NHS
Shropshire, Telford and Wrekin

Guideline for prescribing weight-adjusted ORAL paracetamol in adults

V1.0 Approved by STW Area Prescribing Committee on 22nd June 2022. Review May 2024

Background

It is important to be able to recognise pain, diagnose underlying conditions that might be causing it, and adequately treat it to maximise function and quality of life. Initial pain assessment and frequent reassessment are crucial to optimal pain management. Consider each person as an individual and take a holistic, collaborative approach.

Paracetamol is a non-opioid analgesic recommended for the first-line management of mild to moderate pain and pyrexia, safe in all patients except for those with risk factors. Paracetamol can cause liver damage in patients who have certain identifiable risks factors.
Fulminant hepatic failure has been a well-documented consequence of paracetamol overdose since its introduction, while short and long-term use have both been associated with elevation of liver transaminases, a surrogate marker for acute liver injury. Therefore, therapeutic dosing may need to be reduced.

Risk Factors for hepatotoxicity and inadvertent paracetamol overdose

- **Body weight less than 50 kg**
  - Whilst low body weight alone is not considered a marker for an increased risk of oral paracetamol toxicity, an adult patient weighing less than 50kg is more likely to have other conditions which may pre-dispose them to liver damage from paracetamol.
  - It should be remembered that 50kg is a relatively arbitrary border, and patients weighing more than this may also have conditions which mean consideration of a dose reduction would also be appropriate.

- **Chronic alcohol consumption**
  - Regular consumption of more than the maximum recommended amount of alcohol (14 units a week).

- **Chronic malnutrition** and / or **Chronic dehydration**
  - Consider reviewing patients acutely not eating and/or drinking for a few days.
  - Consider reviewing patients with risk of renal impairment: in cases of dehydration and acute kidney injury.

- **Malnourished patients, with nutritional deficiency and/or chronic debilitating illness**
  - Likely to deplete glutathione concentrations and exerting a direct hepatotoxic effect are conditions such as eating disorders (anorexia or bulimia), cystic fibrosis, AIDS, cachexia, Hepatitis C.

- **Cardiac, pulmonary, or renal insufficiency**

- **Severe liver disease**
  - Pharmacokinetics of paracetamol is altered in severe liver disease and the hazards of overdose are greater in people with non-cirrhotic alcoholic liver disease.

- **Increasing age and/or frailty**
  - A reduction of the clearance of paracetamol has been associated with increased age and frailty.
  - Old age is not a risk factor in itself, and older people who are in good health and weigh over 50kg are unlikely to need a dose reduction.
  - However, age may be accompanied by frailty and other risk factors. Elderly people might have comorbidities and polypharmacy, which can further increase risk of inadvertent paracetamol toxicity and overdose.

- **Long-term paracetamol use** (especially in those who are malnourished).

- **Hepatic enzyme induction or evidence of on-going liver injury e.g., long term treatment with liver enzyme-inducing drugs** (e.g., carbamazepine, isoniazid, phenobarbital, phenytoin, primidone, rifampicin, rifabutin, efavirenz, nevirapine, St John's Wort).

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Key Prescribing Points
For ORAL paracetamol dose adjustments in adults

Clinical judgement should be used to dose / adjust the dose of oral paracetamol in patients with Risk Factors

1. **Document up to date weight.**
   - Weight from within the past 4 weeks or depending on risk factors, weigh more regularly.

2. **Assess the patient for risk factors.**

3. **If risk factors are present REDUCE the maximum daily dose.**
   - A lower starting dose and/or reduced frequency of dosing may be appropriate (see table on page 3).
   - Advise the patient that they have been prescribed a lower dose and explain the reason why.
   - Patients who require a dosage adjustment must be advised that this may be lower than the maximum paracetamol dose recommended in patient information leaflet.
   - If recommending a dose reduction, monitor pain control and offer alternate management strategies if needed.

4. **Before administering, check when oral paracetamol was last administered.**
   - Follow the correct dosage interval.
   - Do not exceed four doses of paracetamol in 24 hours.

5. **Irrespective of weight where the patient's creatinine clearance (or absolute glomerular filtration rate) is less 30mL/minute, the interval between dosing must be a minimum of 6 hours.**
   Use creatinine clearance to adjust drug doses:
   - In patients with a BMI < 18 kg/m² or > 40 kg/m².
   - In patients at both extremes of muscle mass.

6. **Advise caution when using over the counter or regular paracetamol-containing products (e.g., Co-codamol, Co-dydramol).**
   - The recommended maximum total daily dosage must not be exceeded.
   - If a reduction in paracetamol dose is indicated individual components should be prescribed.

7. **Use of Prokinetics (e.g., metoclopramide or domperidone) will enhance gastric emptying and may increase the rate of paracetamol absorption.**
   - Therefore, a reduction in the amount or frequency of paracetamol dosing may be appropriate.

8. **Anticoagulants**
   - The effect of warfarin and other coumarins may be enhanced by prolonged regular use of paracetamol, with increased risk of bleeding.
   - Monitor international normalized ratio (INR).

9. **Colestyramine**
   - May reduce absorption if given within 1 hour of paracetamol.
   - Separate administration by 1 to 2 hours.

10. **Where applicable, e.g., in a person with swallowing difficulty, consider using paracetamol suspension in place of effervescent preparations due to the high sodium content (6 g salt in a 4 g per 24 hours dose).**
    - Avoid effervescent preparations of paracetamol where possible, particularly in people with hypertension, heart failure, and renal failure.

11. **Monitor liver function tests.**

12. **In a care home setting, ensure that the outcome is recorded and monitored also when using PRN (when required) analgesia.**
    - To assess paracetamol outcome, use a validated pain assessment tool e.g., Abbey pain scale tool (see reference 21) for those who cannot communicate their pain needs.
    - It is crucial that assessment and treatment of pain is undertaken routinely for all patients regardless of the setting.

Dose of ORAL paracetamol in ADULT patients WITHOUT Risk Factors

500 mg – 1 g every 4 - 6 hours as required
Maximum 4 g in 24 hours

Recommended dose adjustments of ORAL paracetamol in ADULT patients WITH Risk Factors

	Adults weighing ≤ 33 kg	Adults weighing ≤ 41 kg	Adults weighing 42 kg - 50 kg	Adults weighing > 50 kg
Oral dose:	Dose reduction is required: 15mg / kg per dose	500 mg	500 mg - 1 g	500 mg - 1 g
Frequency of Administration:	every 4 - 6 hours as required (See below for dosing frequency in renal impairment)			
	Always leave at least 4 hours between doses. Do not exceed four doses of paracetamol in 24 hours.			
Maximum daily Dose:	Maximum: 60 mg / kg in 24 hours	Maximum 2 g in 24 hours	Maximum 3 g in 24 hours	Maximum 4 g in 24 hours*
	Final dose to be determined on an individual basis. - Taking into account their underlying disease state and the pharmacological covariates. Review and assess risk factors regularly.			
Renal function, if creatinine clearance is less than 30 mL/minute; - **Increase the minimum dosing interval to 6 hours.** - **Dose according to weight and risk factors.**				

* Use clinical judgement to adjust the dose to maximum 3 g in 24 hours in people with risk factors for hepatotoxicity, such as for malnourished people and people with Child Pugh C cirrhosis, irrespective of body weight.

As with all analgesics, there should be a regular clinical review of paracetamol effectiveness, assessment of adverse effects and any potential risk factors.

- This is to reduce the high risk of developing acute liver failure.

In all patients, the lowest dose which manages the patient's pain should be used.

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