ADDRESSOGRAPH, or

Name:
DoB:
Hospital number:
CHI:

PARACETAMOL OVERDOSE

Ingested over a period of one hour or less – presenting 8 - 24 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

Patients < 16 years

PARACETAMOL OVERDOSE – 8 - 24HOURS

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

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

Admitting Consultant.....

ADDRESSOGRAPH, or

Name:
DoB:
Hospital number:
CHI:

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 8 - 24 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 – 8 - 24 HOURS** Date: Clinical area: ED ☐ Ward ☐	ADDRESSOGRAPH, or Name: DoB: Hospital number: CHI:

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 – 8 - 24HOURS
Date:

Clinical area: ED ☐ Ward ☐

ADDRESSOGRAPH, or

Name:
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Hospital number:
CHI:

IMMEDIATE ASSESSMENT

	Initial & time
Ingested over a period of one hour or less – presenting 8-24 hours after acute ingestion Give acetylcysreine **IMMEDIATELY** to all patients if it is thought that more than 150mg/kg body weight paracetamol has been ingested. **DO NOT WAIT for the plasma paracetamol concentration** The efficacy of the antidote declines rapidly during this period and it must therefore be started **URGENTLY**	
Assessment for risk of liver damage **Paracetamol ingested…….mg/kg (see calculation on page 3)**☐	
Clinical priorities • Is it thought that more than 150mg/kg has been ingested Yes ☐ No ☐ • **If Yes** **START ACETYLCYSTEINE IMMEDIATELY** DO NOT WAIT FOR BLOOD RESULTS (Refer to SNAP based dosage table on page 6/7) ☐ • **If No, wait** for blood results before starting acetylcysteine ☐	
Blood Sampling • Obtain urgent blood samples for paracetamol concentration, U&Es, LFTs, GGT, FBC,INR ☐	
On receipt of blood results assess the risk of liver damage: • By plotting the paracetamol concentration on the graph on page 5 ☐ • Date, time & blood results documented on page 5 ☐	
If treatment has not already been initiated: • Commence acetylcysteine if paracetamol concentration is plotted on or over the treatment line (Refer to SNAP based dosage table on initiation /prescription sheet) ☐ • Consider the use of acetylcysteine if the patient has an ALT above the limit of normal even if the paracetamol concentration is below the treatment line ☐ • Acetylcysteine is not indicated if the plasma paracetamol concentration is under the treatment line, the INR and ALT are normal, and 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 ☐	
A rise in ALT can suggest acute liver injury 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 700mg/L or more and an elevated lactate. For advice contact local toxicologist or the National Poisons Information Service Tel 03448920111 out of hours.	
If treatment has already been initiated: • Continue acetylcysteine if paracetamol concentration is plotted over the treatment line ☐ • Discontinue acetylcysteine if paracetamol concentration is plotted below the treatment line; the INR and ALT are normal; patient is asymptomatic; **AND** there is no doubt about the time of ingestion ☐ • If creatinine is abnormal and the above criteria are met acetylcysteine is not required but renal function should be monitored as an inpatient and if required, treated conventionally ☐	
Advanced Nurse Practitioner/ senior medical staff <u>must</u> review blood results prior to discontinuing therapy Results reviewed by……Date……Time……	
If treatment with acetylcysteine is not indicated or discontinued and further blood tests not required, go to 'Subsequent Management & Discharge' (pg 9)	

Patients < 16 years
PARACETAMOL OVERDOSE – 8 - 24HOURS
Date:

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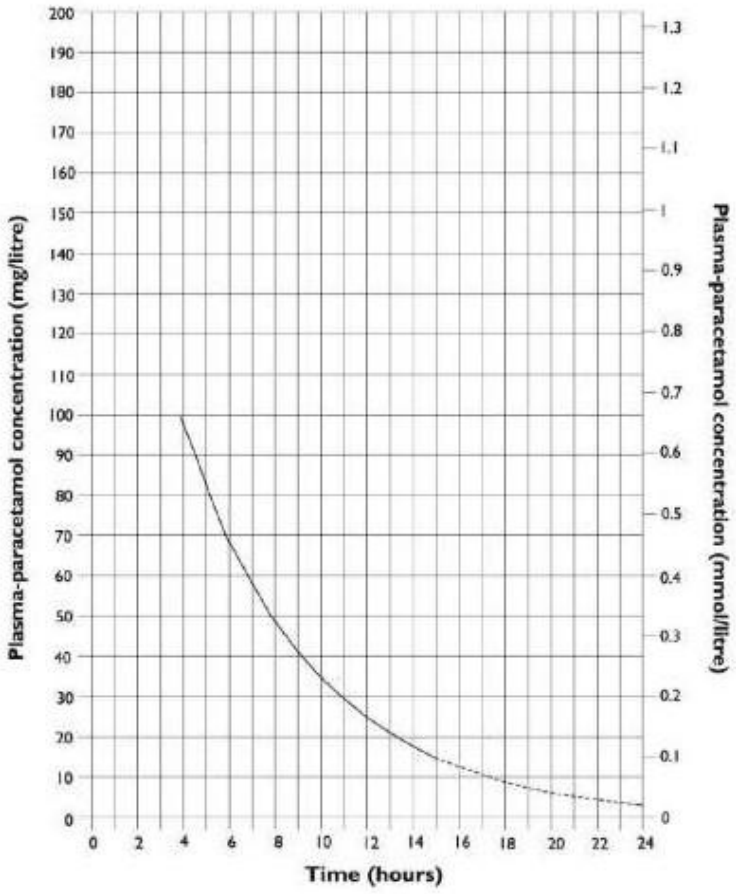
Plot patient's paracetamol concentration on the nomogram to assess if patient is at risk of liver damage

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
AlkPhos
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 –8 - 24 HOURS
Date:

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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 anaphylactoidreations 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 standardregimes

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

NHS BORDERS

Patients < 16 years
PARACETAMOL OVERDOSE –8 - 24 HOURS
Date:

Clinical area: ED ☐ Ward ☐

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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 &**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

Patients < 16 years **PARACETAMOL OVERDOSE –8 - 24 HOURS** Date: Clinical area: ED ☐ Ward ☐	ADDRESSOGRAPH, or Name: DoB: Hospital number: CHI:

REVIEW OF TREATMENT WITH ACETYLCYSTEINE

If criteria for discontinuing acetylcysteine at the end of the second infusion are met

- Discontinue acetylcysteine once infusion 2 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 hours bloods due at……20 hours 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 of second infusion ☐
- Obtain 20 hour bloods, 2 hours before the end of the extra bag of acetylcysteine ☐
- U&Es, LFTs, FBC &INR
- 20 hours bloods due at……20 hours bloods obtained at…….

FOR ALL PATIENTS:

- 20 hour bloods documented in table on page 7 ☐
- **Results reviewed by Advanced Nurse Practitioner/senior medical staff** ☐

Discharge 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, creatinine is abnormal or is 10% greater than at presentation, renal function should be monitored as an inpatient. Recheck in 12 hours later.

Decision — Initial & time

- If further treatment or blood sampling is not required go 'Subsequent Management & Discharge' (page 9) ☐
- 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** ☐

Extended or Restarted treatment is required:

- Continue acetylcysteine at the dose and infusion rate used in the 2nd treatment bag 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……

Once treatment with acetylcysteine is discontinued go to 'Subsequent Management & Discharge' (page 9)

Patients < 16 years **PARACETAMOL OVERDOSE –8 - 24 HOURS** Date: Clinical area: ED ☐ Ward ☐	ADDRESSOGRAPH, or Name: DoB: Hospital number: CHI:

STAGE 4 – 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*