Croydon Health Services NHS
NHS Trust

Management of oral paracetamol overdose in adults and children over 16

Version:	1.0
Ratified by: ***(NB: All Procedural Documents which include details of drugs or their management must be approved by the Medicines Management Committee)***	MMC
Date ratified:	7th December 2020
Approving Committee/Group (Date)	21st December 2020 approved by MMC 24th December 2020 approved by MAG
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Date issued:	December 2020
Review due date:	December 2023
Target audience:	Trust wide
Superseded documents	N/A
Related CQC Domain ***(Please tick)***	☑ Safe ☑ Effective ☐ Caring ☐ Responsive ☑ Well-Led
Relevant Standards(e.g. HSE, Health and Social Care Act)	MHRA TOXBASE UK National Poisons Information Service
Acknowledgements	N/A
Key Words	Paracetamol, overdose, acetylcysteine, SNAP

EXECUTIVE SUMMARY

Paracetamol is the most common drug taken in acute overdose in the UK.

Following a review by the Commission on Human Medicines (CHM), there were significant changes in the assessment of paracetamol overdose in September 2012, particularly in determining which patients require treatment and in relation to the administration of acetylcysteine, the antidote used in the management of paracetamol poisoning.

There is evidence from a randomised controlled trial that a new protocol for administering acetylcysteine (The Scottish and Newcastle Anti-emetic Pre-treatment for Paracetamol Poisoning (SNAP) protocol) has fewer adverse effects and is easier to administer compared to the standard 21 hour infusion protocol.

This clinical guideline incorporates the SNAP protocol together with the most recent advice from the Medicines & Healthcare products Regulatory Agency (MHRA) and the UK National Poisons Information Service (NPIS) on the assessment and treatment of oral paracetamol overdose in adults and children over the age of 16.

CONTENTS

1 INTRODUCTION

Paracetamol (acetaminophen) is a commonly used over the counter analgesic and antipyretic. Paracetamol is the most common drug taken in acute overdose in the UK. The toxic metabolite of paracetamol, NAPQI (*N*-acetyl-*p*-benzo-quinoneimine), is normally detoxified by conjugation with glutathione. However in paracetamol overdose hepatic glutathione stores are used up and NAPQI causes hepatotoxicity. Treatment of paracetamol overdose with the antidote acetylcysteine is aimed at restoring hepatic glutathione concentrations and is most effective if commenced within 8 hours of paracetamol ingestion. There is evidence of benefit for the treatment of later presentations with acetylcysteine, this is through mechanisms other than replacing hepatic glutathione and delays in treatment significantly increase the risk of hepatotoxicity.

Following a review by the Commission on Human Medicines (CHM), there were significant changes in the assessment of paracetamol overdose in September 2012, particularly in determining which patients require treatment and in relation to the administration of acetylcysteine, the antidote used in the management of paracetamol poisoning. More recently, there is evidence from a randomised controlled trial published in the *Lancet* in 2014 that a new protocol for administering acetylcysteine (the SNAP protocol) has fewer adverse effects and is easier to administer.

This clinical guideline incorporates the SNAP protocol together with the most recent advice from the MHRA and the UK National Poisons Information Service (NPIS) on the assessment and treatment of oral paracetamol overdose in adults and children over the age of 16.

2 PURPOSE

The purpose of the procedural document is to outline the management of oral paracetamol overdose in adults and children aged 16 years and older.

3 DEFINITIONS

ALT: Alanine transaminase
INR: International Normalised Ratio
MHRA: Medicines & Healthcare products Regulatory Agency
NPIS: National Poisons Information Service
SNAP: The Scottish and Newcastle Anti-emetic Pre-treatment for Paracetamol Poisoning
ULN : Upper limit of normal

4 ACCOUNTABILITIES AND RESPONSIBILITIES

Medical prescribers are responsible for complying with the guidelines. They are also responsible for auditing compliance to the guidelines, devising and implementing action plans to improve performance.

The directorate pharmacist is responsible for co-ordinating review of the guidelines, promoting awareness amongst prescribers, pharmacists and nursing staff, designing and implementing initiatives to support adherence, auditing adherence and reporting audit results.

