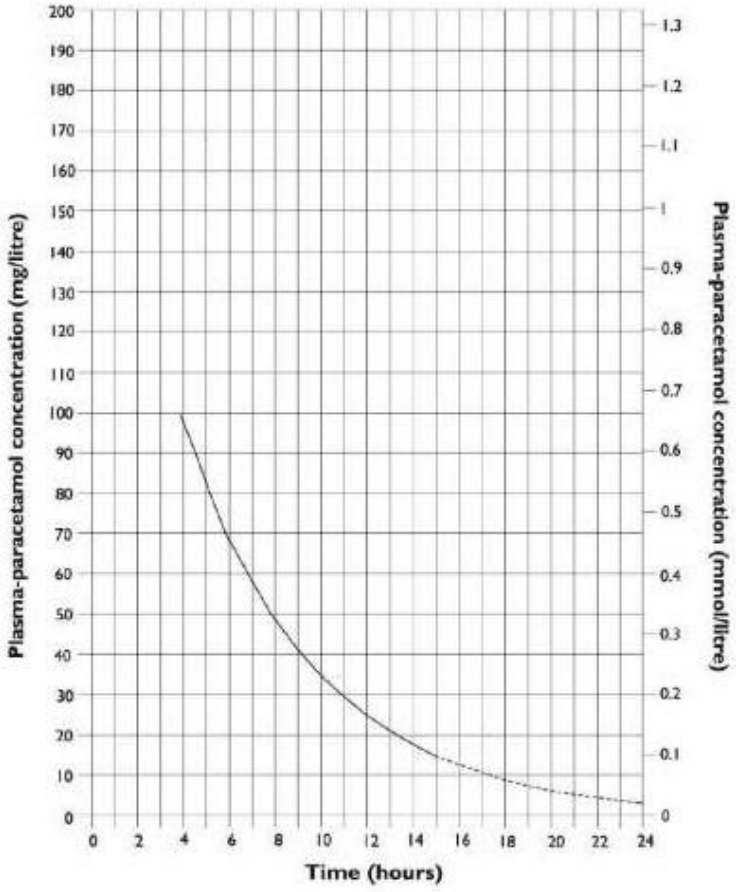
If treatment with acetylcysteine is not indicated and further blood tests are not required got to 'Subsequent Management & Discharge'

NHS BORDERS

Patients < 16 years **PARACETAMOL OVERDOSE – 0-8 HOURS** Date: Clinical area: ED ☐ Ward ☐	ADDRESSOGRAPH, or Name: DoB: Hospital number: CHI:

Plot patient's paracetamol concentration on the nomogram to assess if patient is at risk of liver damage

WARNING: PLEASE CHECK THE UNITS CAREFULLY AND USE THE CORRECT SCALE



Graph taken from TOXBASE ®

Blood Results		
Date/Time of sample		
Urea		
Sodium		
Potassium		
Creatinine		
Lactate		
Bilirubin		
ALT		
Alk Phos		
GGT		
Albumin		
Hb		
MCV		
WCC		
Platelets		
INR		
pH	HCO_3	BE
Plasma paracetamol concentration…….. **at……..……hours post ingestion**		
Other		
Initials date / time		Initials date / time

NHS BORDERS

Patients < 16 years
PARACETAMOL OVERDOSE – 0-8 HOURS
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REACTION to acetylcysteine				**COMPLICATIONS of paracetamol ingestion**			
None	☐	Wheeze	☐	Abnormal liver function	☐	Encephalopathy	☐
Flushing	☐	Hypotension Other	☐	Acute kidney injury	☐	Haemorrhage	☐
Vomiting	☐	Specify……	☐	Hypoglycaemia	☐	Other	☐
Rash	☐			Acidosis	☐	Specify……	
Date and time of reaction		Initial		Date and time of reaction		Initial	

MANAGEMENT OF SIDE EFFECTS:

- N-acetylcysteine may cause anaphylactoid reations in 2% of cases with this protocol. Flushing, pruritus, rash, hypotension, angioedema, brochospasm and vomiting are most common
- Reactions can be managed by stopping the infusion. Consider chlorphenamine for flushing/itch, nebulised salbutamol if there is brochospasm and ondansetron if there are GI effects.
- **Restart the infusion once the reaction has resolved at half the rate to completion of infusion**
- Previous reaction is NOT a contra-indication to N-acetylcysteine and cases should receive treatment if indicated. Reactions are now considerably less common with this protocol compared to standard regimes

Ondansetron oral or IV slow injection (nausea and vomiting) – Age 6 months -16 years	
Body weight	**Dose**
Up to 10kg	2mg three times a day
10 -40kg	4mg three times a day
41kg and above	8mg three times a day
Chlorphenamine oral (rash and itch)	
Age	**Dose**
1-23 months	1mg twice per day
2-5 years	1mg 4-6 hourly maximum 6mg per day
6-11 years	2mg 4-6 hourly maximum 12mg per day
12-16 years	4mg 4-6 hourly maximum 24mg per day
Chlorphenamine IV injection (rash or itch)	
Age	**Dose**
1-5 months	250 micrograms/kg, maximum 4 times daily
6 months-5years	2.5mg, maximum four times daily
6-11 years	5mg, maximum four times daily
12-16 years	10mg, maximum four times daily

PARACETAMOL OVERDOSE – 0-8 HOURS
Date:

