Patient Safety Together:
learning, sharing and improving

PATIENT SAFETY SUPPLEMENT

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Paracetamol dosing for adult patients under 50kg and those with additional risk factors for hepatotoxicity

This Patient Safety Supplement aims to raise awareness among patients and healthcare staff of the risk of paracetamol-induced hepatotoxicity (harm to the liver) from standard doses of paracetamol in some adult patients. Paracetamol-induced hepatotoxicity may result in acute liver failure, the need for liver transplantation and/or death. Symptoms can include stomach pain, nausea (feeling sick) or vomiting, jaundice (skin or eyes look yellow), confusion, drowsiness or sleepiness and not urinating as much as normal.

Paracetamol is a commonly used and effective medication for pain relief and fever. Most people can take paracetamol safely, but some people need to take extra care. For children, body weight is used to decide on the correct dose of paracetamol.

Dose adjustments are required for adults:

- **weighing under 50 kilograms (kg), or**
- **experiencing dehydration or malnutrition, or**
- **with a history of alcohol use disorder or liver impairment, or**
- **taking interacting medication** (See table page 2)

Jennifer's Story



Jennifer, a 78-year-old lady, was a resident of a nursing home and weighed 34 kg (just over 5 stone). She developed a viral respiratory infection, was vomiting and wasn't eating as usual. To manage her symptoms, paracetamol was prescribed as 1g orally up to four times a day as needed. As Jennifer continued to vomit, she was changed to paracetamol suppositories at the same dose. A dose of 500mg up to four times a day is the maximum recommended dose for Jennifer due to her low weight. Jennifer was given four 1g doses in a 24-hour period before she was transferred to hospital.

Blood tests were performed when Jennifer was admitted to hospital and showed ALT levels (monitoring liver health) had jumped from 26 IU/L the previous month to 3200 IU/L. Marked elevations of ALT (greater than 1000 IU/L) may indicate drug-induced liver injury (such as paracetamol overdose). The INR (international normalised ratio), monitoring how long it takes blood to clot, is usually 1 and had risen to 1.98. Additional tests were performed but no other cause for the raised ALT level was found. The paracetamol was immediately stopped. Jennifer and her son were fully informed of what happening and she was given an infusion of N-acetylcysteine (NAC) for four days as an antidote for paracetamol overdose and she was kept in hospital for seven days. Blood tests were taken daily, and the results, including the liver function tests began to improve once the NAC infusion was started.

Learnings were shared with the nursing home and with hospital staff to build awareness of and help prevent unintentional paracetamol overdose in adults with a weight below 50 kg. One month after discharge, Jennifer's liver blood tests had returned to normal.

What is the data telling us?



From 2021 to 2025 there were 248 incidents reported onto the National Incident Management System (NIMS) under the category of medication* that were associated with paracetamol use in patients less than 50kg. Many of the incidents or near misses were identified during clinical pharmacy review and also prior to administration.

Of these incidents, 47 were categorised as near misses, 199 sustained no injury nor required any intervention, however two people required medical treatment but subsequently made a full recovery. Recurring themes included wrong dose prescribed, wrong dose administered, wrong weight recorded and no weight recorded yet paracetamol was prescribed.

*Similar incidents may have been reported under other categories

Please note that NIMS data is subject to data anomalies described in the HSE NIMS Data Quality Statement, which can be found here

Recommended dosing limits for people at risk of toxicity from standard therapeutic doses of paracetamol

Patient Group / Risk Factors	Maximum Dose
Body weight less than 50 kg Standard doses of 1g paracetamol are too high for low weight patients *Example:* 34 kg patient → max 500mg per dose QDS Note: Oral liquid may be required. Doses may need to be rounded down	15 mg/kg per dose, up to four times daily (QDS)
Body weight more than or equal to 50 kg WITH any of the following risk factors: • Chronic malnutrition (reduces the liver's supply of glutathione, a protein needed to detoxify (safely break down) paracetamol) • Alcohol use disorder (reduces glutathione stores) • Dehydration • Taking isoniazid (treatment for tuberculosis) • Taking enzyme-inducing drugs which include: -Phenytoin, phenobarbitone, carbamazepine (treatment for seizures) -Rifampicin (antibiotic) -St John's Wort (treatment for depression and mood disorders) • Compensated cirrhosis of the liver (liver is scarred but still works, so paracetamol is broken down more slowly)	1g per dose, up to three times daily
Decompensated Cirrhosis (advanced liver disease)	1g per dose, up to twice a day

For further information on Patient Safety Supplements, see www.hse.ie/pst
All feedback on content or format of this supplement is welcome and can be sent to patientsafetytogether@hse.ie

What do I need to do?

If you are prescribing paracetamol:

- Remember that lower than standard doses of paracetamol may be required (see table on page 2)
- Check if your patient needs a lower dose or frequency of paracetamol prescribed
- Check if your patient has taken or has been prescribed any other paracetamol containing products
- Adhere to your local service's guidelines or policy on paracetamol prescribing
- Be vigilant for signs and symptoms of toxicity
- Prescribe oral (tablet / suspension) or rectal (suppository) paracetamol where possible. This is a safer, more time efficient and cost-effective practice, that reduces waste and supports environmental sustainability. Use intravenous (through a drip) paracetamol only when no other options are available

If you are giving someone paracetamol:

- Check if your patient has been prescribed paracetamol and/or paracetamol products correctly especially for patients weighing less than 50kg (see table on page 2)
- Ensure adequate time has elapsed since the last dose of paracetamol was taken
- Be vigilant for signs and symptoms of toxicity

Report any:

- Incident or near miss on the National Incident Management System (NIMS) and
- Suspected side effect to the Health Products Regulatory Authority (HPRA)

If you are taking paracetamol:

- Know your weight, if you weigh less than 50kg you will need to take a lower dose of paracetamol
- Be aware that paracetamol is contained in many prescriptions and over the counter products for example: Benylin Day and Night®, Excedrin®, Lemsip®, Panadol®, Sinutab®, Solpadeine®, Solpadol®, Tylex®
- Inform your healthcare provider if you:
  - are taking any paracetamol or paracetamol containing products
  - have ever had an allergic reaction to paracetamol
  - have liver or kidney problems
  - regularly drink more alcohol than recommended in the weekly low-risk guidelines
  - are taking isoniazid, phenytoin, rifampicin, phenobarbitone, carbamazepine or St John's Wort.

If you are worried or need advice:

- Talk to your GP, pharmacist or healthcare provider
- Visit the HSE advice page on paracetamol at https://www2.hse.ie/medicines/paracetamol/

Where can I get more information?

Refer to and follow any local guidance or policies on paracetamol prescribing and /or administration where available. For additional information, please see below:

- British Hepatology Pharmacist Group Position Statement
- HSE Advice on Paracetamol
- HSE Incident Management and Open Disclosure
- HSE Weekly Low Risk Alcohol Guidelines
- UpToDate for paracetamol drug information
- HPRA Approved Product Information for Paracetamol

Scan here to access this supplement and resources online

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