Trust pharmacists are responsible for alerting prescribers of the guidelines, encouraging adherence and reporting non-adherence to the directorate pharmacist.

Nursing staff are responsible for encouraging adherence to the guideline.

5 PROCEDURE/COURSE OF ACTION REQUIRED

Initial symptoms of acute paracetamol overdose are often non-specific and therefore it is important to consider measuring plasma paracetamol concentrations in all patients presenting with acute overdose. The table below outlines the clinical pattern of toxicity in paracetamol poisoning:

Table 1. Symptoms and signs of paracetamol poisoning related to time since ingestion

Time	Clinical Pattern of Toxicity
Less than 8 hours	Nausea / vomiting common**.
12-24 hours	Usually asymptomatic, occasionally abdominal (particularly right upper quadrant/renal angle) pain
Greater than 24 hours	Clinical evidence of acute liver failure and/or acute kidney injury

**Patients presenting with massive paracetamol overdose (initial plasma paracetamol concentration > 800 mg/L) may develop severe lactic acidosis / coma. This is rare and should prompt early discussion with a consultant.

The management of paracetamol poisoning is dependent on the type of overdose and the following information needs to be collected as part of the patient history:

I. time of ingestion of first paracetamol
II. time of ingestion of last paracetamol
III. dose of paracetamol ingested

Based on this information, paracetamol poisoning can be divided into these four broad categories, each of which has a different management pathway:

1. Single acute overdose (tablets taken over less than 1 hour)
2. Unknown time of single acute overdose
3. Intentional staggered overdose (tablets taken over more than 1 hour)
4. Therapeutic excess paracetamol (ingestion of more than a licensed dose for that individual **AND** more than or equal to 75mg/kg in any 24 hour period)

The assessment process in determining the need for antidotal treatment with acetylcysteine for each of these broad categories differs. It is important in the initial history taking that the type of paracetamol overdose is clearly determined, so that the correct assessment process is undertaken.

It is also important to determine whether the patient has taken any other medication / chemicals in overdose – management of these is not covered in this guideline.

If the patient weighs more than 110 kg, use a value of 110 kg for all calculations below (NOT their actual body weight).

5.1 Single acute paracetamol overdose (tablets taken over <1 hour)

Less than eight hours since paracetamol ingestion

- Consider activated charcoal (50G or 1G/kg in children to a maximum of 50G) if the patient has ingested more than 150 mg paracetamol / kg body weight and presents within 1 hour of ingestion.
- For adults and children who have ingested more than 75 mg of paracetamol / kg of bodyweight (or any dose in context of self harm) wait until 4 hours after ingestion before taking blood for a plasma paracetamol concentration, electrolytes (sodium, potassium), creatinine, liver function tests, venous blood gas and coagulation (INR). These bloods should be taken on arrival for those patients who present within 4-8 hours of ingestion. Ensure that the time that the paracetamol concentration is taken is documented both in the patient's notes and on the sample request.
- Assess the need for treatment by plotting the timed paracetamol concentration on the nomogram below.
- Treat with acetylcysteine if the plasma paracetamol concentration is above the treatment line. In situations where the paracetamol concentration is on the line, or within 10% of the line it is advisable to treat with acetylcysteine.
- There is no need to start acetylcysteine until the paracetamol concentration is available as long as the result will be available and acted upon within 8 hours of paracetamol ingestion. If there is likely to be a delay beyond this time, then acetylcysteine treatment should be commenced for patients who have ingested more than 75 mg paracetamol / kg body weight. In these patients, acetylcysteine should be discontinued if the paracetamol concentration, when known, is below the treatment line starting at 100mg/L at 4 hours.

Eight to sixteen hours since paracetamol ingestion

- Patients should be started on acetylcysteine on presentation if they have ingested more than 75 mg of paracetamol / kg body weight.
- At presentation, take blood for a plasma paracetamol concentration, electrolytes (sodium, potassium), creatinine, liver function tests, venous blood gas and coagulation (INR). Ensure that the time that the paracetamol concentration is taken is documented both in the patient's notes and on the sample.
- Plot the paracetamol concentration on the nomogram below and treat with / continue acetylcysteine if the plasma paracetamol concentration is above the treatment line. In situations where the paracetamol concentration is on the line, or within 10% of the line it is best to treat with acetylcysteine.
- In patients with paracetamol concentrations not requiring treatment, acetylcysteine can be discontinued.