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REVIEW OF TREATMENT WITH ACETYLCYSTEINE	
• **10 hour bloods**: normally **2 hours before the end of 2nd infusion** U&Es, LFTs, FBC, INR, VBG/CBG & **PARACETAMOL CONCENTRATION** ☐	Initial/time
• **10 hour bloods**: obtain usually **2 hours before the end of 2nd infusion** ☐ • Blood results documented in table below ☐ • **Results reviewed by Advanced Nurse Practitioner/senior medical staff** ☐	
10 hour blood review • **Criteria for DISCONTINUING acetylcysteine after 2nd infusion are:** INR 1.3 or less **AND** ☐ ALT less than 100 U/L **AND** ☐ ALT not more than double the admission measurement **AND** ☐ PARACETAMOL concentration less than 20mg/L ☐	
• **Decision to continue or discontinue acetylcysteine on page 8** ☐	
• **ALL PATIENT SHOULD REMAIN IN HOSPITAL FOR 20 HOUR BLOOD SAMPLING see page 8**	

Blood results

	Pre Treatment	**10 hour bloods**	**20 hour bloods**	**End of extended treatment bloods**	**End of extended treatment bloods**
Notes	* Copy from page 6	Blood samples 2 hours before the end of infusion 2	Blood samples 8 hours after the end of infusion 2	Blood samples 2 hours before the end of extended infusion	Blood samples 2 hours before the end of extended infusion
		Date/time taken Initial	Date/time taken Initial	Date/time taken Initial	Date/time taken Initial
Urea					
Sodium					
Potassium	*				
pH/HCO3/BE					
Creatinine	*				
eGFR					
Bilirubin					
ALT	*				
Alk. Phos					
Hb					
WCC					
Platelets					
INR	*				
Paracetamol	*				
Reviewed by Decision		Initial Continue / stop	Initial Restart / continue / stop	Initial Continue / stop	Initial Continue / stop

NHS BORDERS

Patients < 16 years
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	Initial/time
If criteria for discontinuing acetylcysteine at end of 2nd infusion are met:	
• **Discontinue** acetylcysteine once 2nd infusion is **complete** ☐	
• Acetylcysteine discontinued at ……..	
• **The patient should remain in hospital for discharge bloods (20 hour bloods)** U&Es, LFTs, FBC, INR, - 8 hours after the acetylcysteine was discontinued	
• 20 hour bloods due at …..…… 20 hour bloods obtained at …… ☐	
If criteria for discontinuing acetylcysteine at end of 2nd infusion are NOT met:	
• **Continue** acetylcysteine treatment at the dose and infusion rate of infusion 2	
• Obtain 20 hour bloods, 2 hours before the end of the extra bag of acetylcysteine ☐	
• U&Es, LFTs, FBC & INR ☐	
• 20 hour bloods due at .....20 hour bloods obtained at..... ☐	
FOR ALL PATIENTS:	
• 20 hour bloods documented in table on page 10 ☐	
• **Results reviewed by Advanced Paediatric practitioner/senior medical staff** ☐	

20 hour bloods review

- **Extended or restarted acetylcysteine is indicated if:**
  - INR is greater than 1.3 **OR**
  - ALT has more than doubled from admission bloods
  - ALT is 100 U/L or more

This applies to both patients who stopped treatment after 2nd infusion AND patients who continued treatment after 2nd infusion

- If criteria for extended acetylcysteine are not met, no further acetylcysteine is required
- If further acetylcysteine is not required, but creatinine is abnormal or is 10% greater than at presentation renal function should be monitored as an inpatient. Re-check 12 hours later.

Decision	Initial/time
• If further treatment or blood sampling is not required go to Stage 4 'Subsequent Management & Discharge' (page 12) ☐	
• If monitoring of renal function is required, obtain blood samples 12 hours later and review by medical team ☐	
• **If extended or restarted acetylcysteine is indicated follow advice below** ☐	

If extended or restarted treatment is required:	date/time
• Continue acetylcysteine at the dose and infusion rate used in the 2nd infusion until parameters below are met. ☐	
• Recheck U&Es, LFTs, FBC and INR **every 10 hours** to assess the course of liver injury (2 hours before the end of each extended bag). ☐	
• Document results on page 7. ☐	

Discontinue extended or restarted treatment when:

- INR 1.3 or less; OR falling towards normal on two consecutive blood tests, and less than 3.
- There is no clinical advantage to treating ALT rises after this normalisation in INR (indicating restoration of hepatic synthetic function)

Extended or restarted treatment with acetylcysteine was required Yes ☐ No ☐ If YES, number of extended bags required ……..…	date/time
Once treatment with acetylcysteine is discontinued go to 'Subsequent Management & Discharge' (page 9)	

NHS BORDERS

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SUBSEQUENT MANAGEMENT & DISCHARGE

	Initial/time
Criteria for discharge Treatment with acetylcysteine tolerated N/A ☐ Yes ☐ No ☐ • Patient eating and drinking. Yes ☐ No ☐ • Seen by CAMHS/Psychiatry team member N/A ☐ Yes ☐ No☐ Comment……..	
• Treatment complete N/A ☐ Yes ☐ No☐ • Discharge advice given, **including paracetamol patient discharge sheet** (available on TOXBASE®) ☐ Comment..... Left department Date…….. Time……..	Initial/time
Follow-up • Has follow-up been arranged? N/A ☐ Yes ☐ No ☐ Comment……	Initial/time

Notes	Medical follow-up arrangements are not normally required if blood results are within acceptable range

VARIANCES: <u>all</u> staff to identify & record variances. Types of Variance - break down into types:
A - Patient/Relative, B - Clinician, C - Hospital System, D - Community/External.

Record of Variance

Date	Time	Description of issue	Reason	Action	Initials	Var. code
EXAMPLE *28.09.15*	*00.15*	*Flushing*	*Reaction to acetylcysteine*	*Infusion stopped for 30 minutes. Chlorphenamine administered*	*BS*	*A*