Out of Sight and Locked Up Tight: Pediatric pharmaceutical poisoning

Each year, over 25 000 poisonings are reported to the BC Drug and Poison Information Centre (DPIC) and nearly half of these involve children. In the first 11 months of 2012, DPIC was consulted on 10 008 cases involving children less than 6 years old.[1] While 95% developed no toxicity or only minimal symptoms, 99 cases (< 1%) had moderate or major outcomes.[1] A recent review of poisonings in the US reported that after years of pediatric pharmaceutical poisonings steadily declining, from 2001 to 2008 there was a statistically significant increase in pediatric pharmaceutical exposures, emergency room visits, and hospitalizations.[2] During this period, the number of adults taking five or more prescription medications rose from 7% to 11%.[2] This trend of increased pediatric pharmaceutical poisonings can also be predicted for Canada as the number of prescriptions in Canada grows by nearly 5% annually.[3]

Many factors contribute to pediatric poisoning and prevention efforts are targeted at high-risk circumstances and patients most at risk. Poisoning situations in young children are mostly unintentional and are a function of the child's developmental stage. Toddlers and climbers between the ages of 1 to 3 years have the highest rate of poisoning.[1,4] The substances commonly involved are those that are most accessible in their environment (Table 1).[1,4] However, the most common substances are not necessarily the most toxic. For example, children's acetaminophen preparations are commonly ingested by young children, but the product strength and doses per bottle limit toxicity. Serious toxicity, however, can result when a child ingests an adult-strength, high-potency opioid analgesic such as fentanyl, methadone, or oxycodone (Table 2).[2,4] A single adult dose of these opioids is a potentially fatal dose for a toddler. In the aforementioned US study, oral hypoglycemic agents accounted for the highest admission rate in children younger than 6 years of age, whereas death was most frequently related to unintentional ingestion of opioid analgesics, cardiovascular agents, and CNS drugs including sedatives/hypnotics/antipsychotics/antidepressants.[2] As manufacturers strive to increase compliance in their patients on complex drug regimens, once-a-day sustained-release preparations contain potentially lethal amounts if ingested by a toddler (e.g., bupropion XL, verapamil SR, gliclazide MR). In addition, studies have shown that grandparents' medications are involved in 10% to 20% of poisoning exposures in young children as these medications are often stored in blister packs or dosettes, which are not child-resistant.[2,5]

Poison prevention education activities have focused on pediatric poisoning for decades and, as a result, the mortality rate in children from unintentional poisoning has declined dramatically. However, pediatric poisoning from prescription pharmaceuticals appears to be increasing. As more medications are being prescribed, ongoing education efforts need to be directed toward parents, grandparents, prescribers, and pharmacists. Poison Prevention Week (17–23 March) will highlight the problem and prevention of pediatric pharmaceutical poisoning with the theme "Out of Sight and Locked Up Tight." Prevention materials and resources are available by contacting the BC Drug and Poison Information Centre at www.dpic.org.

Table 1. Top 10 categories involved in pediatric (< 6 years) poisonings.[1,4]

- Cleaning substances
- Analgesics
- Cosmetics/personal care products
- Foreign bodies
- Plants
- Vitamins
- Topical preparations
- Food poisoning
- Dietary supplements/herbals/homeopathics
- Antihistamines

Table 2. Most deadly substances involved in pediatric (< 6 years) poisonings.[2,4]

1. Opioid analgesics
2. Sedatives/hypnotics/antipsychotics
3. Cardiovascular agents

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2. Bond GR, Woodward RW, Ho M. The growing impact of pediatric pharmaceutical poisoning. J Pediatr 2012;160:265-270.
3. Canadian pharma sales shrink for first time in 30 years; number of prescriptions filled grows nearly 5%. IMS Health. 6

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stops in Grand Cayman, Costa Maya, Cozumel, and Castaway Cay. The CME provides a rock-solid foundation in the basics of medical CBT and a plethora of 10-minute techniques to help patients with mental health issues. Lead instructor Greg Dubord, MD, is a recent University of Toronto CME Teacher of the Year. Accredited for 12.0 Mainpro-C credits. No prerequisites. For a limited time, rates for deluxe family ocean view staterooms are $2230 (taxes included), with Canada's largest cruise agency, CruiseShipCentres. Group discounts and companion cruises free. See www.cbt.ca or call 888 739-3117. Plan B? Disney Mediterranean cruise 17–24 Aug.

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Medical writing prize: $1000 for best student article

The J.H. MacDermot Prize for Excellence in Medical Journalism comes with a cash award of $1000 for the best article on any medicine-related topic submitted to the *BC Medical Journal* by a medical student in British Columbia.

The British Columbia Medical Association awards the annual prize to the finest medical student manuscript received by the *BC Medical Journal* that year. The prize honors Dr John Henry MacDermot (1883–1969), who became the editor of the *Vancouver Medical Bulletin* at its formation in 1924, remaining at the helm until 1959, when it became the *BC Medical Journal*. He was editor of the *BCMJ* until he retired in 1967. Dr MacDermot was also past president of both the VMA and the BCMA.

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satisfaction. Strong leadership and measurable initiatives make all the difference.

As well as the high level of provider satisfaction, the attitude of the staff was notable. They clearly love going into work every day. They're not there because of the money; they're there because of the culture.

A second visit to the clinic with a different group of specialist physicians is planned for early this year. The focus of this trip will be to look at practical applications and the degree to which elements of the clinic's programs could work for BC's specialist physicians. A review will be published in this column.

For more information, visit the Cleveland Clinic website at www.clevelandclinic.org.

—Ian Courtice, MD
—Ken Hughes, MD

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