Sixteen to twenty-four hours since paracetamol ingestion

- These patients should be discussed with the on call consultant.
- Patients should be started on acetylcysteine on presentation if they have ingested more than 75 mg of paracetamol / kg body weight.
- At presentation, take blood for a plasma paracetamol concentration, electrolytes (sodium, potassium), creatinine, liver function tests, venous blood gas and coagulation (INR). Ensure that the time that the paracetamol concentration is taken is documented both in the patient's notes and on the sample.
- Plot paracetamol concentration on the nomogram below and treat with / continue acetylcysteine if the plasma paracetamol concentration is above the treatment line.
- The lower limit of detection for paracetamol concentration is 10 mg/L. Beyond 16 hours, the treatment line on the paracetamol nomogram is below or within 10% of this limit of detection. Therefore, patients presenting between 16 and 24 hours after paracetamol ingestion with an "undetectable" paracetamol concentration may still require treatment with acetylcysteine.

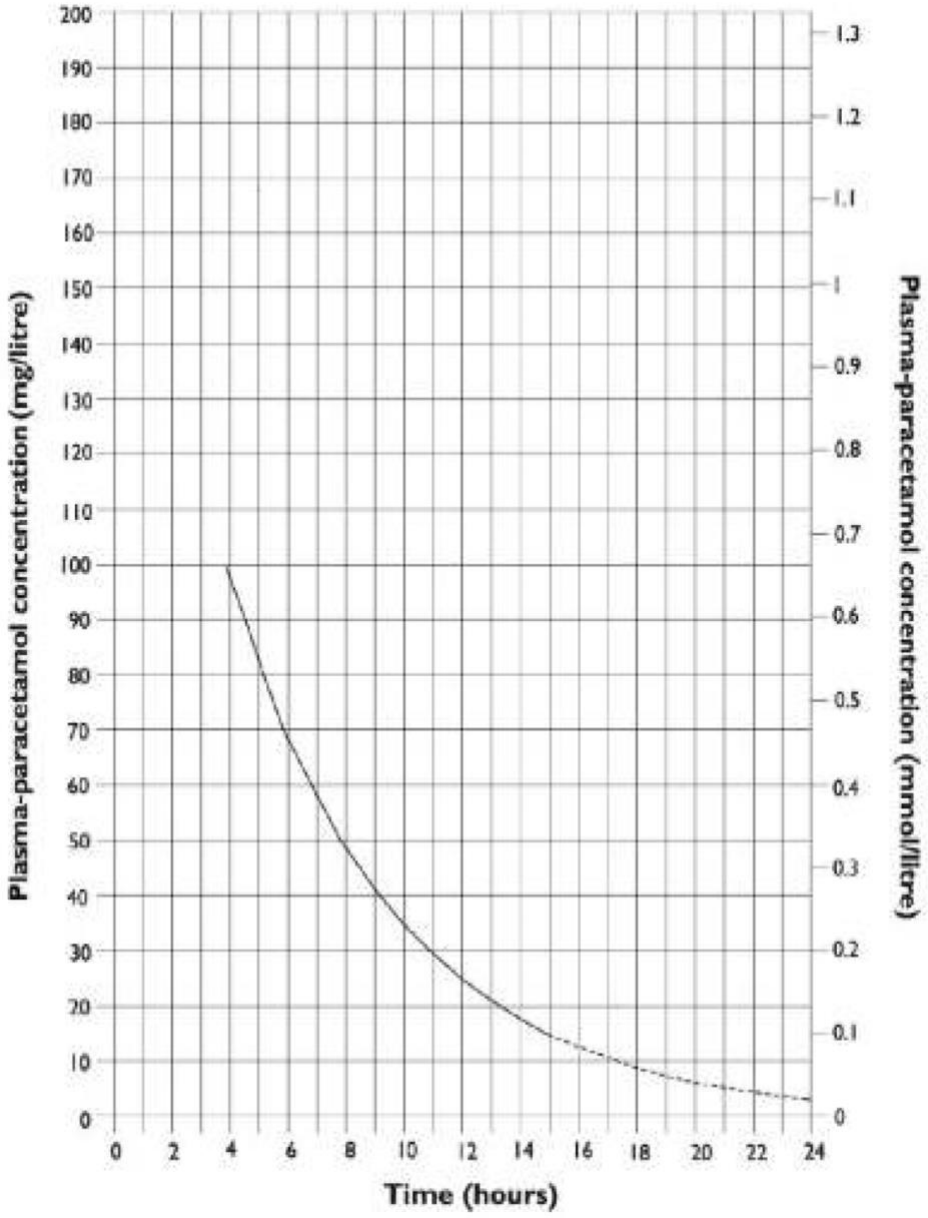
Twenty-four to thirty-six hours since paracetamol ingestion

