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Unintended consequences of a cautious approach to e-cigarette laws

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Unintended consequences of a cautious approach to e-cigarette laws

IN REPLY: We thank Mendelsohn and Wodak for their comment on our letter.¹

Although we acknowledge that there is a range of reported lethal nicotine doses in humans ranging from 0.5 mg/kg to 13 mg/kg,^{2,3} the value of 60 mg stated in our original letter is used in numerous studies and in toxicology textbooks.^{4,5} There have been documented paediatric deaths from accidental nicotine ingestion,⁶ with some articles suggesting that the lethal dose in a child may be as low as 10 mg.⁷ Of note, one case report described a lethal dose of 4.2 mg/kg in a 15-month old child. Despite vomiting immediately after the ingestion, there was rapid progression to cardiac arrest and hypoxic brain injury.⁸ Therefore, with the risk of significant morbidity and mortality, a conservative approach to an accidental ingestion is needed.

Even if a lethal dose of 500 mg is applied — equating to about 8 mg/kg per dose in an adult with a weight of 70 kg — the volume of nicotine required to produce a lethal dose in a child would still be significantly smaller. With the reported nicotine concentrations in electronic nicotine delivery systems (ENDS) ranging from 0 mg/mL to 36 mg/mL,³ the ingestion of only 5 mL (one teaspoon) of a solution with a concentration of 18 mg/mL would be needed to produce a potentially lethal dose in a child who weighs 10 kg.

We advocate for the safe labelling and childproof packaging of ENDS products in Australia to prevent deaths from accidental ingestion. The fact remains that even a small amount of ingested liquid nicotine has the potential to cause serious harm to a child, at a time when ENDS products are both widely available and, at this point, unregulated.

Competing interests: No relevant disclosures.

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References

- 1 Catalano C, Cranswick NE, Robinson J, et al. Unintended consequences of a cautious approach to e-cigarette laws. *Med J Aust* 2019; 210: 143-144. <https://www.mja.com.au/journal/2019/210/3/unintended-consequences-cautious-approach-e-cigarette-laws>
- 2 Solarino B, Rosenbaum F, Riebelman B, et al. Death due to ingestion of a nicotine-containing solution: case report and review of the literature. *Forensic*

Sci Int 2010; 195: e19-e22.

- 3 American Academy of Paediatrics Policy Statement . Electronic nicotine delivery systems. *Pediatrics* 2015; 136: 1018-1026.
- 4 Cameron JM, Howell DN, White JR, et al. Variable and potentially fatal amounts of nicotine in e-cigarette nicotine solutions. *Tob Control* 2014; 23: 77-78.
- 5 Goldfrank LR, Flomenbaum NE, Lewin NA. Goldfrank's toxicologic emergencies; 6th ed. Stamford, CT: Appleton and Lange, 1998.
- 6 Kamboj A, Spiller HA, Casavant MJ, et al. Pediatric exposure to e-cigarettes, nicotine, and tobacco products in the United States. *Pediatrics* 2016; 137. pii: e20160041.
- 7 Etter JF, Bullen C, Flouris AD, et al. Electronic nicotine delivery systems: a research agenda. *Tob Control* 2011; 20: 243-248.
- 8 Seo A, Dong C, Yu H, Kang M. Accidental ingestion of e-cigarette liquid nicotine in a 15-month old child: an infant mortality case of nicotine intoxication. *Korean J Pediatr* 2016; 59: 490-493.