

Acetaminophen overdoses in children can be life-threatening but are avoidable

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Acetaminophen, a widely available over-the-counter medication, can cause liver toxicity in children if doses are exceeded, and more public education is needed to warn of potential adverse effects, states an article published in *CMAJ (Canadian Medical Association Journal)*.

"[Acetaminophen](#) overdose is a major cause of acute [liver failure](#) and is the most common identifiable cause of acute liver failure in [children](#)," writes Dr. Rod Lim, Department of Pediatrics, Children's Hospital, London Health Sciences Centre, London, Ontario, with coauthors. "Repeated suprathreshold dosing [above the recommended dose], accidental overdose due to error and intentional ingestion can all result in [acute liver failure](#) and even death."

The authors cite a case study of a 22-day-old baby in which the parents misunderstood the correct dose of acetaminophen and administered too much analgesic for a circumcision. After the procedure, when the doctor instructed the parents to give another dose, they discovered the error. In this case, N-acetylcysteine with dextrose was given intravenously, and the child recovered within about 24 hours after ingesting the medication.

N-acetylcysteine is the standard treatment for [liver toxicity](#) related to an overdose of acetaminophen and is usually successful if started within eight hours after ingesting the drug.

[Medication errors](#) involving children are a serious issue, and dosing is complicated by the need to dose by the child's weight and convert this

dose to a volume because many medications for children are in liquid form. A report from the US poison control centres and the American Academy of Pediatrics, which analyzed 238 instances of serious medication errors in children under age six, found that 11% of children who are given pharmaceuticals experience a medication error such as an incorrect medication, incorrect dose or method of administering. Acetaminophen overdose was the most common single agent responsible for a life-threatening event, longer-term illness or death.

A better approach is needed to prevent these avoidable, and life-threatening, errors.

"Although physicians and pharmacists should continue to educate parents and caregivers regarding the medications prescribed, one-to-one communication cannot be the sole approach to reducing errors in medication administration," write the authors. "Error reduction on a large scale requires systems-based interventions and prevention."

Suggestions include better labelling and dosing information, improved dosing devices — many parents use spoons, which are not standard sizes and can lead to overdoses — and placing acetaminophen behind the counter to ensure that a pharmacist can counsel parents on correct dosing.

More information: www.cmaj.ca/lookup/doi/10.1503/cmaj.111338

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