- Patients should be started on acetylcysteine on presentation if they have clinical features suggestive of acute liver or kidney injury.
- At presentation, take blood for a plasma paracetamol concentration, electrolytes (sodium, potassium), creatinine, liver function tests, venous blood gas and coagulation (INR). Ensure that the time that the paracetamol concentration is taken is documented both in the patient's notes and on the sample.
- If paracetamol is detected this indicates a very large ingestion or inaccuracies in the history. These patients should all be treated with a full course of acetylcysteine.
- Acetylcysteine can be discontinued if the patient is asymptomatic, paracetamol is not detected, and the INR, ALT and plasma creatinine are all normal. If any of these are abnormal, the patient should receive a full course of acetylcysteine.
- If in doubt continue acetylcysteine and discuss the patient with the on call consultant or consult TOXBASE.

More than thirty-six hours since paracetamol ingestion

- Treatment should NOT be commenced on presentation unless there is right upper quadrant ("hepatic") tenderness or jaundice / other clinical evidence of liver failure.
- At presentation, take blood for a plasma paracetamol concentration, electrolytes (sodium, potassium), creatinine, liver function tests, venous blood gas and coagulation (INR). Ensure that the time that the paracetamol concentration is taken is documented both in the patient's notes and on the sample.
- If paracetamol is detected this is likely to represent inaccuracies in the history of the ingestion. These patients should all be treated with a full treatment course of acetylcysteine.
- If the INR is greater than 1.3 and the ALT is 2x ULN or more, then the patient should receive a full treatment course of acetylcysteine.
- If the INR is less than or equal to 1.3 but the ALT is 2x ULN or more, commence acetylcysteine treatment. Repeat the bloods after 8-16 hours and if the INR remains equal to or less than 1.3 and the ALT has not substantially increased, then the acetylcysteine can be discontinued.
- Where the INR is greater than 1.3 but the ALT is normal, then do not start acetylcysteine and consider other causes of an elevated INR.
- If in doubt continue acetylcysteine and discuss the patient with the on call consultant or consult TOXBASE.

Figure 1. New treatment nomogram for single acute paracetamol overdose (From UK National Poisons Information Service)



Patients whose plasma-paracetamol concentrations are on or above the treatment line should be treated with acetylcysteine infusion*

5.2 Unknown time of ingestion single acute paracetamol overdose (tablets taken over <1 hour)

- The plasma paracetamol concentration can only be used to confirm ingestion. The paracetamol treatment nomogram should NOT be used in patients with an unknown time of ingestion.
- If in doubt as to whether a patient requires treatment with acetylcysteine, discuss with the on-call consultant or consult TOXBASE.

Less than 75 mg of paracetamol / kg body weight ingested:

- Patients who have ingested less than 75 mg of paracetamol / kg body weight are unlikely to be at risk of serious paracetamol related toxicity and therefore do not require treatment with acetylcysteine.

75 to 150 mg paracetamol / kg body weight ingested:

- These patients should, at presentation, have blood taken for plasma paracetamol concentration, electrolytes (sodium, potassium), creatinine, liver function tests, venous blood gas and coagulation (INR).
- If there are abnormalities of ALT or INR then acetylcysteine treatment should be started. If there is any clinical evidence of hepatic injury (jaundice, right upper quadrant tenderness) then acetylcysteine should be started.
- For all other patients the decision whether or not to treat is based on clinical judgement. The paracetamol concentration cannot be applied to the nomogram, it can only be used to confirm ingestion.
- If the paracetamol was definitely taken more than 24 hours ago, all blood tests are normal, and the patient is asymptomatic then they are unlikely to require acetylcysteine and can be discharged.
- If the paracetamol was taken within the last 24 hours, and there is clinical suspicion that a potentially harmful dose was taken, then the patient should receive the 12-hour course of acetylcysteine and have bloods taken at the end of the infusion (see **Section 5.7: Post acetylcysteine infusion** for further management).
- If you are unsure whether the patient should be treated with acetylcysteine, then the case should be discussed with and / or reviewed by the on-call consultant.

More than 150 mg of paracetamol / kg body weight ingested:

- These patients should be started on acetylcysteine and have blood taken for plasma paracetamol concentration, electrolytes (sodium, potassium), creatinine, liver function tests, venous blood gas and coagulation (INR) at the time of presentation.
- The paracetamol concentration cannot be applied to the nomogram, it can only be used to confirm ingestion.
- If the paracetamol was definitely taken more than 24 hours ago, all blood tests are normal, and the patient is asymptomatic then they are unlikely to be at risk and the acetylcysteine can be stopped.
- If the paracetamol was taken within the last 24 hours, the patient should be treated with a full treatment course of acetylcysteine, *unless* the paracetamol concentration is <10 mg/L AND ALT is normal AND the creatinine is normal AND the INR is equal to or less than 1.3.

5.3 Intentional staggered paracetamol overdose (tablets taken over >1 hour)

- A plasma paracetamol concentration can only be used to confirm ingestion and the paracetamol treatment nomogram should NOT be used in patients with a staggered overdose or therapeutic excess of paracetamol.
- All patients presenting with an intentional staggered paracetamol overdose should be assessed clinically for signs of hepatic injury. If there is any evidence of jaundice or right upper quadrant tenderness, they should be started on acetylcysteine immediately.

Less than 75 mg of paracetamol / kg body weight ingested:

- If the patient has ingested less than 75 mg of paracetamol / kg body weight they are unlikely to be at risk of paracetamol toxicity and therefore do not require treatment with acetylcysteine.
- If there is any doubt about the quantity ingested or if the patient is symptomatic then they should be treated with acetylcysteine, and managed according to the guidelines for ingestion of *more than75 mg of paracetamol / kg body weight* (below).

More than 75mg of paracetamol / kg body weight ingested:

- These should be started on acetylcysteine at presentation, and have bloods taken for plasma paracetamol concentration, electrolytes (sodium, potassium), creatinine, liver function tests, venous blood gas and coagulation (INR).
- If the last dose of paracetamol was more than 24 hours ago, the INR is equal or less than 1.3, the ALT is less than 2x ULN, the paracetamol concentration is undetectable, the plasma creatinine is normal and they are asymptomatic then acetylcysteine can be stopped, and the patient can be discharged.
- All other patients should receive acetylcysteine for the full 12-hour course, and have bloods taken at the end of the infusion (see **Section 5.8: Post acetylcysteine infusion** for further management).

5.4 Therapeutic excess of paracetamol (ingestion of more than a licensed dose for that individual)

- It is important that in all cases of reported "therapeutic excess" that an assessment is made to determine if this could be an undisclosed intentional overdose that will require a liaison psychiatry review prior to discharge from hospital.

Maximum dose more than 75mg/kg body weight ingested within any 24-hour period:

- These patients should have blood tests at least 4 hours after last ingestion: plasma paracetamol concentration, electrolytes (sodium, potassium), creatinine, liver function tests, venous blood gas and coagulation (INR).
- Acetylcysteine should be commenced if the patient is symptomatic (e.g. nausea, vomiting, abdominal pain or has clinical features of liver damage) or if blood tests show:
- Paracetamol concentration equal to or greater than 10mg/L **AND**
- ALT greater than ULN **AND**
- INR is greater than 1.3

Maximum dose more than licensed 24-hour dose for that patient but less than 75mg/kg/24 hours over preceding 2 or more days

Risk of hepatoxicity is extremely small but blood tests may be considered if
a) There is doubt over the dose ingested
b) Other factors present that may increase risk of hepatotoxicity such as:

- long term treatment with carbamazepine, phenobarbital, phenytoin, primidone, rifampicin, St John's Wort or other liver enzyme inducers
- regular consumption of ethanol in excess of recommended amounts
- likely glutathione depletion e.g. eating disorder, cystic fibrosis, HIV, starvation, cachexia

Acetylcysteine should be commenced if the patient is symptomatic (e.g. Nausea, vomiting, abdominal pain or has clinical features of liver damage) or if blood tests show

- Paracetamol concentration equal to or greater than 10mg/L **AND**
- ALT greater than ULN **AND**
- INR is greater than 1.3

*Maximum dose less than the licensed 24-hour dose for that patient **OR** less than 75mg/kg over the preceding 24-hour period*

- Further assessment is not needed, provided a reliable history has been obtained and patient is well and asymptomatic

5.5 Acetylcysteine Treatment Regimen

- The antidote for paracetamol poisoning is intravenous acetylcysteine.
- The acetylcysteine treatment regimen is the same irrespective of the type of paracetamol overdose (100mg/kg over 2 hours followed by 200mg/kg over 10 hours).
- There are two acetylcysteine prescription and administration chart for adults and children depending on weight >40kg (Table 2) and <40kg (Table 3).
- Use of acetylcysteine orally for the management of paracetamol poisoning is unlicensed. This should NOT be commenced without discussion with the on-call consultant.
- Dosing of acetylcysteine should be based on the patient's actual body weight to a maximum of 110kg; for those patients weighing over 110 kg, the prescription should be based on a weight of 110 kg.
- The treatment consists of TWO infusions over a total of 12 hours; the first infusion runs over 2 hours and the second infusion runs over 10 hours. Doses for each infusion are described in detail below.
- Previous "anaphylactoid reactions" to acetylcysteine are not a contra-indication to its subsequent use. These patients should be pre-treated with a H1 antagonist (chlorphenamine 10mg intravenously in adults and children over 16 years old) prior to commencement of acetylcysteine.
- Acetylcysteine should be administered by intravenous infusion using glucose 5% as the infusion fluid. Sodium Chloride 0.9% solution may be used if glucose 5% is not suitable.
- The full course of acetylcysteine is two consecutive intravenous infusions. Doses should be administered sequentially with no break between the infusions.

Adults and children weighing over 40kg

- Weigh the patient to determine the correct weight band
- Dose calculations have been based on the weight in the middle of each weight band and figures have been rounded up to the nearest whole number.

Table 2. Acetylcysteine dosing for 12 hour regime (weight 40kg or more)

Regimen of infusion	**First infusion: 100mg/kg over 2 hours**		**Second infusion: 200mg/kg over 10 hours**	
Drug	Acetylcysteine 200mg/ml for infusion, 10ml ampoules			
Diluent	**Glucose 5% (preferred) 200ml** or Sodium chloride 0.9% 200ml		**Glucose 5% (preferred) 1000ml** or Sodium chloride 0.9% 1000ml	
Patient weight (kg)	Volume of acetylcysteine to add to infusion (ml)	Infusion rate (ml/hr)	Volume of acetylcysteine to add to infusion (ml)	Infusion rate (ml/hr)
40-49	23	111	45	105
50-59	28	114	55	106
60-69	33	116	65	107
70-79	38	119	75	108
80-89	43	121	85	109
90-99	48	124	95	110
100-109	53	126	105	111
≥110	55	128	110	111

Use the dosage table to determine the appropriate volume of acetylcysteine (ampoule volume) to be added to the infusion fluid for each of the 2 infusion periods:

- **First infusion**: Before adding the drug, remove excess of fluid from bag so that the remaining volume is 200 mL. Add the appropriate volume of acetylcysteine injection to 200 mL of infusion fluid and mix well, inverting bag at least five times after adding the drug. Infuse over 2 hours

- **Second infusion**: Add the appropriate volume of acetylcysteine injection to 1000 mL of infusion fluid and infuse over the next 10 hours.

Adults and children weighing under 40 kg

- Adults and children weighing under 40 kg are treated with the same doses and regimen as adults. However, the quantity of intravenous fluid used has been modified to take into account age and weight, as fluid overload is a potential danger.
- Weigh the patient to determine the correct weight band.
- Read off Table 3 the total infusion volume required for each dose according to the weight of the patient and make up the solutions according to the directions below.

Table 3. Acetylcysteine dosing for 12 hour regime (weight under 40kg)

Regimen of infusion	**First infusion: 100mg/kg over 2 hours**		**Second infusion: 200mg/kg over 10 hours**	
Drug	Acetylcysteine 200mg/ml for infusion, 10ml ampoules			
Preparation of infusion	Dilute each 10ml of acetylcysteine with 30ml of diluent		Dilute each 10ml of acetylcysteine with 190ml of diluent	
Concentration	50mg/ml		10mg/ml	
Diluent	**Glucose 5% (preferred)** or Sodium chloride 0.9%		**Glucose 5% (preferred)** or Sodium chloride 0.9%	
Patient weight (kg)	Total infusion volume (ml)	Infusion rate (ml/hr)	Total infusion volume (ml)	Infusion rate (ml/hr)
25-29	54	27	540	54
30-34	64	32	640	64
35-39	74	37	740	74

- Dose calculations have been based on the weight in the middle of each weight band and figures have been rounded up to the nearest whole number.
- Acetylcysteine doses should be administered sequentially using an appropriate infusion pump.
- First Infusion:
    - Prepare a 50 mg/mL solution by diluting each 10 mL ampoule of acetylcysteine (200mg/mL) with 30 mL glucose 5% or sodium chloride 0.9% to give a total volume of 40 mL.
    - Prepare the appropriate volume for the weight of the patient
    - The dose is infused over 2 hours at the infusion rate stated in Table 3.

- Second Infusion:
    - Prepare a 10 mg/mL solution by diluting each 10mL ampoule of acetylcysteine (200mg/mL) with 190mL glucose 5% or sodium chloride 0.9% to give a total volume of 200mL.
    - Prepare the appropriate volume for the weight of the patient.
    - The dose is infused over 10 hours at the infusion rate stated in Table 3.

5.6 Acetylcysteine Adverse Reactions

- Anaphylactoid reactions to intravenous acetylcysteine are common, and in some series have been reported to occur in over 20% of patients.
- The risk of reactions is greater in those with low or undetectable paracetamol concentrations, those with asthma / atopy and where there are dosing errors in the acetylcysteine.
- Common symptoms include: nausea, vomiting, flushing, urticarial rash, angioedema, and tachycardia. Anaphylactic reactions are extremely uncommon. It is important that the nature and severity of any unwanted effects are recorded in the medical notes and that the reaction is NOT inappropriately labelled as an “allergy”.

- Initial management is to stop the current treatment infusion of acetylcysteine and if not settling administer a H1 antagonist (chlorphenamine 10 mg intravenously in adults and children over 16 years old)
- There is NO indication for the use of corticosteroids in this situation.
- Once the symptoms have settled, then treatment should continue with next component of the treatment infusion protocol.
- True anaphylactic reactions should be treated using the "Resuscitation Guideline Chapter 06 -The Management of Anaphylaxis" clinical guideline outline by the resuscitation council.

5.7 Post acetylcysteine treatment

- On completion of the complete acetylcysteine treatment course, re-check the INR, creatinine, plasma paracetamol concentration, and ALT.
- The purpose of these blood tests is to determine if the patient would benefit from further doses of acetylcysteine. The thresholds for requiring further acetylcysteine are as follows:
    - ALT > 2x ULN or doubled since admission **AND**
    - INR > 1.3 in the absence of another cause **AND**
    - Paracetamol concentration detected as > 20 mg/L (if within 24 hours of ingestion) or >10mg/L (if >24 hours of ingestion) **AND**
    - Patient has no symptoms suggesting liver damage

There are 2 different categories to consider when interpreting the results of the blood tests taken at the completion of the acetylcysteine treatment course.

*A. Patients whose blood results fall **ABOVE** the thresholds.*

- These patients should be started on a further infusion of acetylcysteine (200 mg/kg over 10 hours).
- Blood tests should be repeated every 8 to 12 hours depending on the rate of change in the blood tests. Acetylcysteine can be discontinued once the INR has plateaued or started to fall.
- If the INR is deranged, do NOT give anything to correct this without prior discussion with the consultant – the INR is the most sensitive marker of ongoing liver injury.
- If after 24 hours after ingestion the patient's results still fall above the thresholds, any further doses of acetylcysteine should be given as 100 mg/kg in 1L glucose 5% over 16 hours.

*B. Patients whose results fall **BELOW** the thresholds.*

- These patients do not need further acetylcysteine at this stage.
- These patients can be consider for discharge from the point of view of their paracetamol poisoning as they are at low risk of subsequent liver injury.
- When the patient is deemed medically fit for discharge, it is important that they have an appropriate psychiatric review before leaving the hospital.
- Patients should be advised to return to hospital or seek medical review if they start vomiting or develop abdominal pain.

If there any concerns about the patient in terms of their blood tests and / or their clinical condition, they should be discussed with and/or reviewed by a consultant.

5.8 Useful contact information

- Toxbase (Login details Username H428 Password LPYY65)
- UK NPIS **0344 892 0111**
- There is a 24 hour a day liaison psychiatry team in the hospital available through bleep 486 and extension 4499.

6 TRAINING

Junior medical staff will receive training on the guideline during their induction and routine training sessions. Nursing staff and pharmacists will receive training during induction, clinical governance meetings and other routine training sessions.The guidelines will be accessible to all staff on the Trust intranet

7 MONITORING COMPLIANCE

The following table may be useful for ensuring key requirements are monitored.

Element to be monitored	Lead	Tool	Frequency	Reporting arrangements	Acting on recommendations and Lead(s)	Change in practice and lessons to be shared
(What needs Monitoring)	(Who will lead on this aspect of monitoring)	(What tool will be used to monitor/check that everything is working according to this element of the policy)	(How often will we need to monitor)	(Who or what committee will I report the results to for information and action)	(Who will undertake the action planning for deficiencies and recommendations)	(How will changes be implemented and lessons shared)
Adherence to protocol Correct preparation & administration of infusions	ED lead	CRS	Annually	MMC	ED lead	Report toMMC/ MSG Clinical governance sessions Education & training (inc. induction)

8 REFERENCES

- Clinical guideline on the management of oral paracetamol overdose in adults and children, June 2019, Guy's and St. Thomas' Hospital NHS Trust
- Acetylcysteine injection 200mg/ ml SPC, last updated 23/2/2017 [Accessed via medicines.org.uk on 23/11/2020]
- Acetylcysteine injection monograph, last updated 12/10/2020 [Accessed via medusa.wales.nhs.uk on 23/11/2020]
- SNAP protocol, last updated September 2020 [Accessed via toxbase.org on 23/11/2020]

9 ASSOCIATED DOCUMENTATION

List documents that relate to this document, such as related Trust policies and Procedures.

10 VERSION HISTORY TABLE

Version	Date	Author	Ratified by	Comment/Reason for change
V1.0	Nov 2020	Dr. Peter Watson	MMC	

APPENDIX A – CONSULTATION TEMPLATE

1.	Procedural Document's Name:	**Management of oral paracetamol overdose in adults and children over 16**	
2.	Procedural Document Author:	Dr. Peter Watson	
3.	**Group/Committee Consulted**		**Date**
	MMC		7/12/20
4	**Name and Title of Key Individuals Consulted**		**Date**
	Dimitrios Karagkounis, Lead pharmacist- Acute Medicine		Sep- Nov 2020
	Dr. Darren Ranasinghe, Consultant Paediatrician		Nov 2020
5	Comments received • p.6, 5th bullet point- to amend 100mg/kg to 100mg/L- Actioned • throughout the document- remove the comment re: new treatment line as there is not a previous treatment line- Actioned • p.8, under nomogram- add comment that any level on or above the line should be treated with acetylcysteine- Actioned • p.11, 13- refer to chlorphenamine with one term (either antihistamine or H1 antagonist) and change age from 12 to 16 to reflect guideline- Actioned • Complete section 7- Actioned		